

REVIEW OF THE PARICANINI (HEMIPTERA: FULGOROMORPHA: TROPIDUCHIDAE)

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Abstract.— The genera of Tropicuchidae tribe Paricanini are discussed and their key to identification of the genera is given and key characters illustrated. The new genus *Lukabales* **gen. nov.** with a new species *Lukabales ecarinatus* **sp. nov.** is described based on specimens collected in montane areas of Cambodia and Thailand.



Key words.— *Lukabales* gen. nov., *Lukabales ecarinatus* sp. nov., taxonomy, biogeography, Cambodia, Thailand.

INTRODUCTION

The tropiduchid faunas of China, Indochina and Southeast Asia remain inadequately studied and there is still much basic taxonomic work to be done on the group in these regions (Liang 2003). The systematics of the Tropicuchidae was firstly reviewed by Melichar (1914), and advanced by Fennah (1982), who divided the family in number of tribes. Several new tribes, both extinct and extant were still included later to the family (Szwedo 2000, Shcherbakov 2006, Szwedo and Stroiński 2010, 2013, Gnezdilov 2007, 2013). As result, the content and range of the family was considerably widened, hence, the definition of the family became fuzzy. Accordingly, the question, how these 22 tribes currently composing the family (including extinct ones) represent a real natural group, needs to receive now some new consideration and its monophyly analysed.

Currently, the Tropicuchidae tribe Paricanini Melichar, 1914 forms a small groups of 4 genera and 9 species representing respectively 0.2 and 0.1% of the Fulgoromorpha (FLOW, Bourgoin 2015) as follow:

Leusaba Walker 1857, with *Leusaba marginalis* Walker, 1857 [type species; Indonesia (Borneo)], *Leusaba philippina* Stål, 1870 [The Philippines (Mindanao Is.)] and *Leusaba rufitarsis* (Kirby, 1891) [Sri Lanka]; *Paricana* Walker, 1857, with *Paricana boninensis* (Matsumura, 1914) [Japan (Ogasawara-Shoto or Bonin Islands)] and *Paricana dilatipennis* Walker, 1857 [type-species; Indonesia (Borneo, Sumatra), Malaysia (Perak State)]; *Paricanoides* Liang, 2003, with *Paricanoides orientalis* Liang, 2003 [type-species; China (Hainan Is.); Vietnam (northern)]; *Paricanoides dalatensis* Liang, 2003, [Vietnam (southern)]; *Paricanoides bresseeli* Constant et Pham, 2014, [Vietnam (northern)]; *Stacota* Stål, 1859, with

Stacota breviceps (Walker, 1858) [type-species: *Dicthyophora breviceps* Walker, 1858; Sri Lanka, The Philippines (Luzon)].

A fifth new genus from Cambodia and Thailand, ascribed to this tribe is described in this paper confirming the restricted distribution of the Paricanini in the Sino-Japanese and Oriental Holt's and co-workers zoogeographic realms (Holt *et al.* 2013).

MATERIALS AND METHODS

Material. The studied material belongs to the following entomological collections:

RBINS – Royal Belgian Institute of Natural Sciences, Brussels, Belgium;

MMBC – Moravian Museum, Brno, Czech Republic.

Preparations and illustration. Abdomens of the specimens examined were cut off and cleared in a warm (50°C) 10% KOH solution with a few drops of black chlorazol (CAS No. 1937-37-7) for dyeing the ectodermic genital ducts based on the method introduced by Carayon (1969) and Bourgoin (1993). Dissections and cleaning of the genital structures were done in distilled water. Final observations were made in glycerol using Olympus stereoscopic dissection microscope SZH10. The photos of habitus and genital structures were taken using a light microscope Leica DM5500B with Leica DFC490 camera; final images were created using the Helicon 5.0 software and Adobe Photoshop. The SEM photographs of uncoated specimens were taken in the Laboratory of Scanning Microscopy, MIZ PAS (Warsaw), using a scanning microscope HITACHI S-3400N under Low Vacuum conditions.

Measurements and abbreviations. The following proportions of measurements and abbreviations were made and used in this study:

- total length – measured (in dorsal view) from the apex of head to the apex of tegmina;
- A/B – width of vertex measured at the posterior margin/length of vertex at midline;
- C/E – width of frons at upper margin/length of frons at midline;
- D/E – maximum width of frons/length of frons at midline;
- F/B – length of pronotum in mid line/length of vertex at midline;
- G/F – length of mesonotum/length of pronotum at midline;
- G/B+F – length of mesonotum/cumulative length of vertex and pronotum at midline;
- G/H – length of mesonotum at midline/width of mesonotum between lateral angles;
- I/J – length of tegmen measured from base to the apical margin in median portion/width of tegmen measured from the apex of clavus to the anterior margin.

The nomenclature of the male genitalia follows Bourgoin and Huang (1990) and for the female genitalia Bourgoin (1993). Vein nomenclature follows the interpretation proposed by Bourgoin *et al.* (2015). Antennal structure nomenclature according to Stroiński *et al.* (2011) and Wang *et al.* (2013).

TAXONOMY

Order Hemiptera Linnaeus, 1758

Suborder Fulgoromorpha Evans, 1946

Superfamily Fulgoroidea Latreille, 1810

Family Tropicuchidae Stål, 1866

Subfamily Tropicuchinae Stål, 1866

Tribe Paricanini Melichar, 1914

Key to the genera of Paricanini

1. Vertex in mid line longer than pronotum; vertex longer than wide; costal area with transverse veinlets present; tegmen with setation on corium and membrane *Stacota* (Figs 62, 66, 70–71)
- . Vertex in midline shorter than pronotum; vertex wider than long in midline; costal area (if visible) present only apically; setation on tegmen present only on membrane **2**
2. Tegmen with common stalk of ScP+R and MP; stem CuA and branch CuA₂ very close to the claval suture (CuP); common stem Pcu+A₁ long, about 3 times as long as free portion of A₁; clypeus without median carina *Paricanooides* (Figs 65, 69, 78–81)
- . Tegmen with stems ScP+R, MP and CuA leaving basal cell separately; common stem Pcu+A₁ at least 2.5 times as long as free portion of A₁; clypeus with median carina **3**
3. Disc of frons without relief, lacking median carination or lateroventral depressions *Lukabales* gen. nov. (Figs 1–61)
- . Lateroventral depressions of frons distinct, disc of frons with median carina or median ridge **4**
4. Frontal lateroventral depressions wedge-like, exceeding half of frons length; median ridge thick; lateral margins of frons diverging basad; pronotum with double median carina converging anteriorly *Leusaba* (Figs 64, 68, 72–75)
- . Frontal lateroventral depressions semicircular, not exceeding half of frons length; median ridge very thick, about as long in mid line as wide at base; lateral margins of frons subparallel; pronotum without median carina *Paricana* (Figs 63, 67, 76–77)

Lukabales Stroński and Szwedo, gen. nov.
(Figs 1–61)

Type species. *Lukabales ecarinatus* Stroński and Szwedo, sp. nov., here designated.

