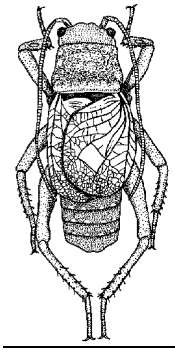

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology,
Institute of Biology and Soil Science,
Vladivostok

Number 266: 1-24 ISSN 1026-051X August 2013

hppt/ urn:lsid:zoobank.org:pub:ABE37DD2-5311-4C1C-8791-A9518CCD64A4

TAXONOMY OF THE KATYDIDS (ORTHOPTERA: TETTIGONIIDAE) FROM EAST ASIA AND ADJACENT ISLANDS. COMMUNICATION 7

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Six new species, three new subspecies and two new subgenera of the genus *Elimaea* Stål [*E.* (*Schizelimaea*) *kinabalu* **sp. n.**, *E.* (*Sch.*) *sukau* **sp. n.**, *E.* (*Sch.*) *wartabone* **sp. n.**, *E.* (*Rhaebelimaea*) *lyra* **sp. n.**, *E.* (*Rh.*) *bavi obliqua* **subsp. n.**, *E.* (*Rh.*) *borneo curvata* **subsp. n.**, *E.* (*Bornelimaea*) *sympatrica media* **subsp. n.**, *E.* (?) *furca* **sp. n.**, *E.* (?) *storozhenkoi* **sp. n.**, *Sulawimaea* **subgen. n.**, *Neoelimaea* **subgen. n.** (Phaneropterinae: Elimaeini)] are described from Malaysia, Vietnam and Indonesia. New data on distribution of *E.* (*Schizelimaea*) *ampla* Gor., *E.* (*Rhaebelimaea*) *semitubulosa* Gor. and *E.* (*Sulawimaea*) *inversa* Br.-W. are given.

KEY WORDS: Orthoptera, Tettigoniidae, Phaneropterinae, Elimaeini, *Elimaea*, new taxa, Malaysia, Vietnam, Indonesia.

А. В. Горохов. Таксономия кузнечиков (Orthoptera: Tettigoniidae) из Восточной Азии и соседних островов. Сообщение 7 // Дальневосточный энтомолог. 2013. N 266. С. 1-24.

Описаны шесть новых видов, три новых подвида и два новых подрода рода *Elimaea* Stål [*E.* (*Schizelimaea*) *kinabalu* **sp. n.**, *E.* (*Sch.*) *sukau* **sp. n.**, *E.* (*Sch.*) *wartabone* **sp. n.**, *E.* (*Rhaebelimaea*) *lyra* **sp. n.**, *E.* (*Rh.*) *bavi obliqua* **subsp. n.**, *E.*

(*Rh.*) *borneo curvata* **subsp. n.**, *E.* (*Bornelimaea*) *sympatrica media* **subsp. n.**, *E.* (?) *furca* **sp. n.**, *E.* (?) *storozhenkoi* **sp. n.**, *Sulawimaea* **subgen. n.**, *Neoelimaea* **subgen. n.** (Phaneropterinae: Elimaeini)] из Малайзии, Вьетнама и Индонезии. Представлены новые данные по распространению *E.* (*Schizelimaea*) *ampla* Gor., *E.* (*Rhaebelimaea*) *semitubulosa* Gor. и *E.* (*Sulawimaea*) *inversa* Br.-W.

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INTRODUCTION

This communication continues a series of papers by Gorochov (2011a, b, c, 2012a, b, 2013) on taxonomy and phaunistics of Indo-Malayan and Papuan Tettigoniidae. In the previous communications of this series, 37 new taxa (subgenera, species and subspecies) from the genera *Elimaea* Stål, *Stictophaula* Heb. (Phaneropterinae), *Euanisous* Heb., *Sumatropsis* Gor., *Xiphidiopsis* Redt., *Xizicus* Gor., *Chandozhinskia* Gor., *Decma* Gor., *Stenophlugis* Gor., *Papuaphlugis* Gor., *Asiophlugis* Gor., *Neophisis* Jin, *Meiophisis* Jin (Meconematinae), *Peracca* Griff., *Viriacca* Ingr. and *Oxylakis* Redt. (Conocephalinae) as well as 3 new genera of Meconematinae were described. The present paper contains descriptions of new taxa from the genus *Elimaea* and additional data on distribution of some species of this genus. The material studied, including types of new species and subspecies, is deposited at the Zoological Institute, Russian Academy of Sciences, St. Petersburg.

DESCRIPTIONS OF NEW TAXA AND NEW DATA ON DISTRIBUTION

Subfamily Phaneropterinae
Tribe Elimaeini

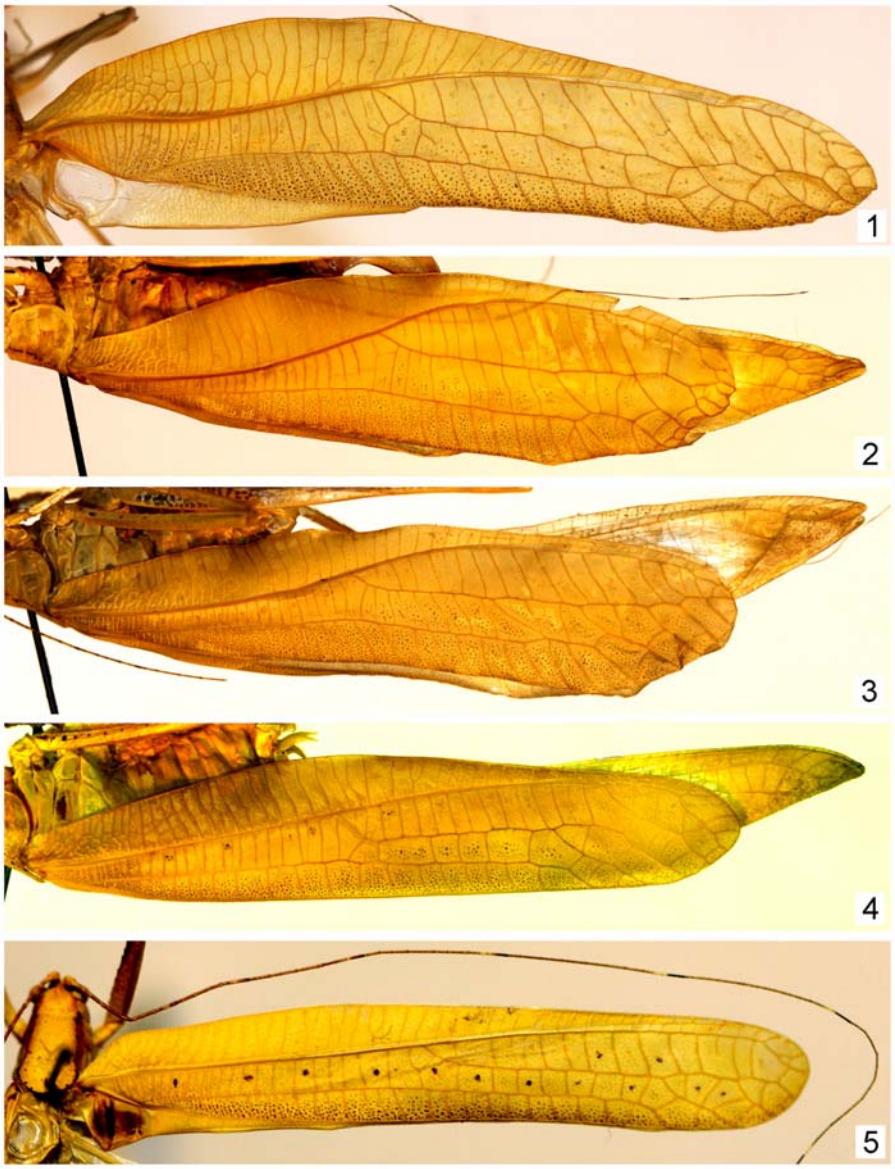
Genus *Elimaea* Stål, 1874

NOTES. This genus was divided into five subgenera by Karny (1926) and Gorochov (2009). The latter author also indicated that some of his species groups inside these subgenera are possibly separate subgenera, and that the former subgenus *Orthelimaea* Karny must be considered as a distinct genus characterized by straight fore femora and rather large teeth on the ovipositor. However, two species from Sulawesi, known only from males, were tentatively included by him in the genus *Orthelimaea*. Later, Ingrisch (2011) and Liu & Liu (2011) described two additional subgenera of *Elimaea*. Until now, this genus consisted of seven subgenera including about 150 species (Eades *et al*., 2013). The new material studied shows that the number of species is greater, the two above-mentioned species from Sulawesi must be placed in a separate subgenus of *Elimaea* (*Sulawimaea* subgen. n.), and the first species group of the nominotypical subgenus (Gorochov, 2009: p. 108) must be considered as a distinct subgenus (*Neoelimaea* subgen. n.).

