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TAXONOMY OF THE KATYDIDS (ORTHOPTERA: TETTIGONIIDAE) FROM EAST ASIA AND ADJACENT ISLANDS. COMMUNICATION 5

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Two new genera, eight new species and three new subspecies of Meconematinae are described from Sulawesi, New Guinea, Borneo and Halmahera: *Stenophlugis subtilis* **gen. et sp. n.**, *Papuaphlugis papua* **gen. et sp. n.**, *P. p. bagusa* **subsp. n.**, *Asiophlugis cercalis* **sp. n.** and *A. kubah* **sp. n.** (Phlugidini); *Neophisis (Neophisis) halmahera* **sp. n.**, *N. (N.) megaurita kasonaweja* **subsp. n.**, *N. (Indophisis) tangkoko* **sp. n.**, *N. (I.) sabah* **sp. n.**, *N. (I.) haani matang* **subsp. n.** and *Meiophisis enarotali* **sp. n.** (Phisidini). *Carliphisis leontopolites* (Karny, 1931), **nom. resurr.** (Phisidini) from Malacca is restored from synonymy with Javanese *C. acutipennis* (Carl, 1908).

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

А. В. Горохов. Таксономия кузнечиков (Orthoptera: Tettigoniidae) из Восточной Азии и соседних островов. Сообщение 5 // Дальневосточный энтомолог. 2012. N 252. С. 1-26.

Из Сулавеси, Новой Гвинеи, Борнео и Хальмахеры описаны два новых рода, восемь новых видов и три новых подвида кузнечиков подсемейства Meconematinae: *Stenophlugis subtilis* **gen. et sp. n.**, *Papuaphlugis papua* **gen. et sp. n.**, *P. p. bagusa* **subsp. n.**, *Asiophlugis cercalis* **sp. n.** и *A. kubah* **sp. n.** (Phlugidini); *Neophisis (Neophisis) halmahera* **sp. n.**, *N. (N.) megaurita kasonaweja* **subsp. n.**,

N. (Indophisis) tangkoko sp. n., *N. (I.) sabah* sp. n., *N. (I.) haani matang* subsp. n. и *Meiophisis enarotali* sp. n. (Phisidini). *Carliphisis leontopolites* (Karny, 1931), **nom. resurr.** (Phisidini) из Малакки восстановлен из синонимии с яванским *C. acutipennis* (Carl, 1908).

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INTRODUCTION

The present paper is a fifth communication in the series of publications on taxonomy of Indo-Malayan and Papuan Tettigoniidae. The previous communications contain mainly descriptions of new taxa from the subfamilies Phaneropterinae, Conocephalinae and Meconematinae (genera *Elimaea* Stål, *Stictophaula* Heb., *Peracca* Griff., *Viriacca* Ingr., *Euanisous* Heb., *Sumatropsis* Gor., *Xiphidiopsis* Redt., *Xizicus* Gor., *Chandozhinskia* Gor., *Decma* Gor.; Gorochov, 2011a, b, c, 2012). This (fifth) communication is dedicated to the tribes Phlugidini and Phisidini of the subfamily Meconematinae. The material examined here is deposited in the Zoological Institute, Russian Academy of Sciences, St. Petersburg.

DESCRIPTIONS OF NEW TAXA

Subfamily Meconematinae

Tribe Phlugidini

Gorochov (1998) and Gorochov & Tan (2011) included in the genus *Asiophlugis* Gorochov, 1998 five Indo-Malayan species [*A. sulawesi* (Jin, 1993); *A. rete* Gorochov, 1998 (type species); *A. thai* (Helfert et Sanger, 1998); *A. temasek* Gorochov et Tan, 2011; *A. trumadi* Gorochov, 2011] having the hind pronotal lobe moderately long and covering the tegminal bases, tegmina long or shortened (but not very short), fore coxa with long spine, fore femur with two rows of ventral spines, fore tibia with a pair of tympana, middle legs unarmed (excepting apical tibial spurs), mesosternum with a pair of distinct tubercles or short spines, male last abdominal tergite rather simple, male genital plate comparatively short and with the hind part more or less wide, styles of this plate stick-like and situated in its posterolateral corners rather widely separated from each other, and male cerci elongate (lobe-like or finger-like) and with a small hook-like or spine-like process at their base (Figs 18, 21, 22, 24). Five other Indo-Malayan species [*Ph. dubia* Karny, 1907; *Phlugis thaumasia* Hebard, 1922; *Ph. borneoensis* Jin, 1993; *Ph. philippina* Jin, 1993; *A. malacca* Gorochov, 1998] were more or less provisionally added to *Asiophlugis* in the same publications, because males of these species were unknown or insufficiently described. Recently Tan (2011) shown that Hebard's species has all the above-listed characters and indubitably belongs to *Asiophlugis*.

There are four other genera of Phlugidini distributed in the Old World: *Lucienola* Gurney, 1975 (Solomon Islands); *Phlugidia* Kevan, 1993 (Africa); *Austrophlugis* Rentz, 2001 (Australia); *Indiamba* Rentz, 2001 (Australia). *Lucienola*, judging by Chopard (1969) and Gurney (1975), includes one species characterized by the hind lobe of male pronotum very short (not covering tegmina and almost not covering mesonotum), tegmina also very short, fore coxa with a long spine, fore femur with two ventral spines, fore tibia with four inner ventral spines and inner tympanum only (?) (Gurney, 1969) or with four pairs of spines and only outer tympanum (?) (Chopard, 1969), male last abdominal tergite with a pair of elongate posterolateral lobes, male cerci thin and very long, male genital plate with the widely bifurcate apex and moderately short styles situated at the base of this plate. This genus was synonymized with *Tenuiphlugis* Kevan, 1993 by Gorochov (1998) as the both generic names are based on the same type species (*Ph. gressitti* Chopard, 1969). Curiously, the establishing of this synonymy was correctly ascribed to Gorochov in one of the previous variants of the Orthoptera Species File, but in its modern variant (Eades et al., 2012), this action is erroneously ascribed to Nickle (2002) who did not know the preceding literature and secondarily synonymized these names.

Kevan & Jin (1993) included in this genus three additional species from New Guinea and Australia: *Tenuiphlugis maai* Jin, 1993; *T. brittoni* Jin, 1993; *T. malkini* Jin, 1993. And Rentz (2001) added two species from Australia: *T. pittii* Rentz, 2001; *T. tiwiwarrina* Rentz, 2001. He also transferred *T. malkini* in the genus *Indiamba*, but all these species (not only *I. malkini*) probably do not belong to *Lucienola*, because they have the hind pronotal lobe more or less long and partly or almost completely covering tegmina and pterothorax, fore tibia with a pair of tympana, and male cerci (if male is known) looking as those of *Asiophlugis* (but the cercal base structure is unclear). Unfortunately, there are additional problems with some of these characters: Jin (in the cited paper by Kevan & Jin) wrote about the presence of ventral spines on fore femora of all her species; Rentz (2001) noted that in *T. brittoni*, “all femora unarmed”, but in the generic diagnosis of *Tenuiphlugis*, he indicated that fore femur “armed ventrally only on anterior [inner] margin” (in *T. maai*, judging by Jin, the both ventral margins of fore femur are with spines). Moreover, males of *T. maai* and *T. brittoni* are unknown, and position of the hind pronotal lobe in relation to tegmina in *T. maai* is not very clear. So, generic position of all these species as well as of *Ph. buruensis* Karny, 1924 (extremely briefly described from Buru I.) is unknown.

Phlugidia, judging by Kevan & Jin (1993), is also a monotypical genus having the tegmina very short and completely covered by the hind pronotal lobe, fore legs as in *Asiophlugis* but with only inner ventral femoral spines, middle legs distinguished from those of *Asiophlugis* and *Lucienola* by the tibia with a ventral spine, and meso-sternum distinguished from that of *Asiophlugis* by the absence of paired tubercles. *Austrophlugis*, judging by Rentz (2001), is similar to *Asiophlugis* by the structure of hind pronotal lobe and of fore legs as well as by the presence of a hook-like or spine-like process at the base of male cerci, but it differs from the latter in a few characters: the middle tibiae are with two ventral spines (vs. without ventral spines); last tergite

of male abdomen with a pair of large lobes; shape of male cerci is usually more complicated, and their basal processes is larger or lobule-like. *Indiamba* is also similar to *Asiophlugis* and *Austrophlugis*, however its hind pronotal lobe is almost completely covering the strongly shortened tegmina, fore femora are with only inner ventral spines, middle tibiae are as in *Asiophlugis*, male last tergite is as in *Austrophlugis* but with the posterior lobes much longer, and male cerci and their basal processes are also much longer than in *Austrophlugis* and *Asiophlugis*.

Two species of Phlugidini described below have some distinct differences from all the above-mentioned genera and from American ones. These differences suppose their belonging to new genera of Phlugidini.

Genus *Stenophlugis* Gorochov, gen. n.

Type species: *Stenophlugis subtilis* sp. n.

DIAGNOSIS. Pronotum with hind lobe covering basal part of tegmina (Fig. 1); mesosternum with a pair of tubercles. Fore coxa with long spine; fore femur with only inner row of ventral spines; fore tibia with two rows of ventral spines and a pair of tympana; middle legs unarmed (excepting apical tibial spurs). Male last abdominal tergite with a pair of short hind lobes and rather deep notch between them (Fig. 2); male cerci more or less finger-like, simple (without any basal process; Figs 2, 3, 5); male epiproct small, rounded (Fig. 5); male genital plate not long, with apical styles rather thin and stick-like (Figs 3, 4).