Etymology. Generic name is derived from Lukabal – a guardian spirit of the earth and human beings from Cambodian mythology. Gender: masculine.

Diagnosis. The new genus differs from all other Paricanini by lack of median carina of vertex; very weak separation of frons and vertex; the vertex wider than long in mid-line (as in *Paricana*, type-genus of the tribe); disc of frons without relief, lacking median carination or lateroventral depressions (median carina or median ledge and lateroventral depressions present in other genera); pronotum without median carina; but differs by lack of median carina of vertex (median carina of vertex present in *Paricana*); frons without lateroventral depressions (lateroventral depressions distinct in *Paricana*); tegmen with apical portion of costal area small, without transverse veinlets (apical portion of costal area wider, with transverse veinlets in *Paricana*); common stem $Pcu+A_1$ more than twice as long as free portion of A_1 (common stem $Pcu+A_1$ about 1.5 times as long as free portion of A_1 in *Paricana*).

Description. **Head.** Head with compound eyes narrower than thorax, with frons protruded to crown. Vertex wider than long in mid line, without median carina; anterior margin not carinate (male), with weakly developed partial carination in lateral portion (female); lateral margins slightly convex, subparallel, carinate; posterior margin arcuate, subparallel to anterior margin, carinate; excavated between compound eyes to half of compound eye length.

Frons longer than wide, convex, in dorsal view protruded to crown; upper margin without carina, almost straight in frontal view; lateral margins carinate, diverging basad distinctly below the level of antennal base, then converging to frontoclypeal suture; disc of frons without relief, lacking median carination or lateroventral depressions; disc of frons leathery microsculptured, with sensory pits more densely distributed in upper, central portion. Frontoclypeal suture weakly convex. Postclypeus with median carina, without lateral carinae, anteclypeus with median carina. Rostrum reaching mid coxae, apical segment distinctly shorter than subapical one. Lateral ocelli present. Compound eye in lateral view ovoid, with calus on posteroventral margin.

Antenna placed in antafossa with elevated margin; genal eminence with posteriorly elevated margin encircling antafossa. Antenna with scape short, circular, concave in middle; pedicel elongated, club-like; antennal plate-organs distributed in the apical part, and as two rows on dorsal surface, reaching to base of pedicel; antennal plate organs multipetalled of folded flattened

plate type, surrounded by strong cuticular denticles; cuticular microtubercles present and two types of setae – trichoid sensillae type I and trichoid sensillae type II on lower and lateral surfaces present.

Thorax. Pronotum longer in mid line than vertex in mid line, with disc subtrapezoid, anterior margin arcuate, lateral carinae obsolete, not reaching posterior margin, posterior margin weakly concave; median carina absent; two circular, lateral impressions present; disc of pronotum with wrinkled microsculpture; lateral portions sloping down anteriorly; with single longitudinal postocular carina.

Mesonotum longer than combined length of vertex and pronotum in mid line; median carina obsolete, lateral carinae weak, separated at base, reaching posterior margin of mesonotum; disc of mesonotum with shagreen-wrinkled microsculptures; lateral portions shagreen microsculptured; scutellum lingulate with acute, triangular apex.

Tegulae wider than long in mid line.

Tegmen translucent, elongate, distinctly exceeding apex of abdomen. Costal margin merely arcuate, anteroapical angle widely rounded, apical margin rounded, posteroapical angle widely rounded, tornus long, straight; clavus with apex reaching almost $\frac{1}{2}$ of tegmen length; claval margin straight. Costal area present, narrow, concealed, merely widened at nodal line level, without transverse veinlets. Costal cell without transverse veinlets. Basal cell elongate, distinctly longer than wide, closed apically with basal part of free portion of stem CuA. Common stem $ScP+R+MP+CuA$ distinct, elevated; stems $ScP+R$, MP and CuA leaving basal cell separately. Stem $ScP+R$ straight, forked at level of nodal line; branch $ScP+RA$ forked again, terminal $ScP+RA_1$ oblique, terminals RA_2 and RA_3 oblique; branch RP with three terminals. Stem MP straight, forked at level of nodal line, merely anteriorly of stem $ScP+R$ forking; branch MP_{1+2} straight, forked before apex, reaching margin with two-three terminals; branch MP_{3+4} forked basad of branch MP_{1+2} forking, reaching margin with two or three terminals. Stem CuA slightly arcuate, basally converging to claval suture, forked on corium, apicad of claval veins fusion; branch CuA_1 forked at level of nodal line, slightly basad of stem M forking; branch CuA_{1a} forked apicad of branch CuA_{1b} forking; terminals of CuA_{1a} reaching tornus; terminals of CuA_{1b} reaching posteroapical angle; branch CuA_2 forked slightly apical of *icu* veinlet; terminal CuA_{2a} arcuate, reaching tornus; terminal CuA_{2b} submerged to margin. Claval veins Pcu and A_1 fused distinctly basad of stem CuA forking. Nodal line full, oblique, composed of veinlet *pcu+cup-scp+ra*₁, basal portion of $ScP+RA_1$, common portion $ScP+RA$, basal portion of RP , veinlet *r-m*, basal portions of MP_{1+2} and MP_{3+4} , veinlet *m-cua*, basal portions of branches CuA_{1a} and CuA_{1b} , veinlet *icua*, subterminal portion of branch

CuA₂ and veinlet *icu*, reaching apex of clavus. Apical line of veinlets present. Longitudinal veins on corium smooth, elevated, longitudinal veins on membrane covered with erected, tuberculate setae. Cells C1 and C3 apicad of nodal line; cell C5 basad of nodal line; cell C1 distinctly shorter than C3; cell C5 about as long as cell C1. Apical cells longer than wide.

Profemur shorter than protibiae; covered with short setae. Protibia slightly flattened, with margins covered with rows of short setae. Protarsus with apical tarsomere longer than combined length of basi- and mid tarsomere; tarsal claws distinct, arolium wide. Mesofemur shorter than mesotibia, covered with short setae. Mesotibia about as long as protibia, subquadrangular in cross-section, with margins covered with rows of short setae. Mesotarsus with apical tarsomere longer than combined length of basi- and midtarsomere; tarsal claws distinct, arolium wide. Metafemur longer than mesofemur, smooth, with bunch of long, stiff setae at base; metatibia long, slender, with three lateral spines, apicad of $\frac{1}{2}$ of metatibia length and row of 6 apical teeth, without diastemma, median pair shorter than lateral pairs; metatarsus with basitarsomere longer than combined length of mid- and apical tarsomere, with row of 9 apical teeth, with rows of setae on plantar surface; mid metatarsomere with lateral teeth distinct, and bunch of stiff, long setae between them; apical metatarsomere longer than mid metatarsomere, with tarsal claws distinct and wide arolium.

Male terminalia (Figs 34–47). Abdomen (male) wide at base, distinctly tapering toward pygofer. Pygofer symmetrical, wider ventrally than dorsally; dorsal margin extremely deeply incised, almost to posterior margin of 8th tergite; posterior margin sinuous, without processes; ventral margin medially shallowly concave. Anal tube elongate, with apex slightly exceeding $\frac{1}{2}$ of length of gonostyles, with lateral margins parallel in dorsal view, with dorsal crista, ventral margin subtriangularly protruded, apical angle rounded; in lateral view anal tube merely tapering basad; anus placed terminally.