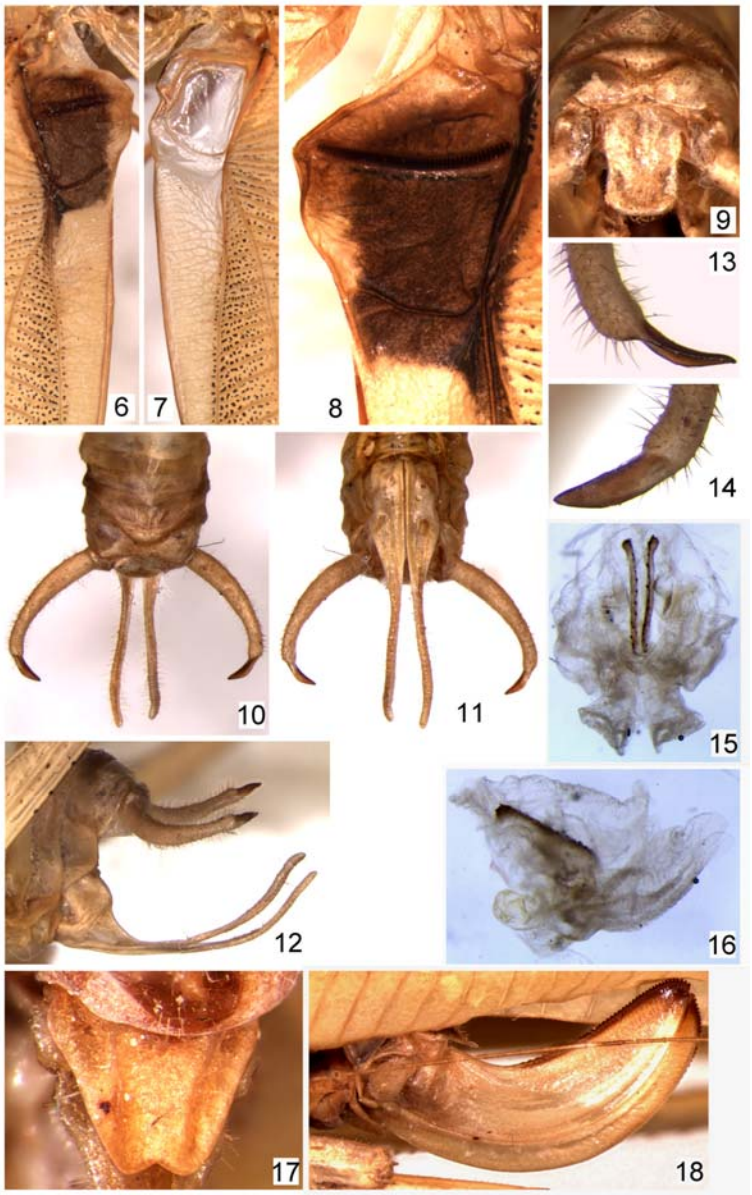
***Elimaea* (*Schizelimaea*) *kinabalu* Gorochov, sp. n.**
Figs 1, 6–16

MATERIAL. Holotype – ♂, **Malaysia**: Borneo I., Sabah State, Kinabalu Mt. near southern part of Kinabalu National Park, 1500-2000 m, primary forest, on leaf of tree, at night, 26.IV–1.V 2013, A. Gorochov, M. Berezin, V. Gorochova, E. Tkatsheva. Paratypes: 4 ♂, same data.

DESCRIPTION. Male (holotype). General appearance typical of this subgenus. Coloration yellowish green with following marks: outer spot on each of 19-20 proximal antennal segments brown; rest of antenna more or less light brown; dots on each lateral pronotal lobe along its dorsal edge, spines of all femora, and short longitudinal stripe on proximal part of ventral surface of middle femur dark brown; dots on inner and outer surfaces of fore femur as well as on outer surface of middle femur, small elongate mark on outer side of fore trochanter and on outer side of proximal part of fore femur, all other spines of legs, and cercal hook brownish; short areas in region of tympanal organ of fore tibia reddish; small (but rather distinct) numerous dots in anal third of lateral tegminal field dark; large spot on proximal part of dorsal field of upper tegmen intensively brown (Fig. 6); stridulatory areas of lower tegmen (Fig. 7) and most part of hind wing transparent (apical part of this wing yellowish green). Upper rostral tubercle low but slightly higher in region of lateral ocelli (its dorsal edge weakly S-shaped in profile), narrow but somewhat widened in hind half, and with shallow median groove on dorsal surface; lower rostral tubercle also low, narrowing to apex, but with apical part somewhat wider than apical part of previous tubercle; apices of these tubercles separated from each other by small (but distinct) concavity. Pronotal disc almost flat and somewhat widened backwards; lateral lobes of pronotum almost as long as high and with more or less sharp border separated them from pronotal disc; hind pronotal lobe moderately short (approximately as half of pronotal lateral lobe in length); notches between this lobe and lateral lobes rather deep. Fore femora distinctly S-shaped in dorsal view; spines on both ventral keels of fore femur and of all tibiae, on outer ventral keel of middle and hind femora, and on both dorsal keels of middle and hind tibiae developed, small (dorsal spines of hind tibia numerous; one small spine developed also on basal part of inner ventral keel of both middle femora and on distal part of inner ventral keel of one of hind femora). Wings long and moderately wide; tegminal venation and structure of tegminal stridulatory apparatus as in Figs 1, 6–8; hind wing distinctly longer than tegmen. Epiproct almost rectangular, with roundly truncate apex (Fig. 9); cerci compartatively short, weakly arcuate but with more strongly curved distal part (Figs 10–12); apical cercal hook elongate, almost lamellar and somewhat curved medially (Figs 13, 14); genital plate with rather short basal parts, with long and thin posterior lobes moderately curved upwards (but not S-shaped, without distinct denticles, and not very long; general length of this plate approximately twice as great as length of cercus; Figs 11, 12); genitalia with a pair of weakly sclerotized plates situated very near each other (almost as two nearest pages in barely ajar book) and having small denticles on straight external edges (these denticles more or less regularly situated and somewhat medially directed; Figs 15, 16).



Figs 1–5. *Elimaea* (*Schizelimaea*): 1 – *E. kinabalu* sp. n., right male tegmen; 2 – *E. sukau* sp. n., right female tegmen in rest position; 3 – *E. ranau* Gor., same; 4 – *E. ulla* Gor., left female tegmen in rest position (reversed); 5 – *E. wartabone* sp. n., left male tegmen (reversed).



Figs 6–18. *Elimaea* (*Schizelimaea*): 6–16 – *E. kinabalu* sp. n., male; 17–18 – *E. sukau* sp. n., female. Stridulatory apparatus of dorsal field in left (6) and right (7) tegmina; stridulatory vein of left tegmen from below (8); epiproct from behind and slightly above (9); abdominal apex from above (10), from below (11), and from side (12); apical part of cercus, dorsomedial view (13) and view perpendicular to plane of this part (14); genitalia from above (15) and from side (16); genital plate from below (17); ovipositor from side (18).

Variations. Sometimes head with a pair of small brown marks on dorsum (behind each eye), pronotum with reddish stripe on each lateral lobe connecting dark brown dots along dorsal edge, proximal part of inner ventral keel of middle femur without spine or with two small spines, and inner ventral keel of hind femur with a few small spines.

Female unknown.

Length (in mm). Body 19–23; body with wings 49–53; pronotum 5–5.5; tegmina 41–44; hind femora 20–22.

COMPARISON. The new species belongs to the subgenus *Schizelimaea* Gor. which includes 13 or 14 species distributed from Indochina to Borneo (Gorochov, 2009; Ingrisch, 2011). This species is distinguished from *E.* (*Sch.*) *caricifolia* (Haan) by longer wings (hind wing is more than twice as long as hind femur; in *E. caricifolia*, hind wing is distinctly less than twice as long as hind femur), less angular medial edge of stridulatory part in the left male tegmen, and much shorter posterior lobes of the male genital plate (this plate is approximately twice as long as male cercus; in *E. caricifolia*, this plate is approximately 3 times as long as male cercus); from *E.* (*Sch.*) *singgalang* Ingrisch, 2011, by longer (longitudinal) mirror in the right male tegmen; from *E.* (*Sch*.) *sinuata* Ingrisch, 1998, by not S-shaped stridulatory vein in the left male tegmen and distinctly longer posterior lobes of the male genital plate; from *E.* (*Sch*.) *bella* Gorochov, 2009, by distinctly longer stridulatory vein in the left male tegmen; from *E.* (*Sch*.) *lata* Gorochov, 2009, by clearly longer tegmina as well as distinctly shorter and curved (in profile) posterior lobes of the male genital plate; from *E.* (*Sch*.) *mira* Gorochov, 2009, by the male cercus lacking any globular inflation near its apex; from *E.* (*Sch*.) *ampla* Gorochov, 2009, *E.* (*Sch*.) *trusmadi* Gorochov, 2009 and *E.* (*Sch*.) *pulchra* Gorochov, 2009, by the male genital plate lacking denticles on its posterior lobes; and from *E.* (*Sch*.) *lamellipes* Hebard, 1922, *E.* (*Sch*.) *ranau* Gorochov, 2009 and *E.* (*Sch*.) *ulla* Gorochov, 2009, known from females only, by the following characters: tegmina widened in proximal (not in distal) half (from *E. ranau*; for comparison see Figs 1 and 3) or with costal and interradial areas somewhat wider (from *E. lamellipes* and *E. ulla*; for comparison see Figs 1 and 4). From *E. malayica* Karny, 1920 possibly belonging to this subgenus, *E.* (*Sch*.) *kinabalu* differs in clearly wider male tegmina.