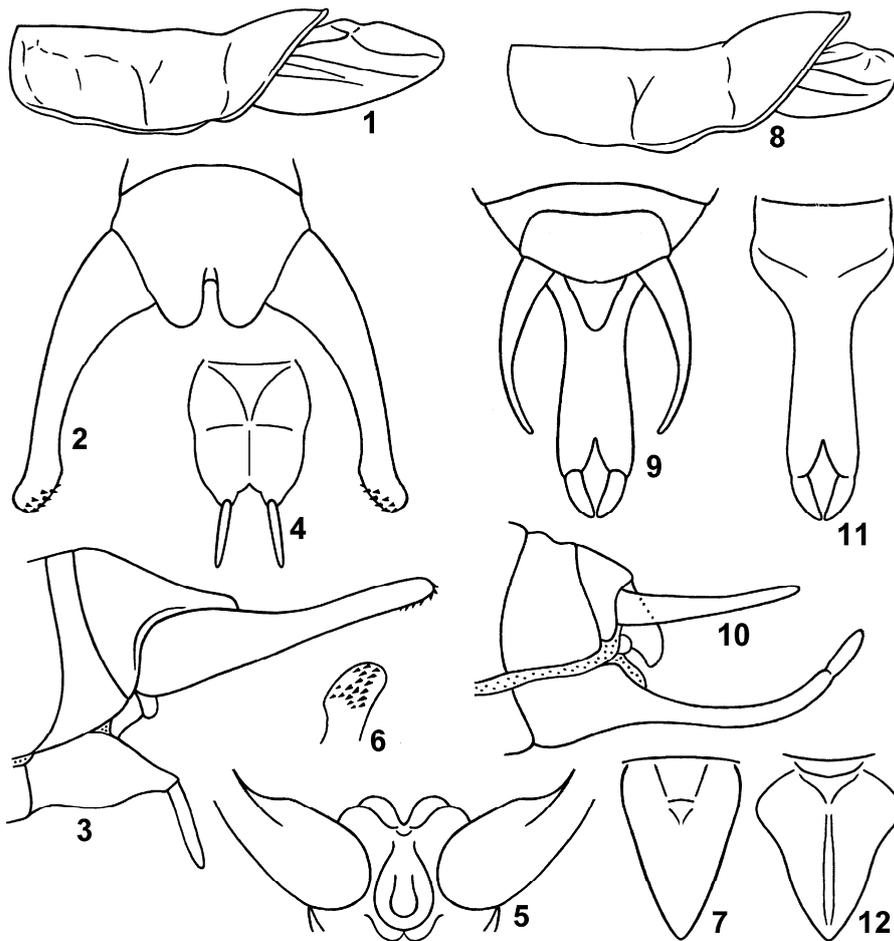
INCLUDED SPECIES. Type species. Possibly also *Phlugis burgersi* Jin, 1993 and *Ph. novaeguineensis* Jin, 1993 (both from New Guinea) as well as some species included by Kevan & Jin and Rentz in *Lucienola* (= *Tenuiphlugis*).

COMPARISON. The new genus differs from *Asiophlugis* and *Austrophlugis* in the fore femur with only inner ventral spines and male cerci lacking basal processes and lobules; from *Phlugidia*, in the presence of tubercles on mesosternum and absence of ventral spine on middle tibia; from *Indiamba*, in the male cerci and lobes of male last tergite much shorter as well as in the absence of any basal process on these cerci; from *Lucienola*, in the hind pronotal lobe longer, fore tibia with a pair of tympana, and male genital plate with apical position of styles; from the American genus *Phlugiola* Karny, in the tegmina longer, fore femur with only inner ventral spines, and middle tibia lacking ventral spines; and from the other American genera, in the same characters of legs as from *Phlugiola* and styles of male genital plate not very long or not fused with this plate.

Stenophlugis subtilis Gorochov, sp. n.

Figs 1–7, 26

MATERIAL. Holotype – ♂, **Indonesia**: Sulawesi I., Sulawesi Tengah Prov., National park Lore Lindu, ~75 km SE of Palu City, environs of Wuasa Vill. (near eastern border of park), ~1000 m, on leaf of bush in primary forest, at night, 7-12.II 2011, A. Gorochov. Paratypes: 3 ♀, same data.



Figs 1–12. Phlugidini: 1–7 – *Stenophlugis subtilis* sp. n.; 8–12 – *Papuaphlugis papua papua* subsp. n. Pronotum with tegmina of male from side (1, 8); male abdominal apex from above (2, 9) and from side (3, 10); male genital plate from below (4, 11); upper half of male abdominal apex without distal parts of cerci from behind and slightly below (5); male cercal apex, inner and slightly caudal view (6); female genital plate from below (7, 12).

DESCRIPTION. Male. Coloration light yellowish green with yellowish eyes, with light brown spots on proximal part of antennal flagellum, on spines of fore tibiae, and on distal half of fore and middle tarsi, as well as with brown rest of this flagellum, spots on apical part of hind tibiae, and most part of hind tarsi. Pronotum long; its hind lobe weakly inflate and covering proximal half of tegminal stridulatory apparatus (Fig. 1). Tegmina shortened, reaching posterior half of 4th abdominal tergite, with well developed stridulatory apparatus and rounded apex; hind wings invisible (not exposed). Fore femur with three inner ventral spines; fore tibia with

four pairs of ventral spines (its inner spines, excepting distal one, longer than all other spines of legs). Last abdominal tergite with rounded hind lobes and narrow notch between them (Fig. 2); cerci with thickened proximal half and rather thin distal one having group of very small (but distinct) hook-like spinules at apex (Figs 2, 3, 5, 6); genital plate with not deep and almost angular notch between bases of rather long styles (Fig. 4).

Female. General appearance as in male, but hind pronotal lobe slightly shorter and not inflate, tegmina lacking stridulatory apparatus and reaching posterior part of 3rd or anterior part of 4th abdominal tergites, last abdominal tergite truncate posteriorly, cerci reaching apex of inflate part of ovipositor and gradually narrowing from rather thin base to very thin apex. Genital plate elongate and narrowing to almost acute or narrowly rounded apical part distinctly curved upwards (Figs 7, 26); ovipositor as in Fig. 26.

Length (in mm). Body: ♂ 9.5, ♀ 10-11.5; pronotum: ♂ 3.5, ♀ 3.3-3.4; visible part of tegmina: ♂ 2.2, ♀ 2-2.2; hind femora: ♂ 10.5, ♀ 10.5-10.7; ovipositor 4.4-4.6.

COMPARISON. The new species differs from *Ph. burgersi* in the clearly deeper hind median notch of male last tergite, wider base of male cerci, and notched (not angularly convex) hind part of male genital plate between styles; from *Ph. novae-guineensis*, in the distinctly shorter tegmina and lobes of male last tergite; from *T. maai* (which have the fore legs more similar to those of *Asiophlugis* and *Austrophlugis*), in the presence of only inner ventral spines on fore femora; from *T. brittoni*, in the presence of outer ventral spines on fore tibiae; from *T. pittii* and *T. tiwiwarrina*, in the narrower notch between male last tergite lobes and wider basal part of male cerci; and from *Ph. buruensis*, in the absence of any notch at the female genital plate apex.

Genus *Papuaphlugis* Gorochov, gen. n.

Type species: *Papuaphlugis papua* sp. n.

DIAGNOSIS. Pronotum with hind lobe covering basal part of tegmina (Fig. 8); mesosternum with a pair of tubercles. Fore coxa without spine; fore femur with only inner row of ventral spines; fore tibia with two rows of ventral spines and a pair of tympana; middle legs unarmed (excepting apical tibial spurs). Male last abdominal tergite without hind lobes (Fig. 9); male cerci thin (almost as in female), simple (without any basal process; Figs 9, 10); male epiproct elongate, more or less conical (Figs 9, 10); male genital plate long, with narrow distal half and with apical styles rather thick and more or less finger-like (Fig. 9-11).

INCLUDED SPECIES. Type species. Possibly also *Phlugis rapax* Jin, 1993 from New Guinea.

COMPARISON. The new genus differs from *Asiophlugis* and *Austrophlugis* in the absence of any spine on fore coxa, of outer ventral spines on fore femur, and of basal processes and lobules on male cerci; from *Phlugidia*, in the presence of tubercles on mesosternum and absence of any spine on fore coxa and on ventral part of

middle tibia; from *Indiamba*, in the fore coxa unarmed, male last tergite without paired hind lobes, male cerci much shorter and without any basal process on these cerci; from *Lucienola*, in the hind pronotal lobe longer, fore coxa without spine, fore tibia with a pair of tympana, and male genital plate with apical position of styles; from the American genus *Phlugiola* Karny, in the tegmina longer, fore coxa without spine, and middle tibia lacking ventral spines; and from the other American genera, in the fore coxa without spine, fore femur lacking outer ventral spines, middle tibiae lacking ventral spines, and styles of male genital plate not very long or not fused with this plate.

***Papuaphlugis papua* Gorochov, sp. n.**

Figs 8–12, 27

MATERIAL. Holotype – ♂, **Indonesia:** New Guinea I., Papua Prov., environs of Nabire Town, partly primary / partly secondary forest, on leaf of bush, at night, 28.II-2.III 2012, A. Gorochov. Paratypes: 2 ♂, 1 ♀, same data.

DESCRIPTION. Male (holotype). Coloration as in *S. subtilis*, but with light brown marks on apical lobules of hind femora. Pronotum long; its hind lobe distinctly inflate and covering most part of tegminal stridulatory apparatus (Fig. 8). Tegmina shortened, reaching hind part of 1st abdominal tergite, with developed stridulatory apparatus and widely rounded apical part; hind wings invisible (not exposed). Fore femur with three inner ventral spines; fore tibia with four pairs of ventral spines (its inner spines very long, distinctly longer than all other spines of legs). Last abdominal tergite simple, with roundly convex posteromedian edge partly fused with epiproct (Fig. 9); apical part of epiproct moderately narrow (Fig. 9) and slightly hooked in profile (Fig. 10); narrow distal half of genital plate slightly curved upwards, with a pair of narrow apical lobules and rather deep and narrow notch between them; styles of this plate comparatively short and situated at apex of these lobules (Figs 9–11); cerci gradually narrowing to very thin apex, reaching apical part of genital plate lobules (Figs 9, 10).

Variations. Epiproct in one of paratypes obliquely truncate (practically not hooked) in profile.

Female. General appearance as in male, however hind pronotal lobe not inflate and shorter (covering only tegminal bases), tegmina without stridulatory apparatus and reaching anterior part of 1st abdominal tergite, last abdominal tergite with median part shorter and posteromedian edge almost straight, epiproct very small (almost triangular) and not fused with last tergite, and cerci similar to those of female of *S. subtilis* but distinctly shorter (Fig. 27). Genital plate with wide base and clearly narrower distal half having roundly angular apical part not curved upwards (Fig. 12); ovipositor as in Fig. 27.

Length (in mm). Body: ♂ 11.5-12.5, ♀ 13; pronotum: ♂ 3.6-3.8, ♀ 3.4; visible part of tegmina: ♂ 1.8-2, ♀ 2.1; hind femora: ♂ 10.3-10.8, ♀ 11; ovipositor 5.