Gonostyli symmetrical, separated, tapering apicad; covered with dense setae; ventral margin arcuate, in ventral view sinuate, diverging apicad; dorsal margin with pair of process; first, basal, finger-like, with membranous base and sclerotized apex, movable; second tooth-like, triangular, sclerotized; both processes placed in basal $\frac{1}{2}$ of gonostyli.

Phallic complex asymmetrical. Periandrium asymmetrical, well sclerotized, distinctly shorter than aedeagus, calyculate, with narrower upper portion, adpressed to aedeagus, with deep concavity, with left part longer than right one, apical margin asymmetrical, incised; periandrium with two asymmetrical internal processes, left longer than right, distinctly

exceeding apical margin of periandrium; right process shorter, slightly exceeding margin of periandrium. Aedeagus longer than periandrium, well sclerotized, asymmetrical; flattened basally, at the level of periandrium basal portion, then more tubulate, with two apical processes – lobate with acute apex, and larger, sickle-like.

Female terminalia (Figs 48–60). Abdomen (female) wide at base slightly tapering towards terminalia. Anal tube tubuliform, exceeds half of gonoplac length, ventral margin with wide lobe-like extensions in the middle of anal tube length, ventroapical production triangular in dorsal view, flattened; anal style short. Pregenital sternite well developed, lateral lobes well developed, tapering laterad, cephalad margin bilobate with wide sinuous incision, caudad margin straight in the median portion with semicircular incision, in lateral portions declining to apex. Gonoplac with membranous cephalad portion, basad of teeth armament, with cephalad lobe in ventral portion; posterior margin with row of 20 teeth, exceeding apex of gonoplac, reaching the apex of dorsocaudad lobe. Base of gonapophysis VIII asymmetric at base, right base slightly wider, with 6 teeth increasing in size apicad at dorsal margin and three teeth at ventral margin apically, median portion with two mediad, internal teeth; endogonocoxal process membranous, narrow, tapering caudad, with acute apex reaching nearly apex of gonapophysis. Gonapophysis IX triangular, apical end elongated, with median incision exceeding half of gonapophysis length; gonospiculum bridge laterally flattened.

Bursa copulatrix forming single, oval, huge pouch without visible cells and sclerites ornamentation. Spermatheca well-developed; *ductus receptaculi* very short and smooth; *diverticulum ductus* very long with basal half ribbed, posterior half smooth.

Distribution. Cambodia, Thailand (Fig. 61).

Lukabales ecarinatus Stroiński and Szwedo, sp. nov.
(Figs 1–61)

Etymology. Specific epithet is derived from the unique feature of the new species – lack of median carina of vertex, frons and pronotum.

Diagnosis. Species dimorphic in terms of body coloration: pattern of tegmina coloration stable in both sexes – oblique transverse band along nodal line, between margins, apex of clavus brown, apical band dark-brown to black.

Description. Total length 0.92–1.15 cm.

Head. Vertex: proportion A/B = 2.70–3.14. Frons: proportion C/E = 0.60–0.67; proportion D/E = 0.95–1.12.

Thorax. Pronotum: Proportion F/B = 1.4–1.88. Mesonotum: proportion G/F = 2.86–3.70; proportion G/B+F = 1.81–2.16, proportion G/H = 0.73–0.86. Tegmina: proportion I/J = 3.34–3.71.

Coloration. Male (Figs 1, 3, 5, 7–8, 40–41): vertex stramineous in anterior portion, brick-red in posterior portion. Pronotum stramineous, median portion of disc with brick-red transverse patch; anterolateral portions of pronotum red. Mesonotum bistre, scutellum dirty white. Frons brick-red, with horseshoe yellowish stain and fastigium yellowish. Clypeus with dirty-brown median band, lateral portions grey-yellowish. Antennal pedicel red. Abdomen yellow-brownish, dorsally with bistre to black, median longitudinal streak, ventrally with yellow to caramel median portion, lateral parts brownish; pygofer with dorsal and lateral portion blackish, ventral portion dirt-whitish; anal tube and styles dark brown.

Female (Figs 2, 4, 6, 54–55): vertex grey-yellowish in anterior portion, dirty-orange in posterior portion. Pronotum grey-yellowish, with disc dirty-orange transverse patch, lateral portions dark brownish-black. Mesonotum bistre-black, disc with central, yellowish round stain, median carina reddish, lateral portions dark brownish-black; scutellum yellow. Frons bistre-black, upper portion with caramel transverse band seamlessly passing to grey-yellowish fastigium. Clypeus dark brownish-black near frontoclypeal portion, lower portion yellow. Antennal pedicel yellow. Abdomen dorsally dirty-yellow to caramel, ventral portion light-yellowish, lateral portions blackish; anal tube light brown dorsally to bistre ventrally; pregenital sternite light brown, with dark apical margins, aside of median incision.

Legs dirty-stramineous, protibia with darker, brownish external margins; base and apex of metatibia with darker, brownish staining; metafemur bistre-black to $\frac{7}{8}$ of their length, apical portion lighter, grey-stramineous, basal $\frac{1}{5}$ of metatibia dark brownish, apical teeth darker. Tegmina transparent with venation brownish (darker in female), oblique transverse band along nodal line, between margins; apex of clavus brown; apical band dark-brown to black (darker in female).

Type material. Holotype, male: [Coll. I.R.Sc.N.B. CAMBODIA Siem Reap Prov., Phnom Kulen N.P., Forest Around, Phum Preah Thom, day Collecting, 26-27-VII-2006, Leg. K. Smets, Youl & D. Jump] – deposited in RBINS.

Paratypes, 3 females: [Thailand, Chiang Mai Prov., Doi Chiang Dao env., 1200±50m, 19°24'45" N, 98°51'30" E, L. Dembický leg., 9-13.v.2009, TH 3/2009 MZM EXPEDITION], [COLLECTIO, Moravské museum, Brno]; [Thai –N, 1-15.v.1998, Chiang Mai prov., San PA Kia vill., 19.19N, 98.50E, 1400m, Vit Kubáň leg.], [COLLECTIO, Moravské museum, Brno]; [THAI, NE, Loei

prov., Phu Kradung N.P., 1000m, 16°52' N, 101°49' E, 16-17.v.1999, M. Řiha leg.], [COLLECTIO, Moravské museum, Brno] – all specimens deposited in MMBC.

Distribution. Cambodia: Siem Reap Prov.; Thailand: Chiang Mai and Loei Prov. (Fig. 61).