***Elimaea* (*Schizelimaea*) *sukau* Gorochov, sp. n.**
Figs 2, 17, 18

MATERIAL. Holotype – ♀, **Malaysia**: Borneo I., Sabah State, Sandakan Division, environs of Sukau Vill. on Kinabatangan River (~35 km from sea), secondary / primary forest, at light, 8–13.V 2013, A. Gorochov, M. Berezin, E. Tkatsheva.

DESCRIPTION. Female. Coloration and general structure similar to those of male of *E.* (*Sch*.) *kinabalu*, but epicranium without brown marks, dark brown dots on pronotum not connected with each other by reddish stripes, all spines of legs light brown, brownish dots on both sides of fore femur absent and on outer side of middle femur less numerous (4–5, but not 8–11), dark numerous dots in anal third

of tegminal lateral field very small (weakly distinct), dorsal field of both tegmina completely yellowish green, fore tibia with a few small spines on outer dorsal keel, middle and hind femora without spines on inner ventral keel, tegmina clearly shorter and with interradial area distinctly shorter and slightly wider (for comparison see Figs 1 and 2), epiproct somewhat narrower (gradually narrowing to almost rounded apex), and cerci typical of female of this genus. Genital plate slightly elongate, almost triangular but with small angular apical notch (Fig. 17); ovipositor as in Fig. 18.

Male unknown.

Length (in mm). Body 21; body with wings 53; pronotum 5.1; tegmina 40; hind femora 26.5; ovipositor 8.3.

COMPARISON. The new species is most similar to *E.* (*Sch*.) *kinabalu*, *E.* (*Sch*.) *ranau* , *E.* (*Sch*.) *singgalang* and *E.* (*Sch*.) *lata* in wide tegmina but distinguished from them by slightly wider tegminal interradial area (from all these species; for comparison see Figs 1–3), somewhat shorter tegmina (from *E. kinabalu*, *E. ranau* and *E. singgalang*; the two latter Sumatran species are very similar to each other by tegminal venation), sparser branches (3 instead 4) of tegminal RS (from *E. lata*), and the presence of a small apical notch in the female genital plate (from *E. ranau*). From all the other species of *Schizelimaea*, *E.* (*Sch*.) *sukau* differs in distinctly wider distal half of tegmina (see Figs 2 and 4) and/or clearly wider tegminal interradial area; additionally from *E.* (*Sch*.) *lamellipes* and *E.* (*Sch*.) *ulla*, the new species differs in the presence of an apical notch in the female genital plate or in distinctly smaller size of this notch, respectively.

***Elimaea (Schizelimaea) ampla* Gorochov, 2009**

NEW MATERIAL. 2 ♂, **Malaysia**: Borneo I., Sabah State, Crocker Range not far from Keningau Town, 1000–1300 m, secondary / primary forest, on leaves of bushes, at night, 2–6.V 2013, A. Gorochov, M. Berezin, V. Gorochova, E. Tkatsheva.

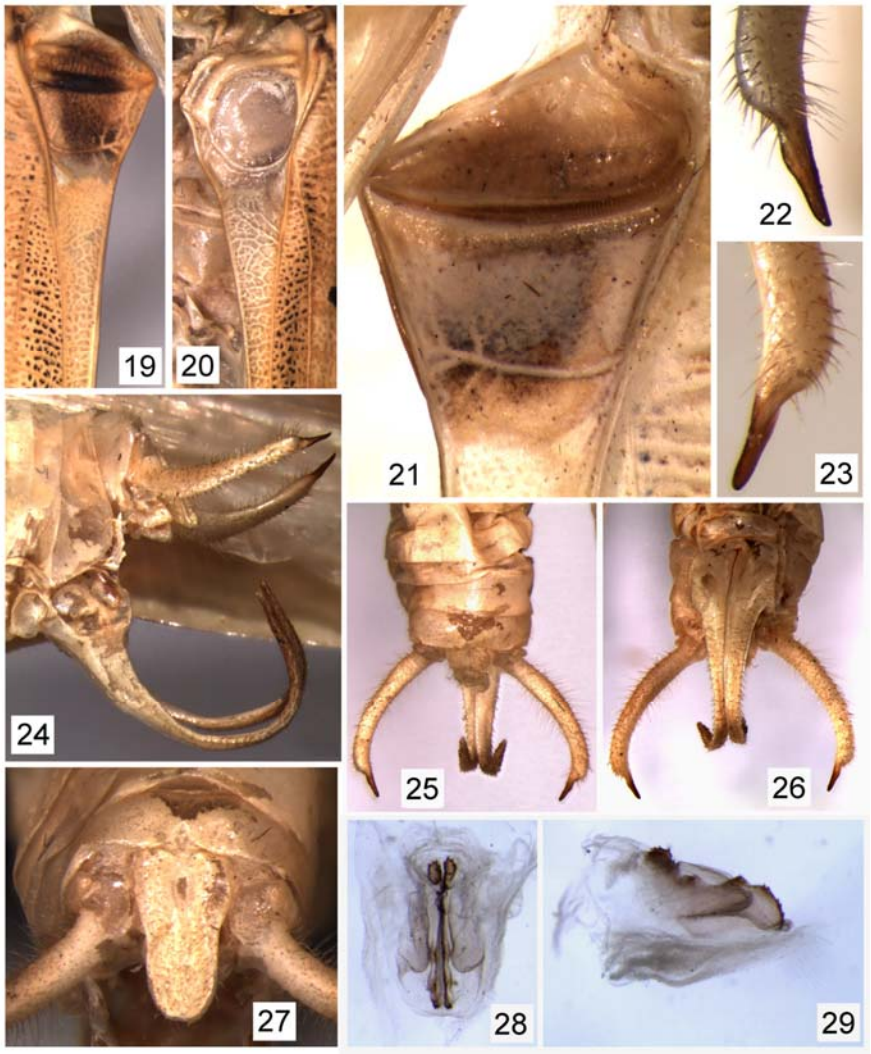
NOTE. The species was described from Trus Madi Mt. situated not very far from this range. It is recorded from Crocker Range for the first time.

***Elimaea* (*Schizelimaea*) *wartabone* Gorochov, sp. n.**
Figs 5, 19–29

MATERIAL. Holotype – ♂, **Indonesia**: Sulawesi I., Sulawesi Utara Prov. (Minahassa Peninsula), Bogani Nani Wartabone National Park, environs of Wallace Base Camp near Toraut Vill. (not far from Doloduo Town), primary / secondary forest, at light, 17–25.I 2011, A. Gorochov.

DESCRIPTION. Male. Body somewhat smaller than in *E.* (*Sch*.) *kinabalu* and *E.* (*Sch*.) *sukau*, yellowish green but with following pattern: antennal coloration similar to that of two above-mentioned species; head dorsum with rose area behind each eye (this area having whitish longitudinal line near lateral edge and short brownish line along posteromedial edge of eye); pronotum with a pair of rows of dark brown dots along borders between disc and lateral lobes (these rows developed also on hind

pronotal lobe along its lateral edges), and with rather numerous small rose dots on rest of lateral lobes; legs with all spines light brown, and with dots on femora almost as in *E.* (*Sch.*) *kinabalu* (however, dots of fore femora somewhat smaller and lighter than those of middle femora); tegminal lateral field (Fig. 5) with sparse large brown dots in median region and numerous small dark dots in anal third; tegminal dorsal



Figs 19–29. *Elimaea* (*Schizelimaea*) *wartabone* sp. n., male: 19, 20 – stridulatory apparatus of dorsal field in left (19) and right (20) tegmina; 21 – stridulatory vein of left tegmen from below; 22, 23 – apical part of cercus, dorsolateral view (22) and dorsomedial view (23); 24–26 – abdominal apex from side (24), from above (25), and from below (26); 27 – epiproct from behind and slightly above; 28, 29 – genitalia from above (28) and from side (29).

field (Figs 19, 20) with brownish area in proximal part of left tegmen (stridulatory vein of this tegmen almost dark brown) and transparent membranes of stridulatory apparatus in right tegmen (in latter tegmen, more distal part of dorsal field yellowish white); coloration of hind wings as in both previous species distal part of posterior lobes of genital plate somewhat darkened. Structure of body also similar to that of *E.* (*Sch*.) *kinabalu*, but spines of legs as in *E.* (*Sch*.) *sukau*, tegmina distinctly narrower, tegminal venation and structure of stridulatory apparatus as in Figs 5, 19–21, epiproct elongate, weakly narrowing to apex and with rather narrow and rounded apical part (Fig. 27), cerci with less strongly curved distal part and with more spine-like apical part (Figs 22–26), genital plate with posterior lobes strongly curved upwards (Figs 24–26), and genitalia with weakly sclerotized plates divided into two unequal lobes by rather large notch (small denticles on these lobes situated less regularly and not directed medially; Figs 28, 29).

Female unknown.