COMPARISON. The new species is distinguished from *Ph. rapax* by the presence of a pair of mesosternal tubercles, coloration of eyes and epicranium uniform, and

tegmina and female cerci clearly shorter. From *Ph. buruensis*, the new species differs in the absence of any notch at the female genital plate apex; and from the other New Guinean representatives of Phlugidini, in the absence of fore coxal spine (a generic character).

***Papuaphlugis papua bagusa* Gorochov, subsp. n.**

MATERIAL. Holotype – ♂, **Indonesia**: New Guinea I., Papua Prov., environs of Bagusa Vill. on Mamberamo River (not far from its mouth), low-lying primary forest, on leaf of tree at night, 22-24.I 2012, A. Gorochov.

DESCRIPTION. Male. Coloration and structure of body very similar to those of nominotypical subspecies, but tegmina distinctly shorter (reaching middle part of 1st abdominal tergite and with stridulatory apparatus completely covered by hind pronotal lobe), epiproct with very narrow distal part and almost acute (from above) apex, genital plate slightly longer and with narrower distal part (almost as wide as its middle part), and hind notch of this plate (situated between styles) clearly narrower in distal half.

Female unknown.

Length (in mm). Body 9.5; pronotum 4.1; visible part of tegmina 1.1; hind femora 11.3.

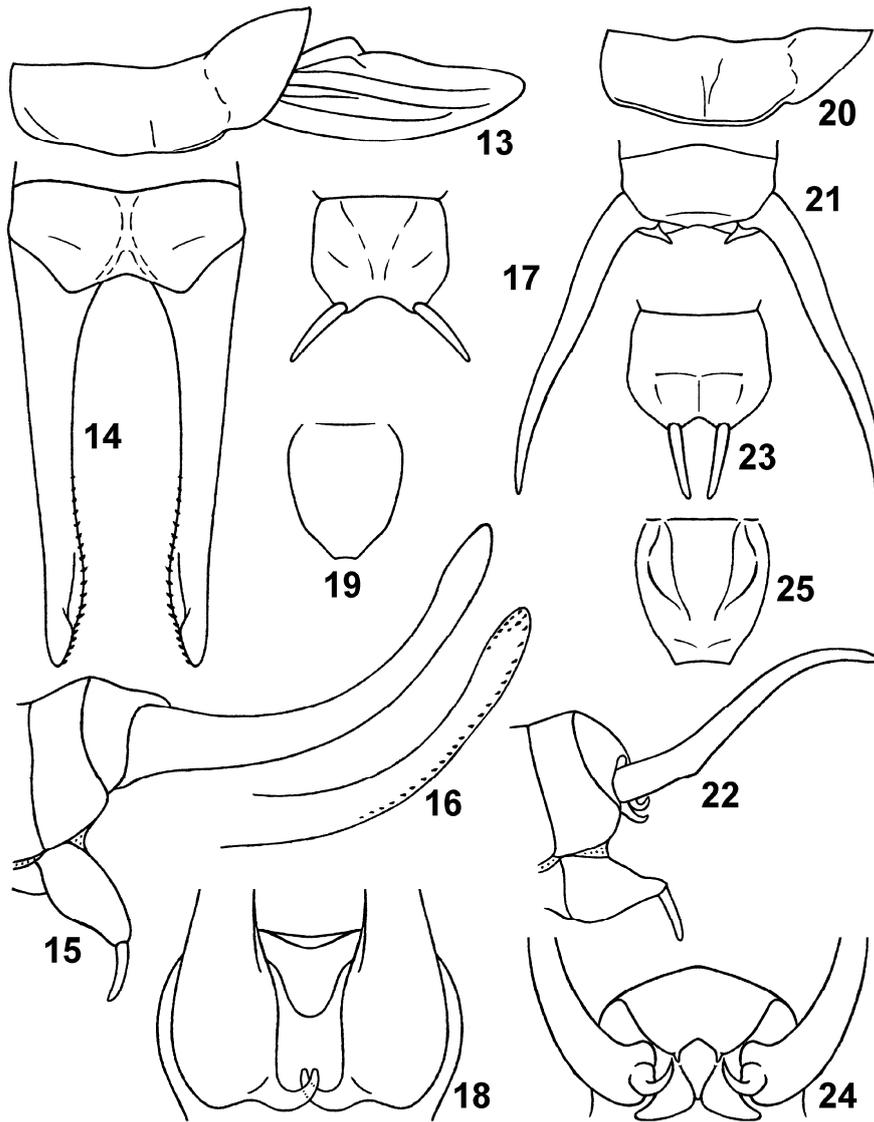
COMPARISON. Differences of the new subspecies from *P. p. papua* are given above, in the description of *P. p. bagusa*.

***Asiophlugis cercalis* Gorochov, sp. n.**

Figs 13–19, 28

MATERIAL. Holotype – ♂, **Malaysia**: Borneo I., Sarawak State, environs of Kuching City, Kubah National Park, Matang Mt, 200-500 m, primary forest, on lower surface of tree leaf, at night, 10-17.III 2012, A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov. Paratypes: 3 ♂, 1 ♀, same data.

DESCRIPTION. Male. Coloration similar to that of *S. subtilis*, but spines of fore tibiae uniformly light yellowish green (as most part of body) and cerci with brown denticles. Pronotum long; its hind lobe distinctly inflates and covering proximal half of tegminal stridulatory apparatus (Fig. 13); mesosternum with a pair of short spines slightly shorter than distance between these apices. Tegmina reaching base of 5th abdominal tergite, with developed stridulatory apparatus and narrowly rounded apex (Fig. 13); hind wings invisible (not exposed). Fore coxa with very long spine; both fore femur and fore tibia with 4 pairs of ventral spines (3 inner proximal spines of tibia very long, distinctly longer than other spines). Last abdominal tergite with a pair of short and almost angular lobes posteriorly, and with shallow and rather wide notch between them (Fig. 14); epiproct small and with rounded apex; cerci long, almost immovable, and arcuately curved upwards; distal half of cerci flattened medially, with almost lamellar distal part hardly widened in profile, and with narrowly rounded apex (Figs 14, 15); ventral edge of this cercal half with one row of very small



Figs 13–25. *Asioplugis* Gor.: 13–19 – *A. cercalis* sp. n.; 20–25 – *A. kubah* sp. n. Pronotum of male with tegmina (13) and without them (20) from side; male abdominal apex from above (14, 21) and from side (15, 22); male cercus without basal part, inner view (16); male genital plate from below (17, 23); upper half of male abdominal apex without distal parts of cerci from behind and slightly below (18) and from behind (24); female genital plate from below (19, 25).

and hook-like denticles directed medially, and inner surface of apical cercal part with a few similar denticles (Fig. 14, 16); genital plate typical of this genus, comparatively short, with rather long and thin styles, and with rather wide distance between their bases (Fig. 17).

Variation. Tegmina sometimes reaching hind part of 4th abdominal tergite.

Female. General appearance as in male, but hind pronotal lobe slightly shorter and almost not inflate, tegmina without stridulatory apparatus and reaching base of 4th abdominal tergite, last tergite with straight hind edge, epiproct very small and rounded, and cerci similar to those of *S. subtilis* female but somewhat longer (Fig. 28). Genital plate almost oval but with oblique lateral edges of distal part and narrow and truncate apex (Fig. 19); ovipositor as in Fig. 28.

Length (in mm). Body: ♂ 10.5-11.5, ♀ 12.5; pronotum: ♂ 3.5-3.8, ♀ 3.4; visible part of tegmina: ♂ 3.3-3.5, ♀ 3.2; hind femora: ♂ 11.2-11.7, ♀ 11.5; ovipositor 5.

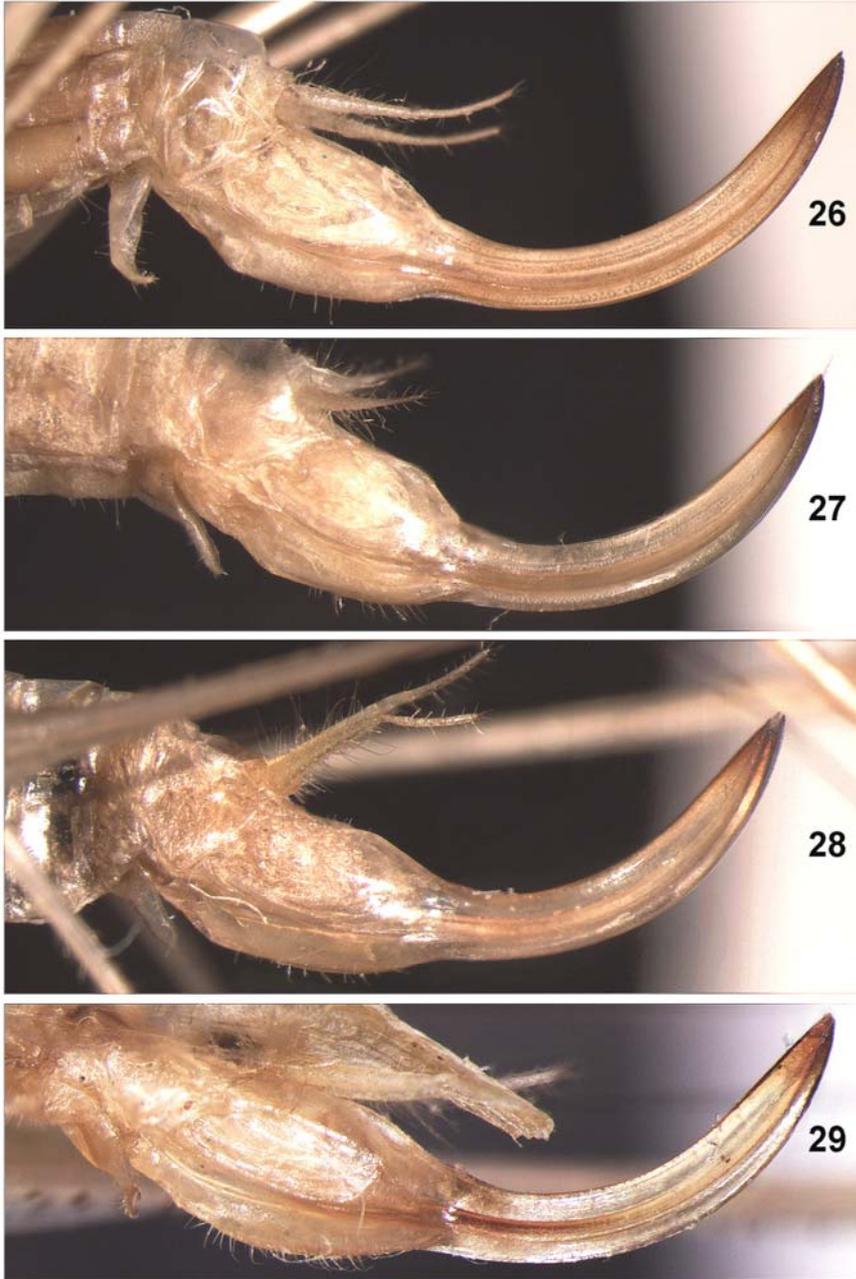
COMPARISON. The new species is well distinguished from *A. thaumasia*, *A. sulawesi*, *A. rete*, *A. thai*, *A. temasek*, *A. trusmadi* and *A.? borneoensis* by the male cerci long, almost immovable, arcuately curved upwards, and provided with rather numerous denticles along the ventral cercal edge and on the inner surface of cercal distal part. From *A.? malacca* and *A.? dubia*, the new species differs in the wings distinctly shorter, and the female genital plate apex truncate (not rounded or emarginate); and from *A.? philippina*, in the clearly longer spine of fore coxa and more numerous outer ventral spines of fore femur.