DISCUSSION

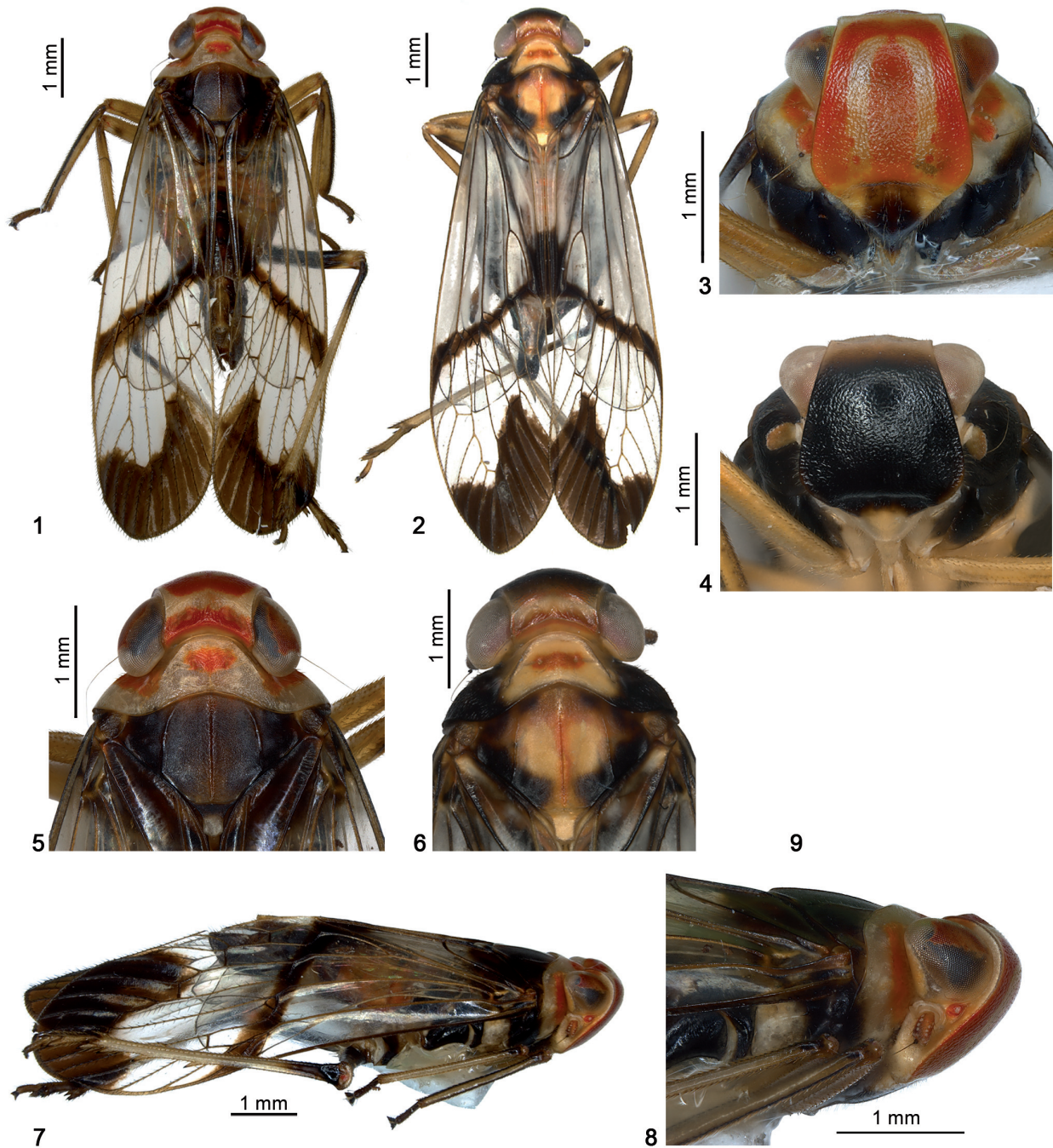
The Tropicuchidae tribe Paricanini Melichar, 1914 was defined by Melichar (1914: 184) on the basis of combination of tegmina venation characters and hind leg spinulation. The tribe was later redefined by Fennah (1982), and with the new genus described above it now comprises five genera and ten species. These genera are distributed from Sri Lanka to the Philippines, i.e. in Oriental realm as defined by Wallace (1876) and they belongs more precisely to the Sino-Japanese and Oriental Holt's and co-workers zoogeographic realms (Holt *et al.* 2013). Latitudinally, Paricanini Melichar, 1914 is a northern hemisphere taxa distributed between the north subtropical and the equatorial bioclimatic zones. Unfortunately too little is known about biology of these taxa for more general conclusions about their biotic requirements and relationships. Constant and Pham (2014) noted that all species of the genus *Paricanoides* were collected at an altitude between 500 and 1500 m a.s.l. in tropical mountain evergreen forest. Even if the tribe remained stable in number of taxa for almost a century since Melichar (1914), the description of two new genera and four species in the last 10 years (*Paricanoides* and *Lukabales* gen. nov.) show that such kind of habitat could be assumed as housing other taxa of Paricanini as well. Host plants of Paricanini remain unknown, but their altitudinal and distributional pattern suggest that similarly to other Tropicuchidae (Fennah 1982, Wang *et al.* 2014), ability to diet relaxation and new food sources exploitation, could be the evolutionary competitive edge of the group. More studies of collection material and particularly more sampling efforts are necessary to provide additional data and also improve our knowledge on the taxonomy, morphology, variability and ecological needs of those insects.