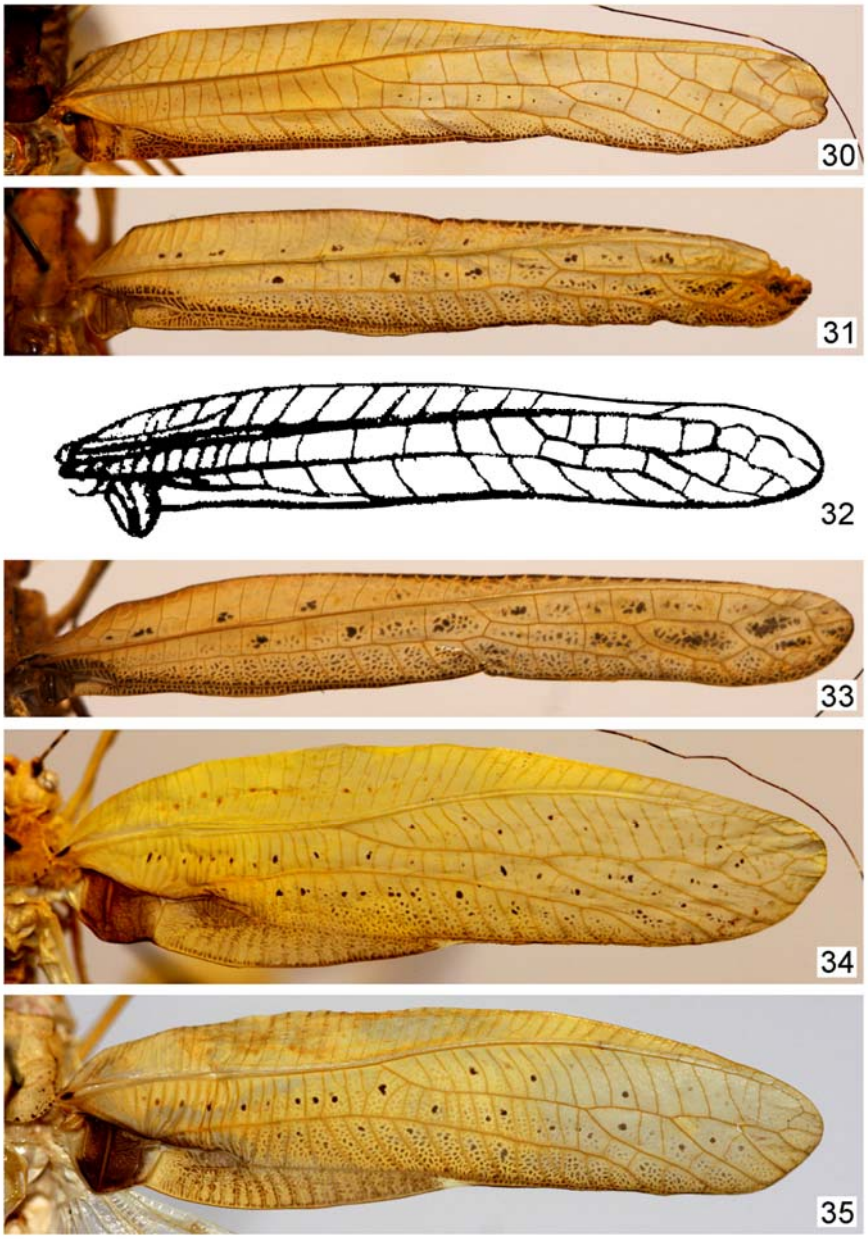
Length (in mm). Body 20; body with wings 46; pronotum 4.6; tegmina 37; hind femora 24.

COMPARISON. The new species is distinguished from *E.* (*Sch*.) *trusmadi* by the posterior lobes of male genital plate strongly curved upwards (not medially), much narrower notch between them, and distinctly narrower and rounded (not truncate) apical part of male epiproct; from *E.* (*Sch*.) *bella*, by the same characters of male epiproct, much more strongly curved male genital plate, and almost round (not longitudinal) mirror in the right tegmen; from *E.* (*Sch*.) *mira* and *E.* (*Sch*.) *sinuata*, by distinctly longer posterior lobes of male genital plate; from *E.* (*Sch*.) *pulchra*, by the bases of all branches of tegminal RS looking as situated on RS (not on RA), posterior lobes of genital plate lacking any denticles, and more uniformly light coloration of body; from *E.* (*Sch*.) *lamellipes*, by the base of tegminal RS situated almost at the middle (*vs*. distinctly in proximal half) of tegmen; and from all the other species of *Schizelimaea*, by clearly narrower tegmina.

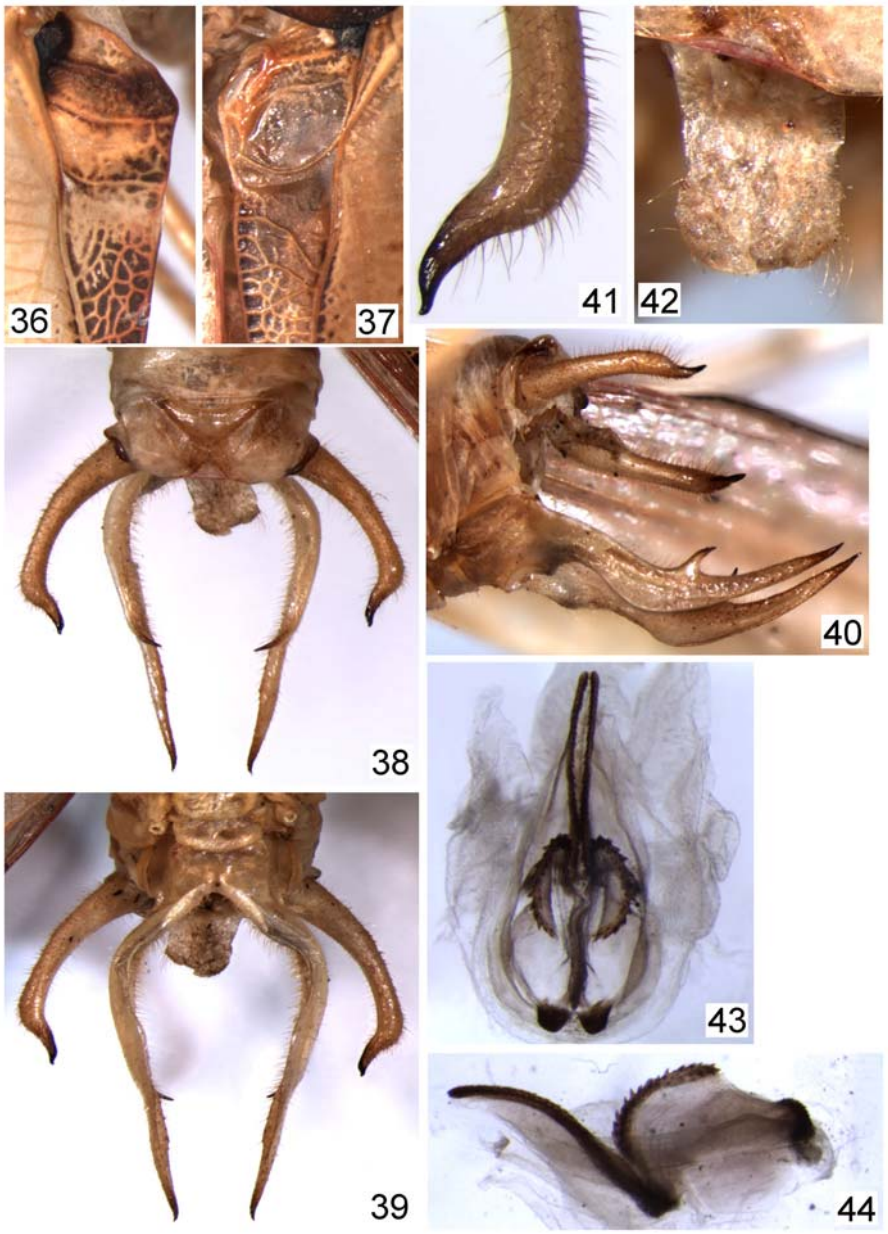
***Elimaea* (*Rhaebelimaea*) *lyra* Gorochov, sp. n.**
Figs 30, 36–44

MATERIAL. Holotype – ♂, **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. Male. General appearance typical of this subgenus but coloration somewhat different: epicranium yellowish with a pair of dark brown longitudinal stripes behind posteromedial parts of eyes, with light brown area between them, and with a pair of small brown marks behind posterolateral parts of eyes; two proximal antennal segments yellowish with brownish and brown spots on dorsal and lateral surfaces; proximal part of antennal flagellum light brown with sparse darker spots; rest of this flagellum from brown to dark brown and with very sparse whitish spots; other parts of head and pronotum yellowish green with light brown pronotal disc having almost dark brown anterolateral corners and brown distal area (this area occupying most part of hind pronotal lobe); legs yellowish with dark brown femoral spines, brown tibial spines, small brown and dark brown marks on tarsi, distinct brown



Figs 30–35. *Elimaea*, male: 30 – *E.* (*Rhaebelimaea*) *lyra* sp. n., left tegmen (reversed); 31 – *E.* (?) *furca* sp. n., same; 32 – *E* (?) *malayica* Karny, right tegmen; 33 – *E.* (?) *storozhenkoi* sp. n., left tegmen (reversed); 34 – *E.* (*Sulawimaea*) *inversa* Br.-W., same; 35 – *E.* (*S.*) *sulawesi* Gor., same. [32, after Brunner-Wattenwyl, 1878: "*E. poaefolia*" (= *E. malayica*).].