***Asiophlugis kubah* Gorochoy, sp. n.**

Figs 20–25, 29

MATERIAL. Holotype – ♂, **Malaysia**: Borneo I., Sarawak State, environs of Kuching City, Kubah National Park, Matang Mt, 200-500 m, camping very near primary forest, on lower surface of tree leaf, at night, 10-17.III 2012, A. Gorochoy, M. Berezin, E. Tkatsheva, I. Kamskov. Paratype: 1 ♀, same data.

DESCRIPTION. Male. Coloration similar to that of *S. subtilis*, but proximal part of antennal flagellum with numerous very small light brownish spots, middle and distal parts of this flagellum brown with sparse and rather long whitish spots, spines of fore tibiae and apical part of hind tibiae light yellowish green (as most part of body), and apical spurs of hind tibiae brown. Pronotum rather long; its hind lobe hardly inflate (Fig. 20) and covering proximal half of tegminal stridulatory apparatus; mesosternum with a pair of short spines slightly shorter than distance between their apices. Tegmina reaching middle of hind femora (and approximately apex of cerci), with developed stridulatory apparatus, with slightly narrowing distal part, and with rounded apex; hind wings distinctly exposed behind tegmina, almost reaching distal third of hind femora. Fore coxa with very long spine; fore femur with 3 inner ventral spines and 2–3 outer ventral spines; fore tibia with 5 pairs of ventral spines (3 inner proximal spines longest). Last abdominal tergite with rounded median lobe curved downwards, a pair of small spinules at apex, and comparatively narrow



Figs 26–29. Phlugidini, female abdominal apex (including ovipositor) from side: 26 – *Stenophlugis subtilis* sp. n.; 27 – *Papuaphlugis papua papua* subsp. n.; 28 – *Asiophlugis cercalis* sp. n.; 29 – *A. kubah* sp. n.

and not deep notch between them (Figs 21, 24); epiproct very small, weakly elongate, and with narrow apical part (Fig. 24); paraproct with lobule-like projection directed backwards and somewhat laterally (Figs 22, 24); cerci rather long and thin, weakly S-shaped in profile, with very small angular projection on ventral edge and strongly curved hook on inner surface of cercal base (Figs 21, 22, 24); genital plate similar to that of *A. cercalis* but with distinctly narrower distance between bases of styles (Fig. 23).

Female. General appearance as in male, however hind pronotal lobe not inflate, tegmina without stridulatory apparatus, and abdominal apex similar to that of *A. cercalis*, but genital plate with distinctly wider apex (Fig. 25), and ovipositor as in Fig. 29.

Length (in mm). Body: ♂ 9.5, ♀ 10.5; body with wings: ♂ 12, ♀ 12.5; pronotum: ♂ 3, ♀ 3.1; tegmina: ♂ 7.5, ♀ 8; hind femora: ♂ 11, ♀ 11.5; ovipositor 4.5.

COMPARISON. The new species is most similar to *A. trusmadi*, but distinguished from it by the male cerci distinctly longer, inner proximal hook of these cerci much more strongly curved, and apex of female genital plate truncate (not narrowly rounded). From *A. thaumasia*, *A. rete*, *A. thai* and *A. ? borneoensis*, the new species differs in the male cerci clearly longer; from *A. thaumasia*, *A. ? malacca* and *A. ? dubia*, in the apex of female genital plate truncate (not rounded or emarginate); from *A. temasek*, *A. rete*, *A. thai*, and *A. ? borneoensis*, in the distinctly longer wings; from *A. sulawesi*, in the male cerci clearly thinner and their inner basal hook shorter; from *A. ? dubia*, in the fore tibia with 5 (not 4) pairs of ventral spines; and from *A. ? philippina*, in the fore coxal spine and wings distinctly shorter.

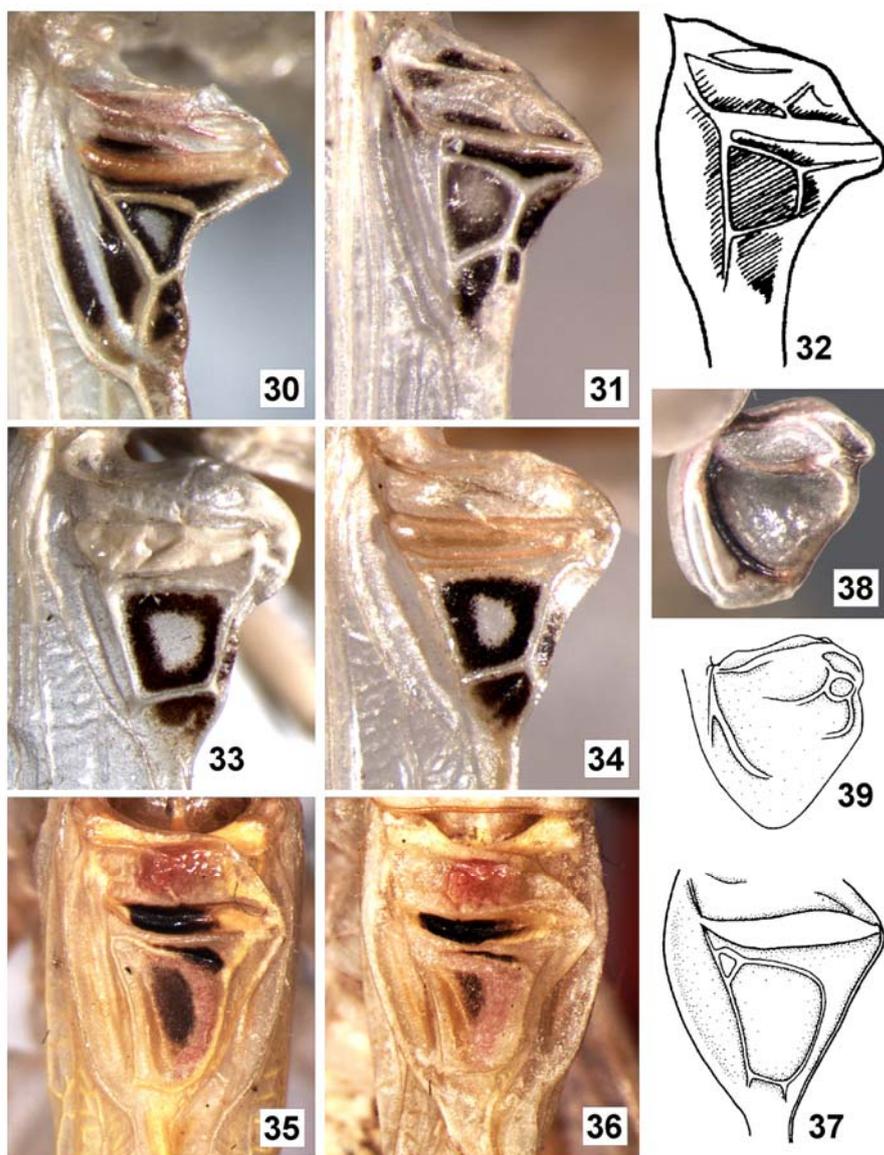
Tribe Phisidini

Neophisis (Neophisis) halmahera Gorochov, sp. n.

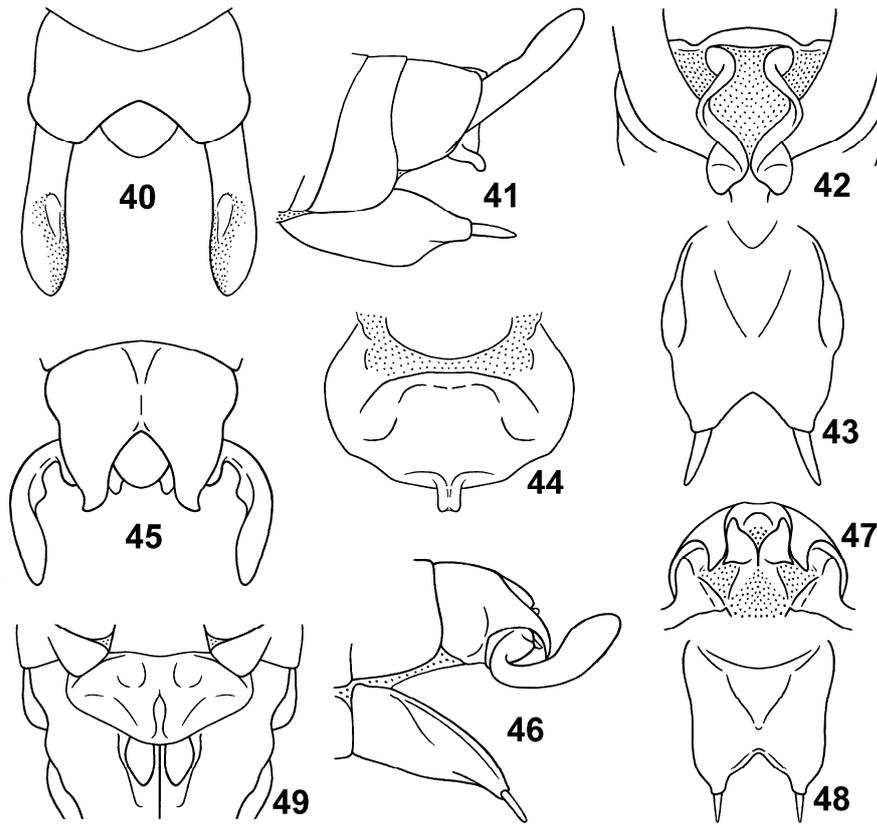
Figs 30, 40–44, 64, 82

MATERIAL. Holotype – ♂, **Indonesia**: Molucca Islands, Maluku Utara Prov., Halmahera I., environs of Subaim Vill. not far to S from Lolabata Vill. (coast of Wasile Bay), disturbed primary forest on hills, confiscated from spider on leaf of bush in daytime, 27.I-1.II 2011, A. Gorochov. Paratype: 1 ♀, same data, but collected in living condition on leaf of small tree at night.