ACKNOWLEDGEMENTS

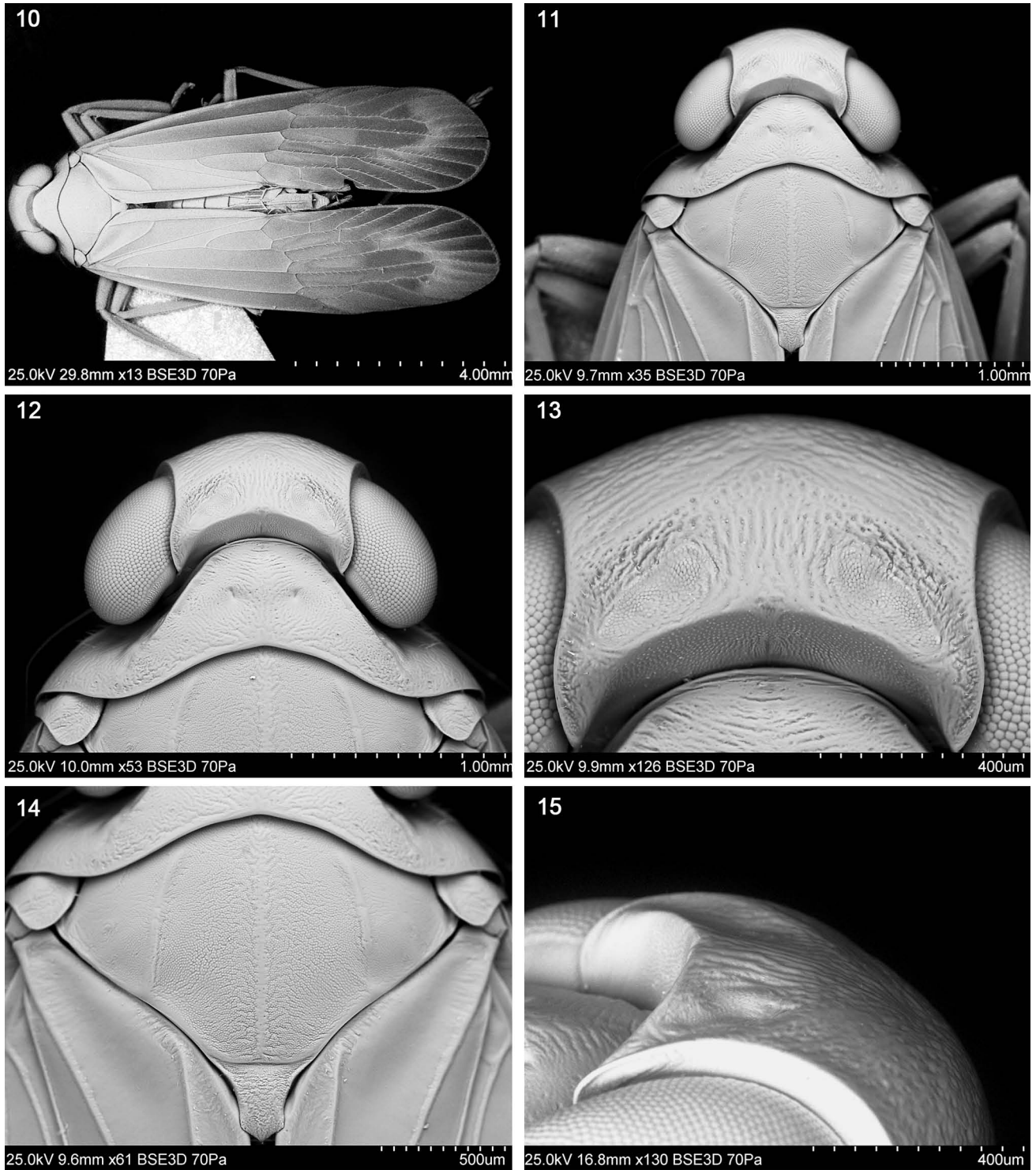
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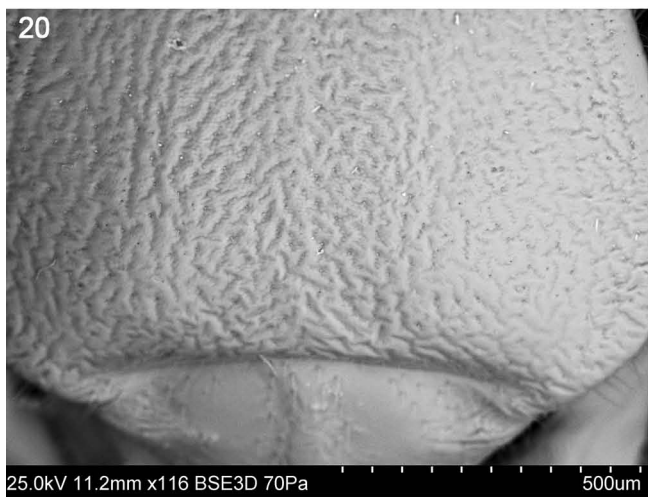
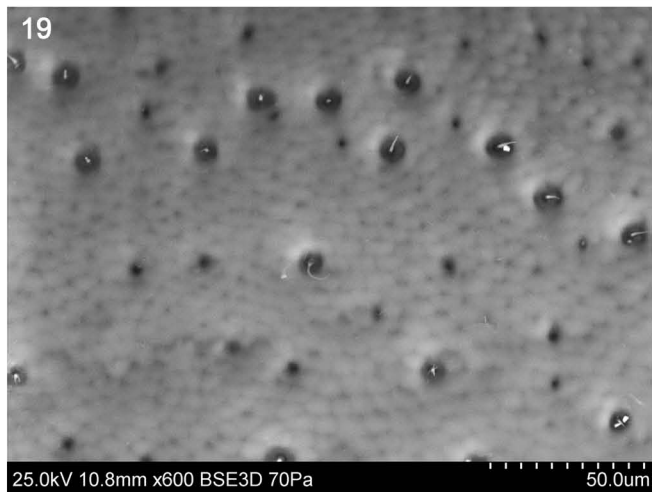
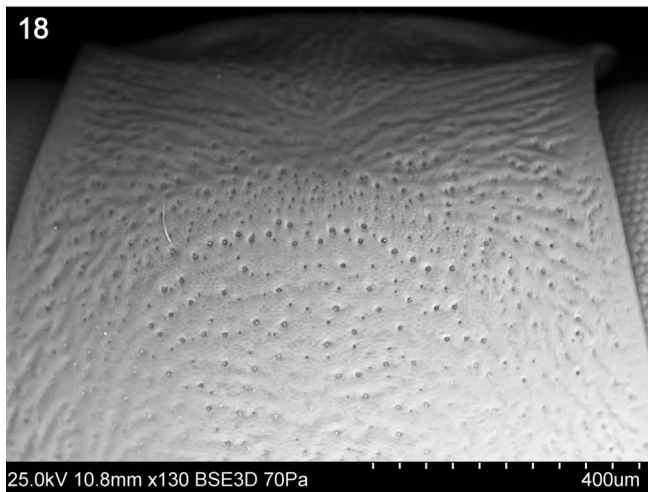
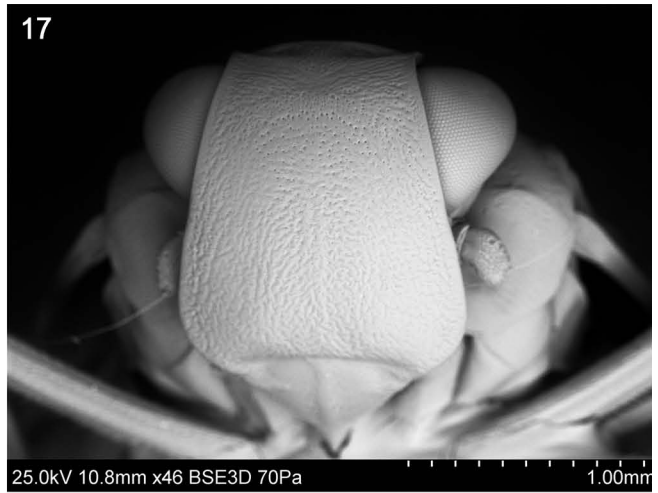
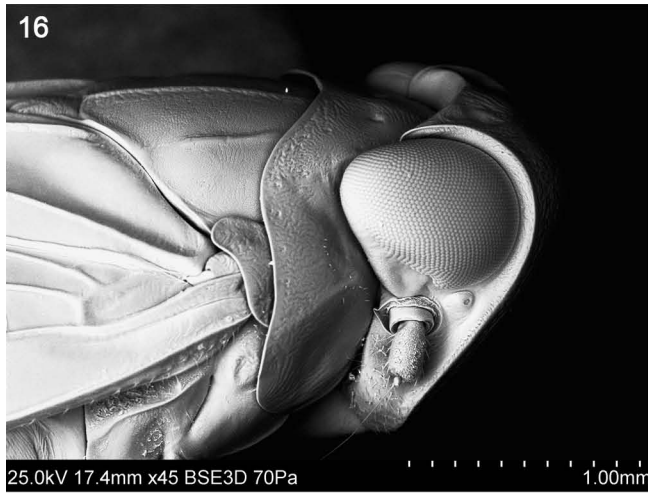
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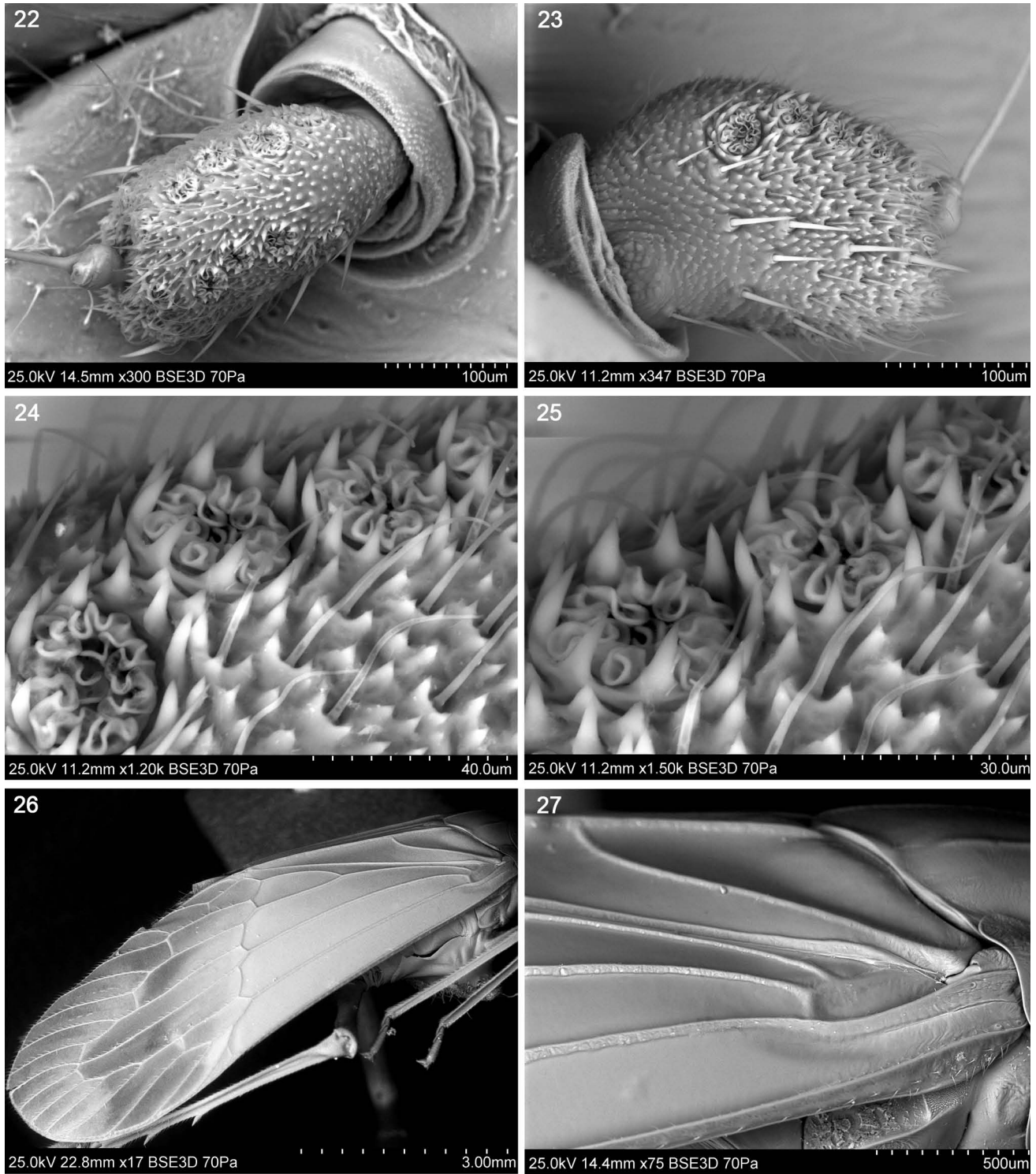
Figures 1–9. *Lukabales ecarinatus* gen. et sp. nov. (1–2) Habitus, dorsal view; (3–4) head, frontal view; (5–6) anterior part of body, dorsal view; (7) habitus, lateral view; (8) anterior part of body, lateral view; (9) labels of the holotype. (1, 3, 5, 7–8) male; (2, 4, 6) female.