Figs 36–44. *Elimaea* (*Rhaebelimaea*) *lyra* sp. n., male: 36, 37 – stridulatory apparatus of dorsal field in left (36) and right (37) tegmina; 38–40 – abdominal apex from above (38), from below (39), and from side (40); 41 – apical part of cercus, dorsal and slightly medial view; 42 – epiproct from above and slightly behind; 43–44 – genitalia from above (43) and from side (44).

marks on fore tibia near both tympanal slits, and greenish hind femur having numerous very small brownish dots on outer side of distal half; tegmina yellowish green with sparse small light brown and brown dots along median part of tegmen, numerous brown dots along anal edge of lateral field, brown most part of dorsal field (but having yellowish venation), yellowish and dark brown spots on proximal part of this field in left tegmen, and transparent membranes of stridulatory apparatus of right tegmen (Figs 30, 36, 37); rest of body yellowish with darkened hooks and spines of abdominal apex. Structure of body distinguished from that of three previous species described here by following characters: fore femora straight; inner ventral spines absent in middle femora and extremely small in one of hind femora; each fore tibia with one small dorsal spine near distal part of outer tympanal slit; tegmina rather narrow, with dorsal field and most areas of lateral field also narrow, with two branches on RS and two branches on RA (latter branches evidently belong to RS but looking as branches of RA; Fig. 30); tegminal stridulatory apparatus as in Figs 36, 37; epiproct elongate, more or less rectangular but with roundly truncate apex (Fig. 42); cerci rather short and weakly arcuate, with slightly S-shaped distal part, with almost hooked apical part, and with hardly inflate subapical part (Figs 38–41); genital plate with wide and very deep posteromedian notch (however, this notch somewhat not reaching base of genital plate), and with long and S-shaped (in profile) posterior lobes (in ventral or dorsal view, these lobes also curved, almost lyre-shaped; Figs 38–40) having two spines (dorsal and apical) on each lobe (Fig. 38, 40); genitalia very characteristic: each weakly sclerotized plate almost completely divided into two unequal parts, narrow part and wider part; all these parts with numerous small oblique denticles along external edge, but wider part with additional lobule having numerous very small denticles (this lobule separated from other denticles of wider part by non-denticulate space; Figs 43, 44).

Female unknown.

Length (in mm). Body 19; body with wings 45; pronotum 4.9; tegmina 35; hind femora 23.

COMPARISON. The new species is similar to *E.* (*Rh.*) *quadrispina* Liu C-X in the shape of male genital plate but distinguished from it by much longer apical spines of this plate. From all the other species of *Rhaebelimaea*, the new species differs in straight fore femora, lyre-shaped male genital plate with a very deep posteromedian notch and with a dorsal spine on each posterior lobe of this plate, as well as by the sclerotized plates of male genitalia almost completely divided into two unequal parts. This species and *E. quadrispina* do not belong to one of the species groups by Gorochov (2009); they must be put in a separate species group of this subgenus.

***Elimaea* (*Rhaebelimaea*) *semitubulosa* Gorochov, 2009**

NEW MATERIAL. **Vietnam**: 1 ♂, Dong Nai Prov., Ma Da Forest (= Vinh Cuu Nature Reserve), III–IX 1989, V. Burakov; 1 ♂, Son La Prov., environs of Song Ma Vill. on Ma River (near border with Laos), 4-8.X 1987, N. Orlov.

NOTES. The species was described from Gia Lai Prov. situated in the central part of Vietnam. It is recorded for the first time from Dong Nai Prov. and from Son

La Prov. in the southern and northern parts of this country, respectively; if the latter label is correct, this species is very widely distributed in Vietnam: from territories around border between its southern and central parts, to its very far northern territory.

***Elimaea* (*Rhaebelimaea*) *bavi obliqua* Gorochov, subsp. n.**
Figs 45–48

MATERIAL. Holotype – ♂, **Vietnam**: Son La Prov., Phu Yen Distr., Suoi To Commune, Suoi Khang Vill. (~10 km NW of Phu Yen Town), 21°20’13.2’’N, 104°36’29.7’’E, 1100 m, V 2013, A. Abramov.

DESCRIPTION. Male. Coloration and structure of body very similar to those of nominotypical subspecies (Gorochov, 2009: p. 92), but scape almost completely yellowish rose, second antennal segment with large darkish area on lateral half, spines of legs from brown to light brown (in nominotypical subspecies, femoral spines of same color, but tibial spines reddish), wings slightly longer, mirror of right tegmen clearly more oblique, epiproct more or less truncate (almost not notched and not narrowing at apex), cerci slightly shorter (for comparison see Figs 45–47 and 49–51), and genitalia with only one additional unpaired semisclerotized structure having a few distinct transverse folds (Fig. 48).

Female unknown.

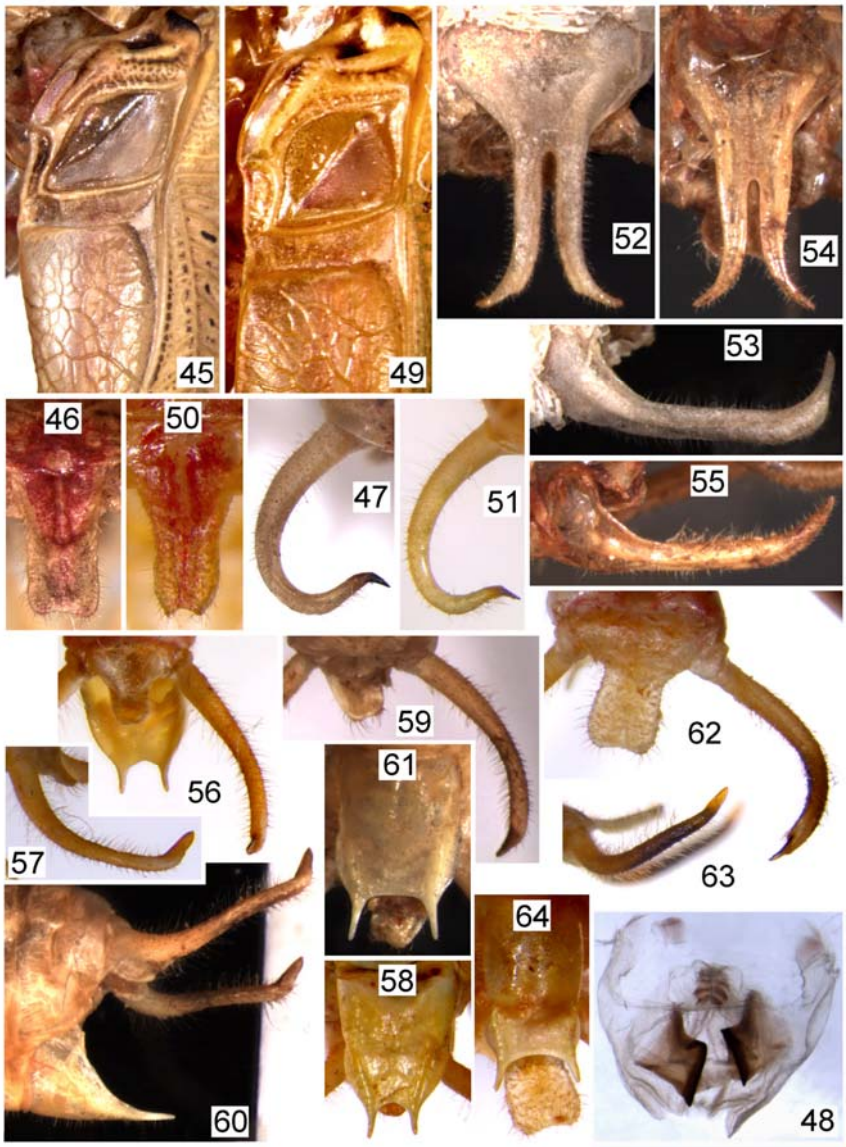
Length (in mm). Body 23; body with wings 51; pronotum 5; tegmina 40; hind femora 26.

COMPARISON. The new subspecies differs from *E.* (*Rh.*) *bavi bavi* Gorochov, 2009, **stat. n.** in the characters listed above. Also, it is reasonable to add that *E. b. bavi* has two unpaired sclerotized structures in the male genitalia: one larger structure distinctly sclerotized and without folds, and one smaller sclerite looking as a denticle (the latter sclerite is absent in the new subspecies).

***Elimaea* (*Rhaebelimaea*) *borneo curvata* Gorochov, subsp. n.**
Figs 52, 53

MATERIAL. Holotype – ♂, **Malaysia**: Borneo I., Sarawak State, Mulu National Park not far from borders with Brunei and Indonesia, 100–300 m, primary forest, on leaf of tree, at night, 24–27.III 2012, A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov.