DESCRIPTION. Male. Coloration light greenish with rose eyes, yellow stridulatory vein of upper tegmen, a few blackish spots on stridulatory apparatus of this tegmen (Fig. 30), three such spots near lateral part of mirror of lower tegmen (proximal spot less dark, almost brownish grey), grayish brown longitudinal stripe on ventral surface of spines of fore and middle legs, light brown most part of spines of hind tibia and small areas on third segment of all tarsi, and very light brown most part of medial surface of distal cercal half. Thoracic venter with a pair of moderately long spines on prosternum and a pair of moderately short ones on mesosternum only. Tegmina long and narrow, reaching middle part of hind tibiae, and with rounded



Figs 30–39. Phisidini, male: 30 – *Neophisis halmahera* sp. n.; 31 – *N. meaurita kasonaweja* subsp. n.; 32 – *N. m. meaurita* Jin; 33 – *N. ?sarasini* (Karny); 34 – *N. tangkoko* sp. n.; 35 – *N. sabah* sp. n.; 36 – *N. haani matang* subsp. n.; 37 – *N. h. haani* Jin; 38 – *Meiophisis enarotali* sp. n.; 39 – *M. cardiopennis* Jin. Male left (upper) tegmen (38, 39) and its stridulatory apparatus (30–37). [Figs 32, 37, 39 – after Jin & Kevan (1992)].



Figs 40–49. *Neophisis* Jin. 40–44 – *N. halmahera* sp. n.; 45–49 – *N. tangkoko* sp. n. Male abdominal apex from above (40, 45) and from side (41, 46); upper half of this apex without distal parts of cerci from behind and slightly below (42) and from behind (47); genital plate of male (43, 48) and female (44) from below; female abdominal apex without most part of ovipositor from below (49).

apex; upper tegmen with long, transverse and comparatively narrow stridulatory vein, and with rather long and narrowly angular medial projection of basal part of stridulatory apparatus; tegminal medial edge behind this projection (near it) with large (deep) notch; mirror of both tegmina well developed but small and more or less triangular (Fig. 30); hind wings somewhat shorter than tegmina, slightly not reaching their apex. Fore femur with 6 outer and 4 inner ventral spines; fore tibia with 8 pairs of ventral spines (2 distal pairs moderately long, 5 proximal pairs very long) and a pair of large and oval tympanal openings (inner opening slightly smaller than outer one; Fig. 64); middle trochanter with 1 small ventral spine; middle femur with 4 outer and 2 inner ventral spines (2 latter spines small and located in proximal part of femur); middle tibia with 7 outer and 6 inner ventral spines as well as with 1 inner dorsal subapical spine; hind femur with rather numerous outer ventral spinules

(only part of this femur preserved). Last abdominal tergite with distinct posteromedian notch; epiproct rounded posteriorly (Fig. 40); paraprocts lamellar, more or less vertical, and S-shaped from behind; their lower part with slightly inflat lobule (Figs 41, 42); cerci rather short, finger-like, with hardly inflat distal half and shallow concavity near middle of their dorsomedial surface (Figs 40, 41); genital plate not long, with moderately wide hind part having a pair of rather long styles and almost angular notch between them (Fig. 43); sclerite of genitalia not found.

Female. General appearance as in male, but eyes yellowish, stridulatory apparatus absent, and majority of structures of abdominal apex (tergites, epiproct, paraprocts) not specialized (typical of female of Phisidini). Genital plate wide, with more or less rounded hind edge having small median process curved partly upwards and partly backwards (Fig. 44); ovipositor as in Fig. 82.

Length (in mm). Body: ♂ 13, ♀ 15.5; body with wings: ♂ 28, ♀ 31; pronotum: ♂ 3.6, ♀ 3.8; tegmina: ♂ 23.5, ♀ 25; hind femora: ♀ 17.5; ovipositor 9.5.

COMPARISON. The new species is clearly distinguished from all the other species of this subgenus by the longer and more narrowly angular projection of basal part of upper tegminal stridulatory apparatus, larger (deeper) notch of tegminal medial edge behind this projection, shorter male cerci having hardly inflat distal half, and presence of small median process at the apex of female genital plate [such process is known only in *N. obiensis* (Heb.), but the new species differs from it also in the distinctly larger tympanal openings]. Additionally the new species differs from *N. arachnoides* (Bol.), *N. novemspinata* Jin, *N. pogonopoda* (Montr.), *N. leptoptera* Jin, *N. phymacercata* Jin, *N. longifenestrata* Jin, *N. longicercata* Jin, *N. crassipes* (Bol.), *N. longiplata* Jin, *N. robusta* Jin and *N. megaurita* Jin in the clearly longer styles of male genital plate; from *N. longistylata* Jin, in the well developed mirror of male upper tegmen; from *N. curvicaudata* Jin and *N. ecmura* Rentz, in the not curved male cerci; from *N. brachyptera* Jin and *N. buloloensis* Jin, in the much longer wings; and from *N. supiori* Gor., in the shorter mirror of male upper tegmen and in the position of dorsomedial concavity of male cerci near their middle (not near their apex).

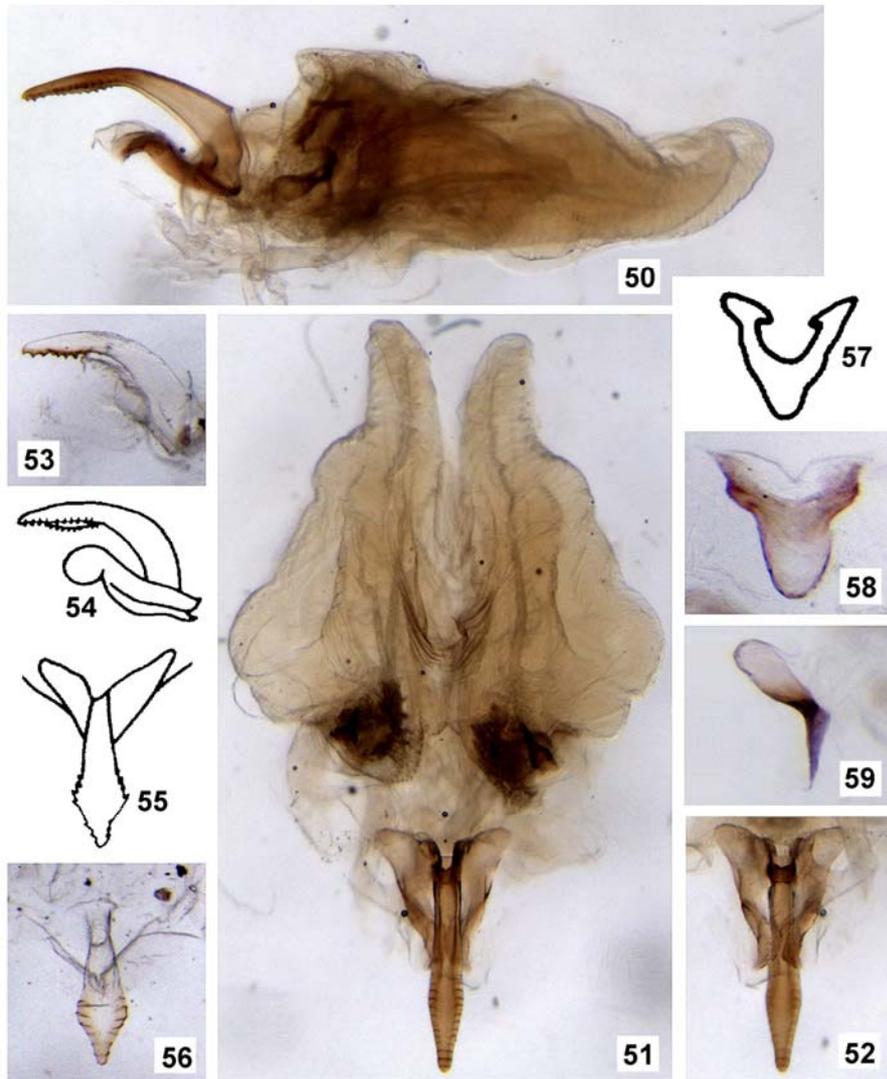
***Neophisis (Neophisis) megaurita kasonaweja* Gorochov, subsp. n.**

Figs 31, 58, 59

MATERIAL. Holotype – ♂, **Indonesia**: New Guinea I., Papua Prov., environs of Kasonaweja Vill. on low slope of Van Rees Range near Mamberamo River, primary forest, at light, 25-27.I 2012, A. Gorochov.

DESCRIPTION. Male. Coloration light greenish with rose eyes, yellow longitudinal stripe on rostral dorsum and rather wide median stripe on pronotum, a few brownish grey spots on stridulatory apparatus of upper tegmen (Fig. 31), 1 small grayish spot behind mirror on lower tegmen, blackish brown small sparse spots on antennal flagellum, 3 small (but distinct) marks on apex of all femora, and ventral surface of spines of fore and middle legs (tibial spines with light greenish middle part of this surface), and brownish dorsal area on tympanal inflation of fore tibiae,

distal part of hind tibial spines and 3 distal segments of all tarsi. Structure of body very similar to that of nominotypical subspecies [see Jin & Kevan (1992)], but stridulatory apparatus of upper tegmen with medial projection of basal part somewhat



Figs 50–59. *Neophisis* Jin, male: 50–52 – *N. tangkoko* sp. n.; 53–56 – *N. ? sarasini* (Karny); 57 – *N. megaurita megaurita* Jin; 58, 59 – *N. m. kasonaweja* subsp. n. Genitalia (50, 51) and their sclerite (52–59) from side (50, 53, 54, 59), from above (51, 55–58), and from below (52). [Figs 54, 55, 57 – after Jin & Kevan (1992)].

less projected and with medial and distal edges of mirror more oblique (for comparison see Figs 31 and 32), fore tibia with inner ventral spines more numerous (9), middle femur with 2 (vs. 1) very small inner proximal spines, genital plate with styles slightly longer, and sclerite of genitalia (Figs 58, 59) with apical part wider and median notch less deep (for comparison see Figs 57 and 58).