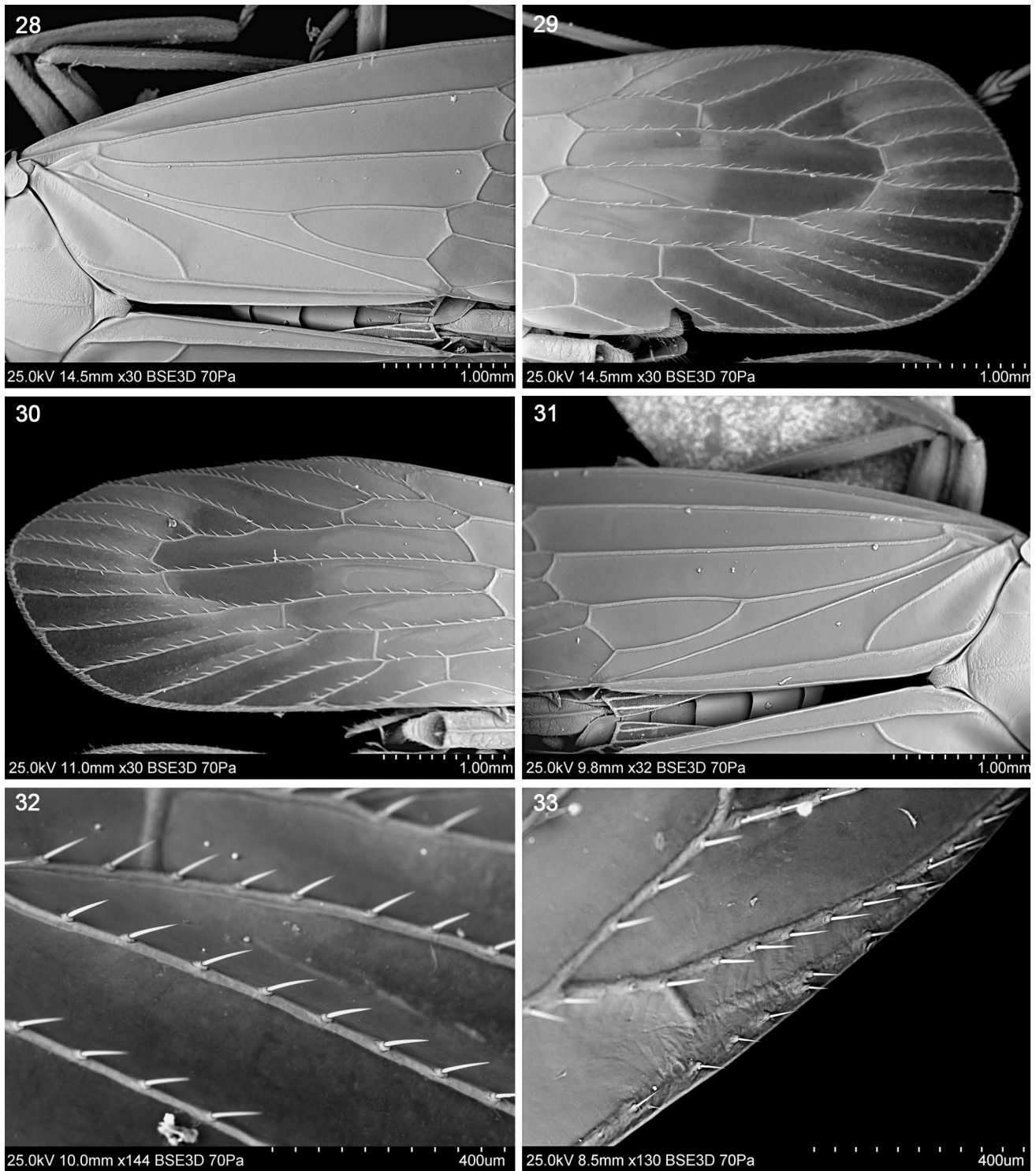
Figures 10–15. *Lukabales ecarinatus* gen. et sp. nov., holotype, SEM photographs. (10) Habitus, dorsal view; (11) anterior part of body, dorsal view; (12) vertex and pronotum, dorsal view; (13) vertex, dorsal view; (14) mesonotum, dorsal view; (15) vertex, dorso-lateral view.