DESCRIPTION. Male. Coloration and structure of body very similar to those of nominotypical subspecies (Gorochov, 2009: p. 100, 101), but dorsal surface of upper rostral tubercle on head (excepting apical part) reddish, lateral areas of proximal half of antennae blackish with sparse yellowish and whitish spots, stripes and dots of upper pronotal half blackish, fore femur with dark brown distolateral lobules and blackish line along each ventral keels, fore tibia with brown dorsal surface and dark brown both lateral lobe near outer tympanal slit and distal part of rest tibial surfaces, membranes of dorsal tegminal field after stridulatory vein in left tegmen and after



Figs 45–64. *Elimaea*, male: 45–48 – *E.* (*Rhaebelimaea*) *bavi obliqua* subsp. n.; 49–51 – *E.* (*Rh.*) *bavi bavi* Gor.; 52, 53 – *E.* (*Rh.*) *borneo curvata* subsp. n.; 54, 55 – *E.* (*Rh.*) *borneo borneo* Gor.; 56–58 – *E.* (*Bornelimaea*) *sympatrica sympatrica* Gor.; 59–61 – *E.* (*B.*) *sympatrica media* subsp. n.; 62–64 – *E.* (*B.*) *levi* Gor. Stridulatory apparatus of dorsal field in right tegmen (45, 49); epiproct from behind and slightly above (46, 50); cercus from above (47, 51); genitalia from above (48); genital plate from below (52, 54, 58, 61, 64) and from side (53, 55); abdominal apex from above (56, 59, 62) and from side (60); cercus and epiproct from side (57, 63).

large membranes of stridulatory apparatus in right tegmen dark brown, stridulatory teeth of left tegmen blackish (not brown), abdominal dorsum partly rose, genital plate with clearly deeper posteromedian notch (almost reaching widened part of this plate) and with more strongly curved apical parts (Figs 52, 53), and genitalia with more distinct numerous short hairs and with more heavily sclerotized denticulate parts of paired plates.

Female unknown.

Length (in mm). Body 22; body with wings 48; pronotum 4.8; tegmina 38; hind femora 25.5.

COMPARISON. The new subspecies is distinguished from *E.* (*Rh*.) *borneo borneo* Gorochov, 2009, **stat. n.** in the characters named above (for comparison see Figs 52, 53 and 54, 55). It is useful to note that *E. b. borneo* was described from "Nord-Borneo" (probably Sabah State of Malaysia).

***Elimaea (Bornelimaea) sympatrica media* Gorochov, subsp. n.**
Figs 59–61

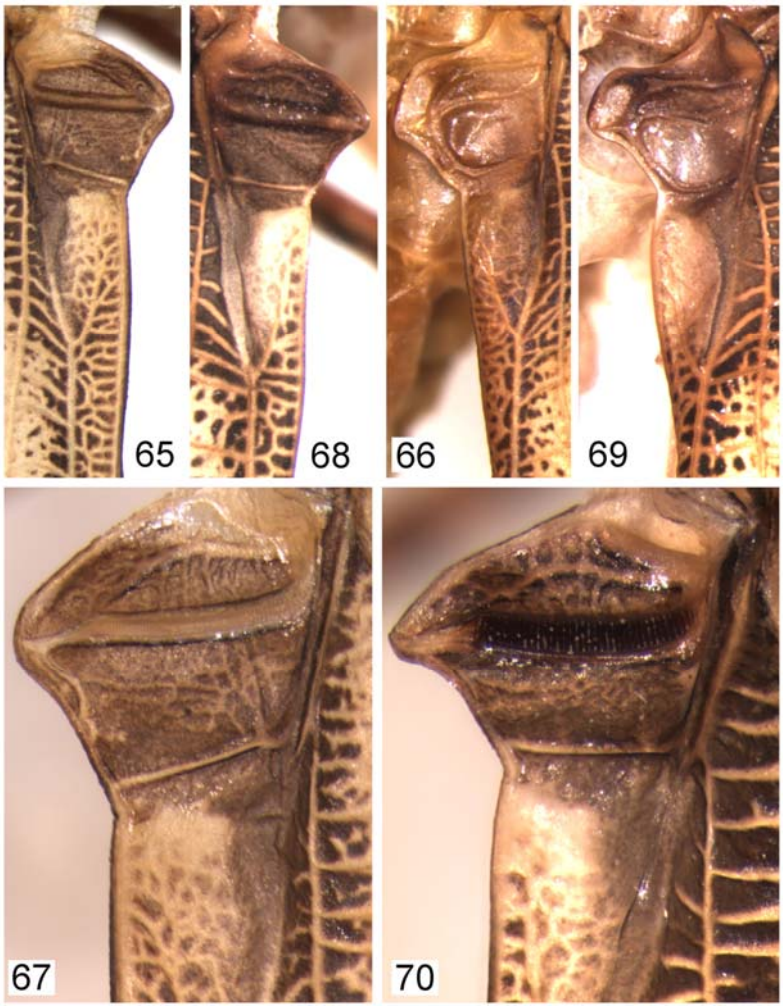
MATERIAL. Holotype – ♂, **Malaysia**: Borneo I., Sabah State, Kinabalu Mt. near southern part of Kinabalu National Park, 1500-2000 m, at light, 26.IV–1.V 2013, A. Gorochov, M. Berezin, V. Gorochova, E. Tkatsheva.

DESCRIPTION. Male. Coloration and structure of body almost as in nominotypical subspecies (Gorochov, 2009: p. 103) but with following differences: body with rose color only on upper rostral tubercle of head; fore tibia with slightly darker (brownish) both dorsal surface and lobe near outer tympanal slit as well as with much darker (brown) distal part of rest tibial surfaces; mirror in right tegmen similar to that of *E.* (*B.*) *levi* Gor. (Gorochov, 2009: p. 102, 103); epiproct intermediate between those of nominotypical subspecies and latter species in shape (this epiproct somewhat larger and less rounded at apex than in nominotypical subspecies, and smaller and more rounded at apex than in *E. levi*; see Figs 56, 59, 62); cerci practically not arched in profile (but with rather strongly curved apical part similar to that of nominotypical subspecies and dissimilar to that of *E. levi*; see Figs 57, 60, 63); and genital plate with distinctly wider notch between posterolateral spine-like lobes (this notch more similar to that of *E. levi* than to that of nominotypical subspecies; see Figs 58, 61, 64).

Female unknown.

Length (in mm). Body 18; body with wings 44; pronotum 4.2; tegmina 34; hind femora 20.5.

COMPARISON. The differences from *E.* (*B.*) *sympatrica sympatrica* Gorochov, 2009, **stat. n.** and from a nearest species, *E.* (*B.*) *levi*, are listed above. The latter species as well as the nominotypical subspecies are described from Trus Madi Mt., another mountain system in Sabah. I cannot exclude that the new subspecies may be a distinct species but not subspecies of *E. sympatrica*.



Figs 65–70. *Elimaea*, male: 65–67 – *E.* (?) *furca* sp. n.; 68–70 – *E.* (?) *storozhenkoi* sp. n. Stridulatory apparatus of left (65, 68) and right (66, 69) tegmina; stridulatory vein of left tegmen from below (67, 70).

***Elimaea* (?) *furca* Gorochov, sp. n.**
Figs 31, 65–67, 71–77

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

DESCRIPTION. Male. Body comparatively small. Coloration yellowish with following pattern: epicranium with a pair of light brown longitudinal stripes behind posterolateral parts of eyes, short reddish brown line along posteromedial part of each eye, and rose upper rostral tubercle and small areas near it; antennae with proximal segments rose and having yellowish and reddish brown marks, with middle part light brownish grey and having sparse dark brown and whitish spots, and with distal part dark brown (almost black) and having very sparse whitish spots; mouthparts and pronotum with greenish tinge, but pronotum additionally with small brown dots on upper half of lateral lobes and on lateral parts of disc (these dots numerous on lateral lobes along dorsal edge and sparse in other places) as well as with brown spot on each lateral lobe near posteroventral edge; fore legs yellowish green with reddish brown marks on coxa, dark brown longitudinal stripe on femur along proximal half of outer ventral edge, almost blackish femoral spines, brownish dots on both sides of distal half of femur, brown spot on inner tympanal lobe of tibia, and light brown tibial spines; middle legs with coxa as in fore legs, dark brown numerous small spots on outer side of femur and short stripe on proximal part of ventral surface of femur, brown femoral spines and spot at base of tibia, and light brown tibial spines; hind legs with sparse small dark brown spots on outer side of femur near ventral edge, rather numerous brown dots on median part of this side, somewhat sparser brown dots on inner side of femur near ventral edge, brownish grey most part of ventral and outer surfaces of tibia (distal part of tibia also with brownish dot on inner surface near base of each inner ventral spine), and light brown all spines; tegmina yellowish green with rather dark (brownish grey) costal edge, several large blackish dots along median part of tegmen, numerous small blackish dots on anal third of lateral field and on most part of dorsal field, light brown area on proximal part of dorsal field and almost yellowish most part of stridulatory teeth in left tegmen, and transparent (but with very light brown tinge) membranes of stridulatory apparatus in right tegmen; coloration of hind wings as in all previous species; cerci with light brown distal half and slightly darker large dorsolateral spot near their base; genital plate with dark brown medial part of each posterior lobe. Structure of body somewhat similar to that of *E.* (*Rh.*) *lyra* but with following differences: fore femora strongly S-shaped; tegmina hardly narrower (almost parallel-sided), with RS branching from R clearly after middle of tegmen and having two distinct branches (Fig. 31); stridulatory apparatus (Figs 65–67) with strongly projected plectral lobe of right tegmen, with rather large notch between this lobe and more distal part of anal tegminal edge, with mirror of this tegmen short (transverse), and with stridulatory vein of left tegmen having somewhat narrower and curved medial part; last abdominal tergite with a pair of rather long posterior lobes having numerous very small marginal denticles (Figs 71, 73); cerci rather short, strongly arcuate, with distal half flattened and forming very long (and very weakly curved) apical hook (Figs 74, 75); genital plate moderately long, narrow in distal half, clearly arcuate in profile, with not very deep and rather narrow posteromedian notch, and with rounded apex of each posterior lobe (Figs 72, 73); genitalia with a pair of rather narrow and weakly sclerotized plates having numerous very small and oblique denticles on 2/3 of external edge of these plates (Figs 76, 77).