Female unknown.

Length (in mm). Body 11.5; body with wings 24; pronotum 2.9; tegmina 21.5; hind femora 15.5.

COMPARISON. The new subspecies differs from *N. m. megaurita* Jin in the above-mentioned characters of body structure as well as somewhat more spotted coloration with the medial part of stridulatory apparatus of male upper tegmen darker (for comparison see Figs 31 and 32).

Neophisis (Indophisis) ? sarasini (Karny, 1931)

Figs 33, 53, 56

MATERIAL. 1 ♂, **Indonesia**: Sulawesi I., Minahassa Peninsula, Sulawesi Utara Prov., Bogani Nani Wartabone National Park, environs of Wallace Base Camp near Toraut Vill. (not far from Doloduo Town), primary forest, on leaf of bush at night, 17-25.I 2011, A. Gorochochov.

NOTES. The species was described from a female collected in the central part of Sulawesi (Karny, 1931). Jin & Kevan (1992) did a redescription of this species based on this female and some additional material (including males) from the northern part of Sulawesi (Minahassa Peninsula). However I have 2 similar species from the latter part which are practically identical to this redescription excepting shape of sclerite of male genitalia. One of these species is with this sclerite very similar to that pictured by Jin & Kevan (for comparison see Figs 53–56), but another species is with the spine-like part of this sclerite distinctly narrower and longer (Figs 50, 51). The latter species is collected in the most eastern part of Minahassa which is situated most far from the type locality of *N. sarasini*. Possibly all these specimens from Minahassa do not belong to *N. sarasini* as their localities and the type locality of *N. sarasini* are situated in the different parts of Sulawesi. Here I tentatively (under question) determine the first species (collected less far from the type locality of *N. sarasini* and having the male genital sclerite similar to that pictured by Jin & Kevan) as *N. sarasini* and describe the second species as a new one.

Neophisis (Indophisis) tangkoko Gorochochov, sp. n.

Figs 34, 45–52, 65, 83

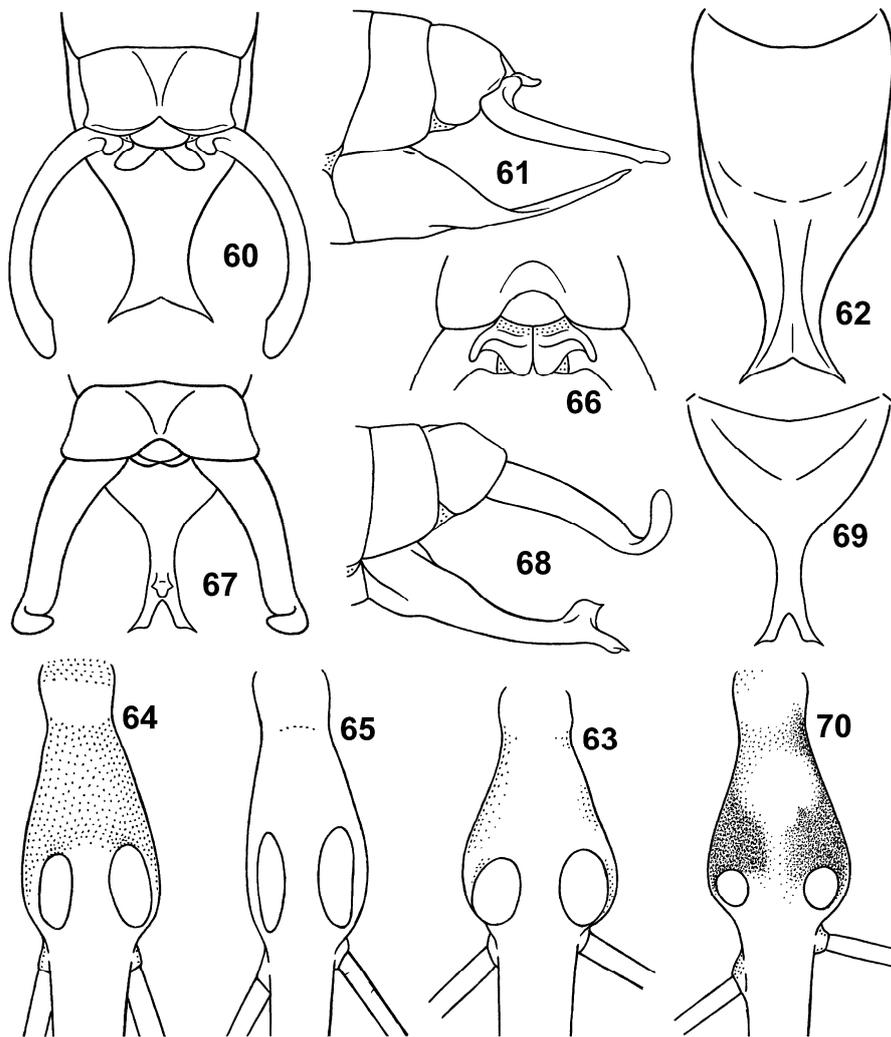
MATERIAL. Holotype – ♂, **Indonesia**: Sulawesi I., Minahassa Peninsula, Sulawesi Utara Prov., ~40 km NE of Manado City, Tangkoko National Park, environs of Tangkoko Lodge, partly primary / partly secondary forest, on leaf of bush at night, 3-6.II 2011, A. Gorochochov. Paratypes: 2 ♀, same data.

DESCRIPTION. Male. Coloration similar to that of *N. halmahera*, but eyes yellowish, distal part of antennal flagellum brownish grey, dark spots on stridulatory apparatus of upper tegmen less numerous and different in shape (Fig. 34), this apparatus in lower tegmen almost transparent (lacking dark or darkish marks), spines of middle femora and cerci completely light greenish. Spines of prosternum moderately long; spines of mesosternum moderately short; spines of metasternum very short (almost tubercle-like). Tegmina moderately long and narrow, with rounded apex, and reaching subapical part of hind femora; stridulatory apparatus of upper tegmen as in Fig. 34; lower tegmen with distinctly larger mirror having medial and lateral edges convex; hind wings practically reaching tegminal apex. Fore femur with 5 outer and 4 inner ventral spines; fore tibia with 7 pairs of ventral spines and a pair of large (long) tympanal openings (inner opening clearly narrower than outer one; Fig. 65); middle legs with spines as in *N. halmahera*, but tibia with additional small proximal inner ventral spine; hind femur with 8 very short outer ventral spinules. Last abdominal tergite posteriorly with a pair of rather narrow and acute lobes (these lobes weakly curved downwards and with apical part slightly curved laterally) as well as with deep notch between them; epiproct not reaching apex of these lobes, with rounded hind part; each paraproct with small upper lobule and very short (tubercle-like) lower spine (Figs 45–47); cerci strongly curved, with ventromedial lobule at middle (this lobule directed medially and upwards) and with distal part distinctly widened and flattened (Figs 45, 46); genital plate comparatively short, with moderately long apical styles and rather deep and almost angular notch between them (Figs 46, 48); genitalia with spine-like part of sclerite rather thin (not significantly widened in subapical part) and long (Figs 50–52).

Female. General appearance as in male, however tegmina without stridulatory apparatus and majority abdominal structures typical of Phisidini female. Genital plate wide, with almost roundly truncate apex lacking any median process (Fig. 49); shape of ovipositor as in Fig. 83, and its base with a pair of distinct ventral lobules partly exposed behind genital plate (Figs 49, 83).

Length (in mm). Body: ♂ 14, ♀ 13.5–14.5; body with wings: ♂ 20.5, ♀ 20–21; pronotum: ♂ 3.6, ♀ 3.5–3.6; tegmina: ♂ 15, ♀ 16–16.5; hind femora: ♂ 15.5, ♀ 15–15.5; ovipositor 9.7–10.

COMPARISON. The new species is most similar to *N. sarasini* but distinguished (if the determination of Jin & Kevan is correct) by the distal part of male cerci more strongly widened, and spine-like part of male genital sclerite distinctly longer and clearly narrower. From the other species of this subgenus, it differs in the long wings in combination with a characteristic shape of male last abdominal tergite (this tergite with a pair of rather narrow and acute hind lobes as well as a large notch between them), strongly curved male cerci having the distal part distinctly widened and flattened, small (not large) medial lobe of these cerci, moderately long styles of male genital plate, deep notch of this plate between these styles, and long and narrow spine-like part of male genital sclerite.



Figs 60–70. Phisidini, male. 60–63 – *Neophisis sabah* sp. n.; 64 – *N. halmahera* sp. n.; 65 – *N. tangkoko* sp. n.; 66 – *N. haani matang* subsp. n.; 67–70 – *Meiophisis enarotali* sp. n. Abdominal apex from above (60, 67) and from side (61, 68); genital plate from below (62, 69); dorsal surface of proximal part of fore tibia (63–65, 70); upper half of abdominal apex without distal parts of cerci from above and slightly behind (66).

***Neophisis (Indophis) sabah* Gorochov, sp. n.**

Figs 35, 60–63, 71, 72

MATERIAL. Holotype – ♂, **Malaysia:** Borneo I., Sabah State, Trus Madi Mt, ~1000 m, partly primary / partly secondary forest, at light, 13-25.V 2007, A. Gorochov. Paratype: 1 ♂, same data.