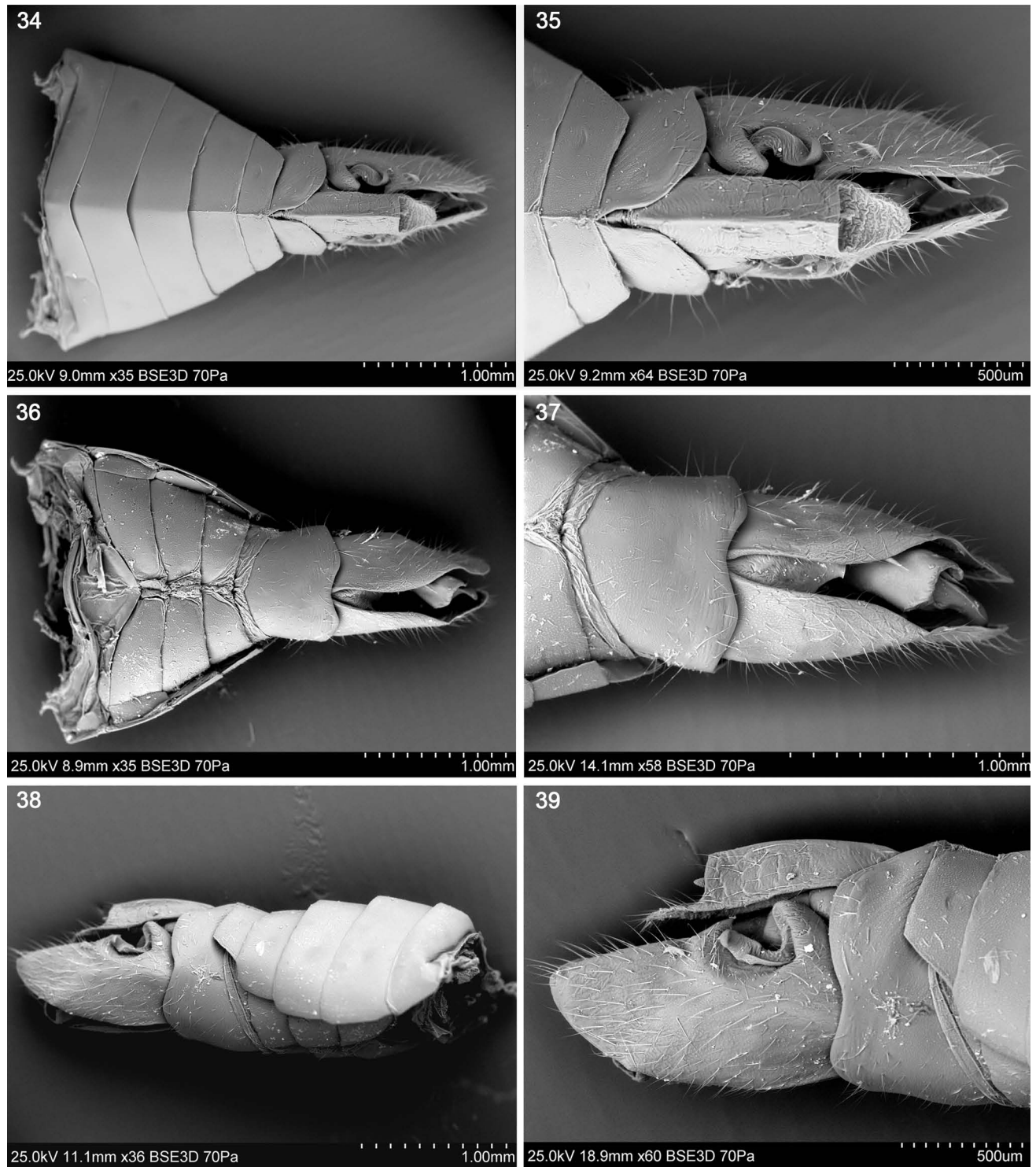
Figures 16–21. *Lukabales ecarinatus* gen. et sp. nov., holotype, SEM photographs. (16) Anterior part of body, lateral view; (18–20) surface of frons: (18–19) upper part, (20) lower part, frontal view; (21) clypeus and frons, ventro-lateral view.