Female unknown.

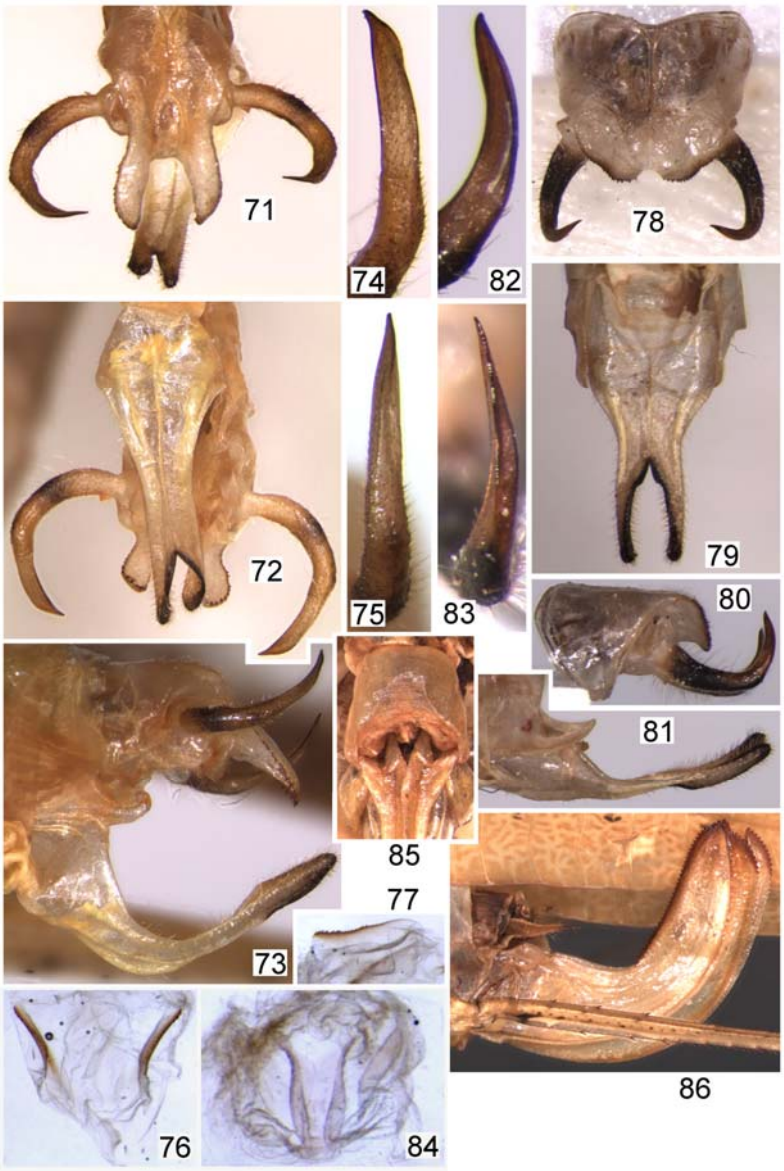
Length (in mm). Body 18; body with wings 39; pronotum 3.6; tegmina with apical part somewhat deformed (slightly shortened) 28; hind femora 23.

COMPARISON. The new species is similar to *E. jacobsoni* Karny, 1926, recently transferred by Ingrisch (2011) to the subgenus *Poefoliana* Ingr., in narrow tegmina with strongly projected plectral lobe of the male stridulatory apparatus, in rather large notch between this lobe and more distal part of the medial edge of tegmen, and in rather short and significantly curved male cerci having a long apical hook. This new species may be also put in *Poefoliana*, but it differs from the diagnosis of *Poefoliana* published by Ingrisch (2011) in the tegminal RS branching distinctly after (not before) the middle of tegmen, and possibly in the ovipositor similar to that of a new close-related species described below (rather short and strongly curved but not "elongo-falcate"). Thus, subgeneric position of these new species is unclear, but this position may be clarified after study of some additional material: for example after study of female of *E. jacobsoni*. Except for different structure of RS in tegmina, *E.* (*Rh.*) *furca* is distinguished from *E. jacobsoni* by much shorter (transverse) mirror of right tegmen. From *E. malayica* with unclear subgeneric position and somewhat similar structure of the male tegmina (Figs 31, 32), the new species differs in the presence of a pair of long posterior lobes of male last abdominal tergite.

***Elimaea* (?) *storozhenkoi* Gorochov, sp. n.**
Figs 33, 68–70, 78–86

MATERIAL. Holotype – ♂, **Malaysia**: Borneo I., Sabah State, Sandakan Division, environs of Sukau Vill. on Kinabatangan River (~35 km from sea), secondary / primary forest, at light, 8–13.V 2013, A. Gorochov, M. Berezin, E. Tkatsheva. Paratypes: 1 ♂, 5 ♀, same data.

DESCRIPTION. Male (holotype). Coloration and structure of body similar to those of *E.* (*Rh.*) *furca*, but with following differences: tympanal organ of fore tibia with dark brown spot on each (inner and outer) lobe; both ventral keels of this tibia with distinct brown dots near base of each spine; middle femur with additional dark brown interrupted line on outer side along dorsal edge; middle tibia with coloration almost as in fore tibia but with dark brown spot (similar to that of above-mentioned species) at base; dark spots of hind femur rather large; hind tibia with most part of ventral and outer surfaces of hind tibia as well as with lower half of distal part of inner surface dark brown; tegmina with darker (brown) areas on proximal part of dorsal field (Figs 68, 69) and with blackish most part of stridulatory teeth of left tegmen (Fig. 70); cerci almost completely grayish brown (Fig. 78); each posterior lobe of genital plate with dark apical and medial parts (Figs 79, 81); wings somewhat longer (Fig. 33); plectral lobe of right tegmen distinctly shorter (= narrower); mirror of this tegmen somewhat different in shape (for comparison see Figs 66 and 69); last abdominal tergie with a pair of much shorter posterior lobes; cerci also slightly shorter and with somewhat more curved distal hook; genital plate almost straight in profile,



Figs 71–86. *Elimaea*: 71–77 – *E.* (?) *furca* sp. n.; 78–86 – *E.* (?) *storozhenkoi* sp. n. Male abdominal apex from above (71), from below (72), and from side (73); distal part of male cercus, view perpendicular to plane of this part (74, 82) and posterolateral view (75, 83); male genitalia from above (76, 84), and their sclerotized plate from side (77); last abdominal tergite and cerci of male from above (78) and from side (80); genital plate with nearest parts of ninth abdominal tergite of male from below (79) and from side (81); female genital plate from below (85); ovipositor from side (86).

with deeper posteromedian notch and small keel along proximal part of medial edge of each posterior lobe (Figs 78–83); genitalia without denticulate parts but with very slight semisclerotized (semimembranous) stripes along lateral sides of median fold (Fig. 84).

Variations. Second male (paratype) with less numerous and much lighter (grayish, rose and light brown) marks, almost completely yellowish cerci, and completely membranous genitalia (this male died very shortly after moulting).

Female. General appearance similar to that of holotype, but dorsal tegminal field, middle and hind tibiae as well as cerci almost uniformly yellowish, and dark marks on other parts of body smaller and somewhat less distinct. Genital plate strongly modified: its proximal sclerotized part larger than its more distal membranous piece, weakly elongate, with a pair of small lateral lobules, and with concave posteromedian edge; lateral edges of this part almost completely connected with tergite by membranes; more distal membranous piece of this plate with transverse fold; in ventral view, only three small apical lobules exposed behind transverse fold (Fig. 85). Ovipositor (Fig. 86) rather short and wide (= high), not characteristic of *Poefoliana* but characteristic of other subgenera of *Elimaea*.

Length (in mm). Body: ♂ 13–17, ♀ 18–20; body with wings: ♂ 42–45, ♀ 45–49; pronotum: ♂ 3.4–3.6, ♀ 3.8–4.2; tegmina: ♂ 31–33, ♀ 34–37; hind femora: ♂ 22–23, ♀ 25–27; ovipositor 7–7.5.

COMPARISON. The new species is most related to *E. furca* and must be included in the same subgenus (see the comparison for *E. furca*), but it distinctly differs from the latter species in the characters listed above (especially in much shorter posterior lobes of the male last abdominal tergite). From *E.* (*P.*) *jacobsoni* having more or less similar stridulatory apparatus, the new species is distinguished by distal position of the tegminal RS base, shorter (= narrower) plectral lobe of the right male tegmen, distinctly shorter mirror of this tegmen, and the absence of distinct sclerotized structures in the male genitalia; and from *E. malayica* with unclear systematic position, by distinctly longer tegmina and their interradial area (see Figs 32 and 33).

ETYMOLOGY. The new species is named in honor of orthopterist S.Yu. Storozhenko, founder and editor of a first entomological journal in the Far East of Russia (Far Eastern Entomologist).