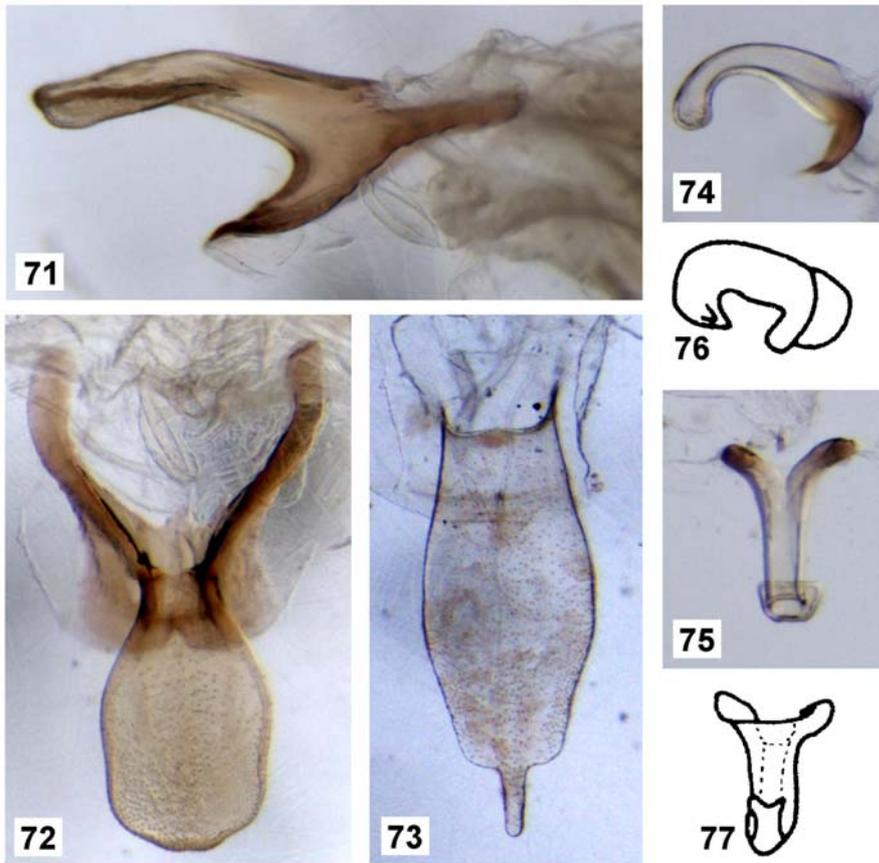
DESCRIPTION. Male (holotype). Coloration light greenish with yellowish eyes, yellow both longitudinal stripe behind each eye and longitudinal stripe along each lateral edge of pronotal disc, rose both spot on basal part of stridulatory apparatus of upper tegmen and spot on medial part of its mirror, reddish both longitudinal stripe on tegmen near middle third of its anal edge and row of short stripes in R-M tegminal area, dark brown both spot on stridulatory vein of upper tegmen and spot along proximal part of its mirror, brown spot on lateral part of this mirror, and light brown both stripe (or spot) on venter of spines situated on fore legs and on middle tibiae as well as distal part of spines of hind tibiae. Structure of body more or less similar to that of *N. tangkoko*, but spines of prosternum moderately short (almost as those of mesosternum in length), tegmina reaching middle third of hind tibiae, stridulatory apparatus of upper tegmen as in Fig. 35, hind wings slightly not reaching tegminal apex, fore femur with 6 outer and 5 inner ventral spines, outer and inner tympanal openings large (more or less round) and almost equal in size (Fig. 63), middle femur with 5 outer and 2 inner ventral spines (2 latter spines proximal and very short), middle tibia with 7 pairs of ventral spines (inner proximal one short), last abdominal tergite without hind lateral lobes and with less deep hind median notch, epiproct slightly shorter, each paraproct with only upper lobule (Figs 60, 61), cerci very different (longer, thin, weakly arcuately curved, and with small dorsal tubercle at base and small angular ventromedial projection near apex; Figs 60, 61), genital plate rather long and narrowing in subapical part, its apical part characteristic (widened, fused with styles, laterally spinose, and with shallow median notch; Figs 61, 62), and sclerite of genitalia with plate-like part rather long and flattened (oval in shape; Figs 71, 72).

Variations. Paratype with yellow marks on pronotum almost indistinct and brownish edges of 3rd segment of tarsi distinct.

Female unknown.

Length (in mm). Body 13.5-14.5; body with wings 23-25; pronotum 3.3-3.5; tegmina 19-20.5; hind femora 13-14.

COMPARISON. The new species is most similar to *N. haani* Jin, but distinguished by the distal part of male paraproctal lobules less narrow (from above), male genital plate fused with styles and having the hind median notch shallower, and sclerite of male genitalia with the plate-like part lacking thin apical process. From *N. siamensis* Jin and *N. arcuata* Jin, the new species differs in the different shape of plate-like part of male genital sclerite (distinctly longer than in *N. siamensis*, and lacking small apical process present in *N. arcuata*); and from all the other species of this subgenus, in the male cerci longer and less curved in combination with the wings not shortened.



Figs 71–77. Phisidini, male. 71, 72 – *Neophisis sabah* sp. n.; 73 – *N. haani matang* subsp. n.; 74, 75 – *Meiophisis enarotali* sp. n.; 76, 77 – *M. cardiopennis* Jin. Sclerite of genitalia from side (71, 74, 76) and from above (72, 73, 75, 77). [Figs 76, 77 – after Jin & Kevan (1992)].

***Neophisis (Indophisis) haani matang* Gorochov, subsp. n.**

Figs 36, 66, 73, 84

MATERIAL. Holotype – ♂, **Malaysia:** Borneo I., Sarawak State, environs of Kuching City, Kubah National Park, Matang Mt, 200-500 m, primary forest, on tree leaf at night, 10-17.III 2012, A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov. Paratypes: 1 ♂, 5 ♀, same data.

DESCRIPTION. Male (holotype). Coloration light greenish with yellowish eyes, a pair of yellow (almost light brown) longitudinal stripes on pronotal disc, blackish spot on stridulatory vein of upper tegmen, two small brownish grey marks on mirror

of this tegmen, rose areas on basal part of stridulatory apparatus of this tegmen (before stridulatory vein) and on medial half of its mirror (Fig. 36), and darkish areas on ventral surface of spines of both fore leg and middle tibia as well as along distal edge of 3rd segment of all tarsi. Body structure very similar to that of nominotypical subspecies (Jin & Kevan, 1992), but mirror of upper tegmen clearly wider distally and without small additional anterolateral cell, marginal vein of proximal part of this mirror partly obliterate (for comparison see Figs 36 and 37), middle tibia with 7 outer and 6 inner ventral spines, paraproctal lobules directed more medially (Fig. 66), and genital plate fused with styles.

Variations. Paratype with spot on stridulatory vein of upper tegmen distinctly smaller and lighter (brownish grey), spots on mirror of this tegmen somewhat smaller and less distinct, and distal part of this mirror more or less intermediate between those pictured in Figs 36 and 37.

Female. General appearance as in male, however tegmina uniformly light greenish (but with small rose marks along anal edge) and without stridulatory apparatus, middle tibia sometimes with 7 pairs of ventral spines, abdominal apex with majority of structures typical of female of this subgenus. Genital plate with a pair of spine-like processes similar to those of *N. arcuata* Jin (Jin & Kevan, 1992: fig. 58, H); ovipositor as in Fig. 84.

Length (in mm). Body: ♂ 12-14, ♀ 13-17; body with wings: ♂ 22-24, ♀ 24-26; pronotum: ♂ 3.1-3.3, ♀ 3.3-3.6; tegmina: ♂ 16-17.5, ♀ 19-21; hind femora: ♂ 13-14, ♀ 14-15.5; ovipositor 11.5-13.

COMPARISON. The new species differs from *N. haani haani* Jin in the characters of body structure listed above as well as presence of dark and darkish spots on the stridulatory apparatus of male upper tegmen. Proximal part of mirror of this tegmen is more similar to that of *N. arcuata*, and female genital plate is practically identical in the latter species and in the new subspecies. However male genital sclerite of the new subspecies is with the spine-like apical process long (in *N. arcuata*, this process is short) and clearly more similar to that of *N. h. haani* (Fig. 73).

***Meiophisis enarotali* Gorochov, sp. n.**

Figs 38, 67-70, 74, 75

MATERIAL. Holotype – ♂, **Indonesia**: New Guinea I., Papua Prov., Central Range, environs of Paniai Lake near Enarotali Vill. (~120 km SEE of Nabire Town), ~2000 m, disturbed primary forest, on leaf of bush at night, 22-27.II 2012, A. Gorochov.

DESCRIPTION. Male. Coloration light greenish with rose eyes, brownish and blackish brown marks on tegmina (Fig. 38), light brown small spot near base of each ventral spine of fore leg (excepting two outer proximal spines of femur) and 1 inner spot at base of this femur, brown small spot near base of each of other ventral spines of fore and middle legs as well as 3rd segment of all tarsi and marks on ventral surface of ventral spines of fore legs, and blackish brown a pair of small marks at apex of all femora and a pair of spots on dorsal surface of tympanal inflation of fore

tibia as well as most part of ventral surface of outer ventral spines of middle legs and dot near each ventral spine of hind tibia (and near each ventral spur of this tibia). Head almost opistognathous, with rostrum short and inflat, and antero-ventral outlines of epicranium in profile strongly arcuately curved. Thoracic sternites unarmed. Tegmina completely exposed, very short (slightly not reaching hind edge of metanotum), but with stridulatory apparatus developed (Fig. 38); hind wings absent. Fore femur with 8 outer and 5 inner ventral spines; fore tibia with 8 pairs of ventral spines and a pair of not large and almost round tympanal openings (Fig. 70); middle trochanter with small ventral spine; middle femur with 3 inner (small and proximal) and 7 outer ventral spines; middle tibia with 7 outer and 5 inner ventral spines as well as with 1 outer dorsal subapical spine; one hind femur with 5 small outer ventral spines, and other one with 7 such spines. Last abdominal tergite with posteromedian notch not very large; epiproct rounded and more or less transverse; paraprocts unspecialized; cerci with apical part strongly curved upwards and slightly twisted; genital plate with hind part strongly narrowed and rather long (almost as long as rest of this plate), apically bifurcate, fused with styles forming a pair of posterolateral spinules, and having short subapical process on dorsal surface (Figs 67–69); sclerite of genitalia as in Figs 74, 75.

Female unknown.

Length (in mm). Body 11; pronotum 2.5; tegmina 0.9; hind femora 11.3.

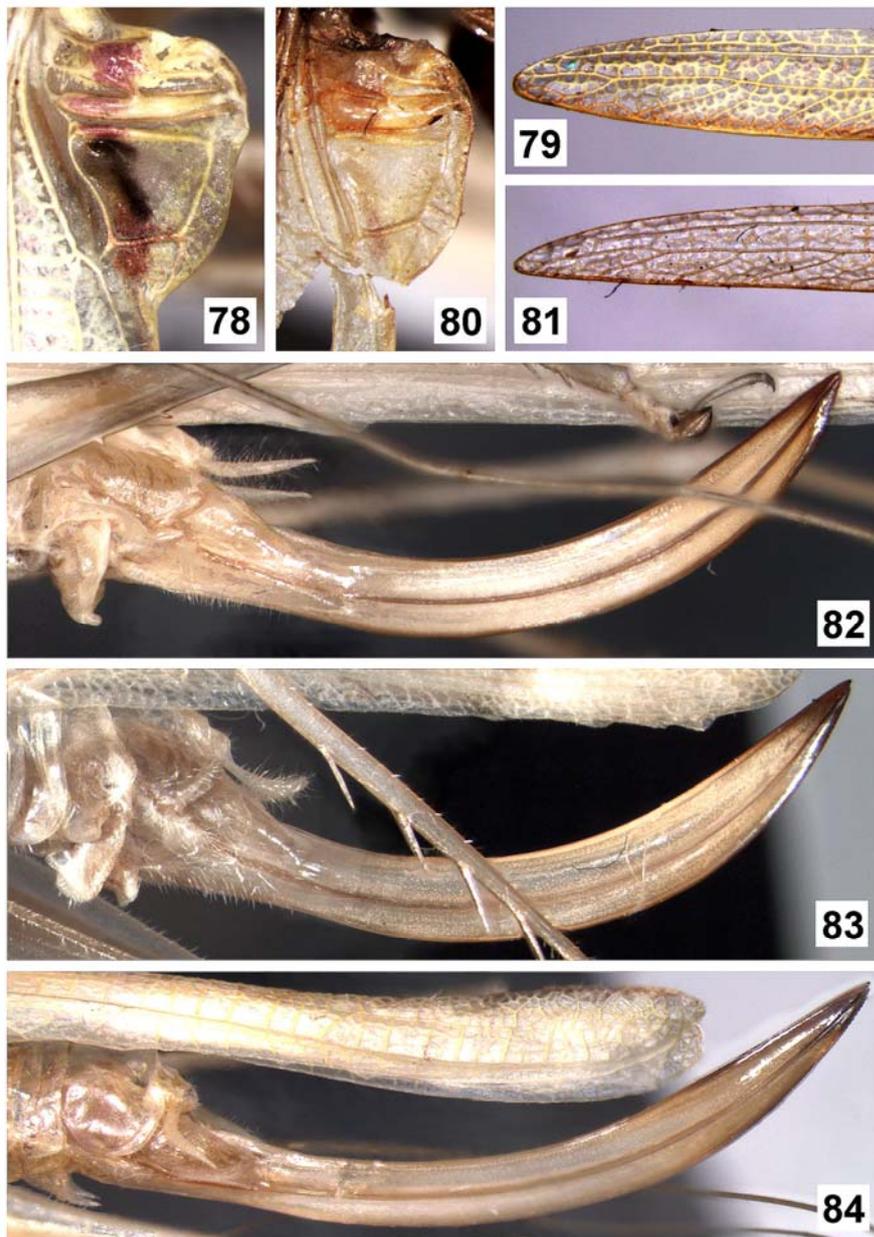
COMPARISON. The new species is most similar to *M. cardiopennis* Jin by the structure of tegmina and cerci as well as general shape of genital plate in male, but clearly distinguished from it by the presence of 3 veins (not 1) in the lateral part of left male tegmen, apex of male tegmina truncate (not almost angular; for comparison see Figs 38 and 39), male cerci with the apical part more strongly curved, male genital plate with the hind (narrow) part distinctly longer and having posterolateral spinules as well as with the apical median notch much deeper and subapical dorsal process developed, and sclerite of male genitalia somewhat different in shape (for comparison see Figs 74–77). From all the other congeners, the new species differs in the dissimilar structure of male tegmina and of male cerci.

***Carliphisis leontopolites* (Karny, 1931), nom. resurr.**

Fig. 78, 79

MATERIAL. 1 ♂, 1 ♀, **Malaysia**: Pahang State, Tioman I. near Malacca Peninsula (not far from Mersing City in Johor State), environs of Juara Vill. (eastern coast), partly primary / partly secondary forest, on tree leaves at night, 6-14.IV 2010, A. Gorochoy, M. Berezin, E. Tkatsheva.

NOTES. This species name was synonymized by Jin & Kevan (1992) with *C. acutipennis* (Carl) described from Java and having 7 pairs of ventral spines on fore tibia (Carl, 1908). Hebard (1922) determined a female from Singapore as Carl's species and indicated that it has 6 pairs of such spines; he also assumed that Carl tracted the small apical spurs as 7th pair of these spines. However Karny (1931) decided that Hebard's specimen belongs to a new species, and he proposed the new name for it.



Figs 78–84. Phisidini. 78, 79 – *Carliphisis leontopolites* (Kamy); 80, 81 – *C. acutipennis* (Carl); 82 – *Neophisis halmahera* sp. n.; 83 – *N. tangkoko* sp. n.; 84 – *N. haani matang* subsp. n. Stridulatory apparatus (78, 80) and apical part (79, 81) of male upper tegmen; female abdominal apex (including ovipositor) from side (82–84).

At present I have 3 specimens from Java (1 ♂, 2 ♀) having 7 pairs of ventral spines of fore tibia (+ small apical spurs), and the above-mentioned male and female from a small island situated not very far from Singapore. The latter specimens are very similar to these Javanese specimens but having 6 pairs of such spines (+ small apical spurs); they also differ from the Javanese specimens (evidently true representatives of *C. acutipennis*) in the following characters: stridulatory apparatus of male upper tegmen is with a distinct brownish rose longitudinal stripe (vs. all tegmina are almost uniformly light); stridulatory vein of this apparatus is distinctly longer and narrower; mirror of both tegmina is clearly wider in the proximal part (for comparison see Figs 78 and 80); distal part of tegmina is less narrow and with the subapical position of Sc apex (vs. distal part of this vein is lost distinctly before subapical part of tegmina; for comparison see Figs 79 and 81); hind wings are reaching the distal quarter of tegmina (vs. reaching the middle of tegmina); spines of fore legs are hardly (in male) or slightly (in female) widened in the distal part (vs. practically not widened in this part); male genital plate is with the styles somewhat longer (they are approximately 5 times as short as the rest of this plate; in *C. acutipennis*, this ratio is near 6).

So, the specimens from Tioman I. most probably belong to a separate species lacking any differences from the original description of *C. leontopolites*, and it is a reason for the latter species restoration.

ACKNOWLEDGEMENTS

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REFERENCES

- Carl, J. 1908. Conocéphalides du Muséum de Genève. *Revue Suisse de Zoologie*, 16: 131–150, pl. 4.
- Chopard, L. 1969. Un extraordinaire Tettigoniide des îles Salomon (Orthoptera). *Memorie della Società Entomologica Italiana*, 48: 47–51.
- Eades, D.C., Otte, D., Cigliano, M.M. & Braun, H. 2012. *Orthoptera Species File Online*. Visited 15 July 2012. Available from: <<http://osf2.orthoptera.org/HomePage.aspx>>
- Gorochov, A.V. 1998. New and little known Meconematinae of the tribes Meconematini and Phlugidini (Orthoptera: Tettigoniidae). *Zoosystematica Rossica*, 7 (1): 101–131.
- Gorochov, A.V. 2011a. Taxonomy of the katydids (Orthoptera: Tettigoniidae) from East Asia and adjacent islands. Communication 1. *Far Eastern Entomologist*, 220: 1–13.
- Gorochov, A.V. 2011b. Taxonomy of the katydids (Orthoptera: Tettigoniidae) from East Asia and adjacent islands. Communication 2. *Far Eastern Entomologist*, 227: 1–12.
- Gorochov, A.V. 2011c. Taxonomy of the katydids (Orthoptera: Tettigoniidae) from East Asia and adjacent islands. Communication 3. *Far Eastern Entomologist*, 236: 1–13.
- Gorochov, A.V. 2012. Taxonomy of the katydids (Orthoptera: Tettigoniidae) from East Asia and adjacent islands. Communication 4. *Far Eastern Entomologist*, 243: 1–9.

- Gorochov, A.V. & Tan, M.K. 2011. New katydids of the genus *Asiophlugis* Gor. (Orthoptera: Tettigoniidae: Meconematinae) from Singapore and Malaysia. *Russian Entomological Journal*, 20 (2): 129–133.
- Gurney A.B. 1975. The male of the South American katydid genus *Phlugiola*, and a new related genus from the Solomon Islands (Orthoptera: Tettigoniidae, Meconematinae). *Proceedings of the Entomological Society of Washington*, 77(3): 426–433.
- Hebard, M. 1922. Studies in Malayan, Melanesian and Australian Tettigoniidae (Orthoptera). *Proceedings of the Academy of Natural Sciences of Philadelphia*, 74: 121–299.
- Jin, X.-B. & Kevan, D.K.McE. 1992. *Taxonomic revision and phylogeny of the tribe Phisidini (Insecta: Grylloptera: Meconematidae)*. Koenigstein: Koeltz scientific books. 360 p.
- Karny, H. 1907. Revisio Conocephalidarum. *Abhandlungen der K. K. Zool.–Bot. Gesellschaft in Wien*, 4(3): 1–114.
- Karny, H. 1931. Orthoptera Celebica Sarasiniana. Fam. Tettigoniidae. *Treubia*, 12(Suppl.): 4–140.
- Kevan, D.K.McE. & Jin, X.-B. 1993. Remarks on the Tribe Phlugidini Eichler and Recognition of New Taxa from the Indo-Malayan Region and East Africa (Grylloptera: Tettigoniidae: Meconematidae). *Invertebrate Taxonomy*, 7: 1589–1610.
- Nickle, D.A. 2002. New species of katydids (Orthoptera: Tettigoniidae) of the neotropical genera *Arachnoscelis* (Listroschelidinae) and *Phlugiola* (Meconematinae), with taxonomic notes. *Journal of Orthoptera Research*, 11 (2): 125–133.
- Rentz, D.C.F. 2001. *Tettigoniidae of Australia – Volume 3. The Listroschelidinae, Tympanophorinae, Meconematinae and Microtettigoniinae*. Collingwood: CSIRO publishing. 524 p.
- Tan, M.K. 2011. The species of *Asiophlugis* Gorochov, 1998 in Singapore (Orthoptera: Tettigoniidae: Meconematinae). *Nature in Singapore*, 4: 233–239.