Subgenus *Sulawimaea* Gorochov, subgen. n.

Type species: *Orthelimaea? sulawesi* Gorochov, 2009 (Sulawesi: environs of Makassar City).

DIAGNOSIS. Upper part of fore coxa without any spine; fore femur straight. Male tegmina widened and with rather wide dorsal field (Figs 34, 35). Male epiproct strongly widened at apex; cerci not very long, with spine-like apical part; each posterior lobe of male genital plate with rounded apical part (Figs 89, 90, 95, 96); male genitalia completely membranous. Female genital plate simple, almost triangular,

compressed laterally in distal part (Fig. 91); ovipositor (Fig. 92) rather short, wide (= high), and with very small marginal denticles.

INCLUDED SPECIES (in original binomen). Type species and *Elimaea inversa* Brunner-Wattenwyl, 1891 (Sulawesi).

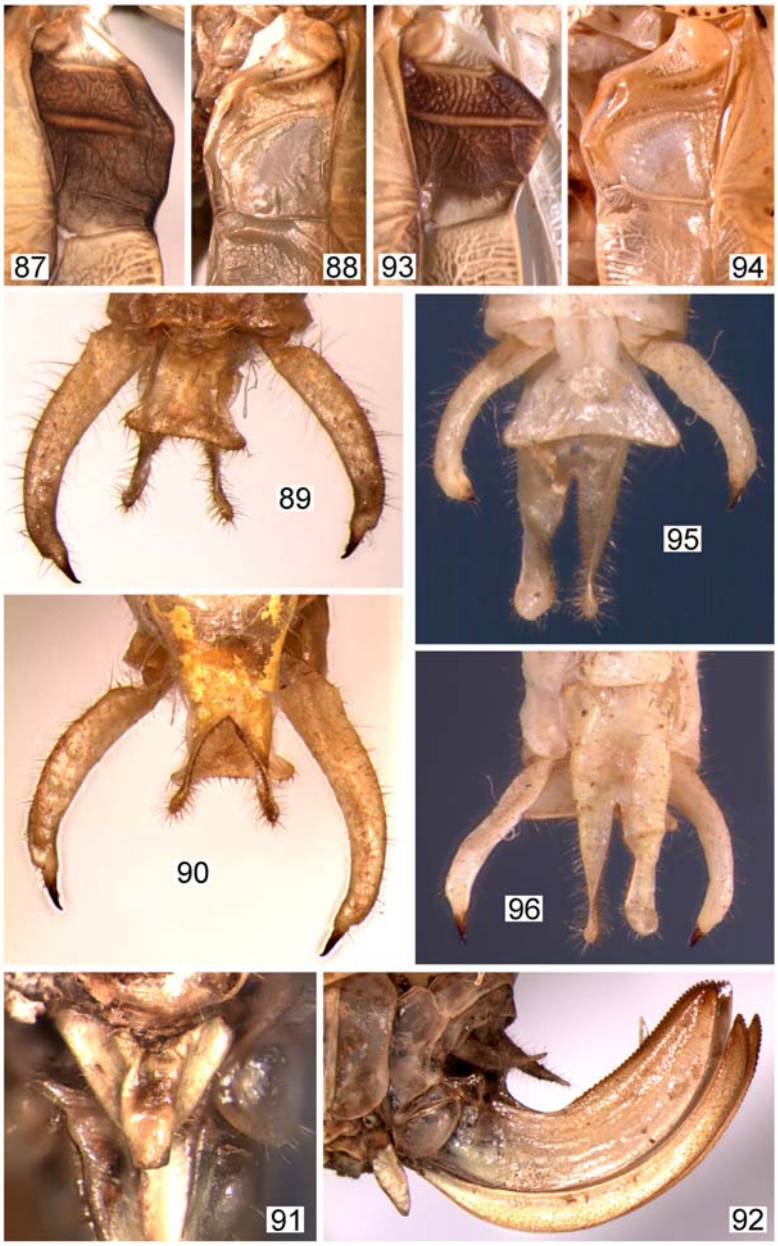
COMPARISON. This subgenus differs from the subgenera *Pseudectadia* Gor. and *Bornelimaea* Gor. (also having completely membranous male genitalia) in straight fore femur; from *Bornelimaea*, it is additionally distinguished by more widened male tegmina and much wider distal part of the male epiproct, and from *Pseudectadia*, by the male genital plate with rounded (not hooked) apical parts. From all the other subgenera of this genus, *Sulawimaea* differs in the male genitalia completely membranous (i.e. without any sclerotized or semisclerotized structure).

***Elimaea* (*Sulawimaea*) *inversa* Brunner-Wattenwyl, 1891**
Figs 34, 87–92

MATERIAL. 1♂, 1 ♀, **Indonesia**: Sulawesi I., Sulawesi Utara Prov. (Minahassa Peninsula), Bogani Nani Wartabone National Park, environs of Wallace Base Camp near Toraut Vill. (not far from Doloduo Town), primary / secondary forest, at light, 17–25.I 2011, A. Gorochov.

NOTE. The species was described from a single male (Brunner-Wattenwyl, 1891: "Celebes"). The male examined is collected in Minahassa Peninsula of this island; it is practically identical to the original description and photographs of holotype of *E.* (*S.*) *inversa* published in Internet (Eades *et al*., 2013). This probably northern species differs from *E.* (*S.*) *sulawesi* (Gorochov, 2009), **comb. n.**, described from the southern part of Sulawesi, in almost rounded and less strongly projected lobe in the stridulatory vein region of left tegmen (see Figs 34, 35, 87, 93), slightly longer mirror in right tegmen (Figs 88, 94), distinctly smaller male epiproct (Figs 89, 95), longer male cerci (Figs 89, 90, 95, 96), and shorter posterior lobes of male genital plate (Figs 90, 96). Female of *E.* (*S.*) *inversa* is here described for the first time, but for *E.* (*S.*) *sulawesi*, it is still unknown.

BRIEF DESCRIPTION OF FEMALE. Coloration yellowish with greenish tinge and following marks: two proximal antennal segments with brownish grey lateral areas; proximal segments of antennal flagellum grayish with small yellowish marks; rest of this flagellum light brown with yellowish and grayish brown spots; pronotum with a few brownish dots on lateral lobes along their dorsal edges and with row of such dots on hind lobe of disc along its posterior edge; legs with partly light brown and partly yellowish spines as well as with brown areas around both tympanal slits of fore tibia; tegmina with stripe from whitish crossveins in dorsal field along its medial edge, with rather sparse brown dots in interradial area and in areas between R and dorsal field, and with numerous very small brownish dots on medial part of lateral field and on middle part of dorsal field. Structure of body, excepting abdominal apex, similar to male of this species and of *E.* (*S.*) *sulawesi*, but proximal part of dorsal field and proximal half of radial area in tegmina not widened, typical of female of *Elimaea* s. l. (hind femora partly missing). Abdominal apex also normal for female



Figs 87–96. *Elimaea* (*Sulawimaea*): 87–92 – *E. inversa* Br.-W., 93–96 – *E. sulawesi* (Gor.). Stridulatory apparatus of dorsal field in left (87, 93) and right (88, 94) tegmen of male; male abdominal apex from above (89, 95) and from below (90, 96); female genital plate from below (91); ovipositor from side (92).

of this genus: epiproct small, roundly triangular; cerci small, elongate, weakly conical, and with spine-shaped apical part; genital plate with narrowly truncate apex (Fig. 91); ovipositor as in Fig. 92.

Length (in mm), ♀. Body 19; body with wings 41.5; pronotum 4.5; tegmina 33; ovipositor 7.

Subgenus *Neoelimaea* Gorochov, subgen. n.

Type species: *Phaneroptera melanocantha* Walker, 1869 (Sri Lanka).

DIAGNOSIS. Upper part of fore coxa without any spine; fore femur moderately S-shaped. Male tegmina with dorsal field having regular transverse crossveins behind mirror. Distal part of male cerci distinctly arcuate and with spine-like apical part; male genitalia having semisclerotized structure covered with numerous small setae. Female genital plate simple, not very long and somewhat narrowing to apex. Ovipositor gonangulum without ventral lobule and process.

INCLUDED SPECIES (in original binomen). Type species and *Elimaea nigrosignata* Bolivar, 1900 from Southern India; possibly *Steirodon lanceolata* Walker, 1869 from Sri Lanka and *E. bidentata* Brunner-Wattenwyl, 1878 from Southern India.

COMPARISON. This subgenus was considered by Gorochov (2009: p. 108, figs 8–17) as a first group of the subgenus *Elimaea*, but it differs from all the other species of this subgenus by the characters listed above (in *Elimaea* s. str. dorsal tegminal field is with irregular reticular venation behind the mirror, distal part of male cerci slightly S-shaped or distinctly widened, male genitalia with the semisclerotized structure having not very numerous small denticles, and ovipositor gonangulum with a more or less distinct ventral lobule often having posterior process). From all the other subgenera of this genus, *Neoelimaea* is distinguished by the presence of a single semisclerotized structure in the male genitalia.

ACKNOWLEDGEMENTS

This work is supported by the Presidium of the Russian Academy of Sciences (Program “Biosphere origin and evolution of geo-biological systems”).

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