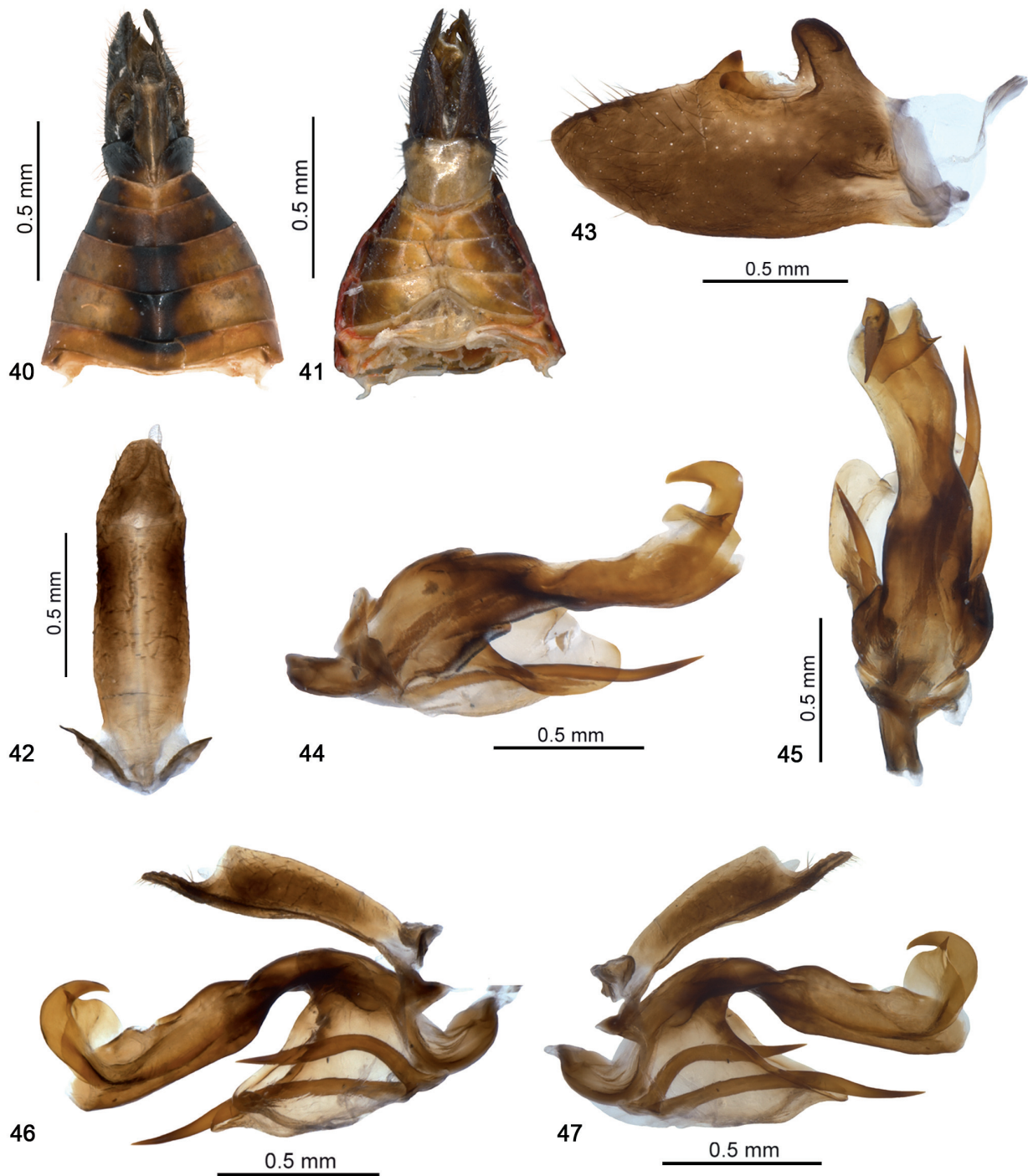
Figures 22–27. *Lukabales ecarinatus* gen. et sp. nov., holotype, SEM photographs. (22–23) Antenna: (22) dorsal view, (23) frontal view; (24–25) antennal plate organs; (26) tegmen, lateral view; (27) basal part of tegmina, lateral view.



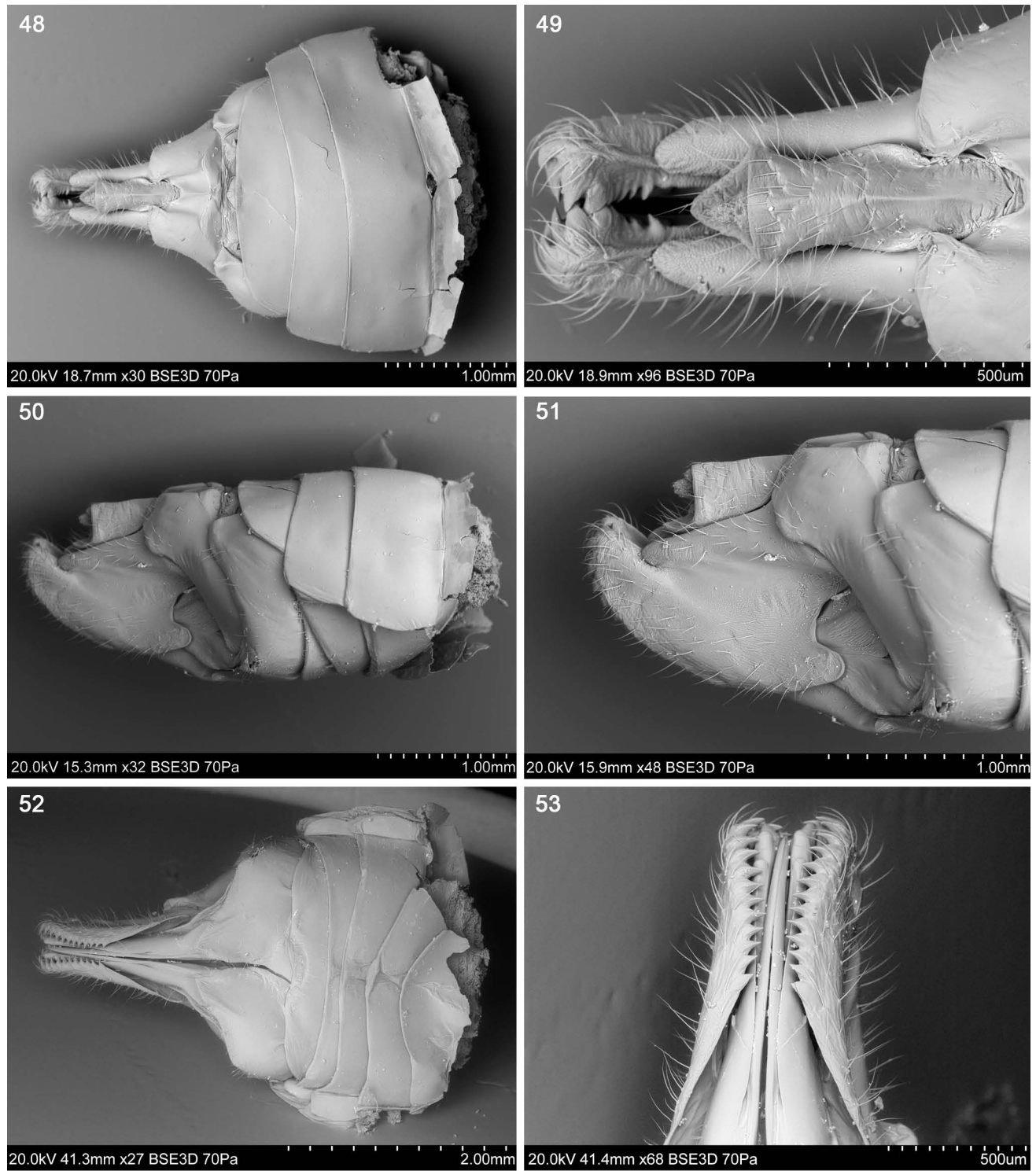
Figures 28–33. *Lukabales ecarinatus* gen. et sp. nov., holotype, SEM photographs, tegmen. (28, 31) basal part; (29–30) apical part; (32) setae on vein; (33) end of costal area.



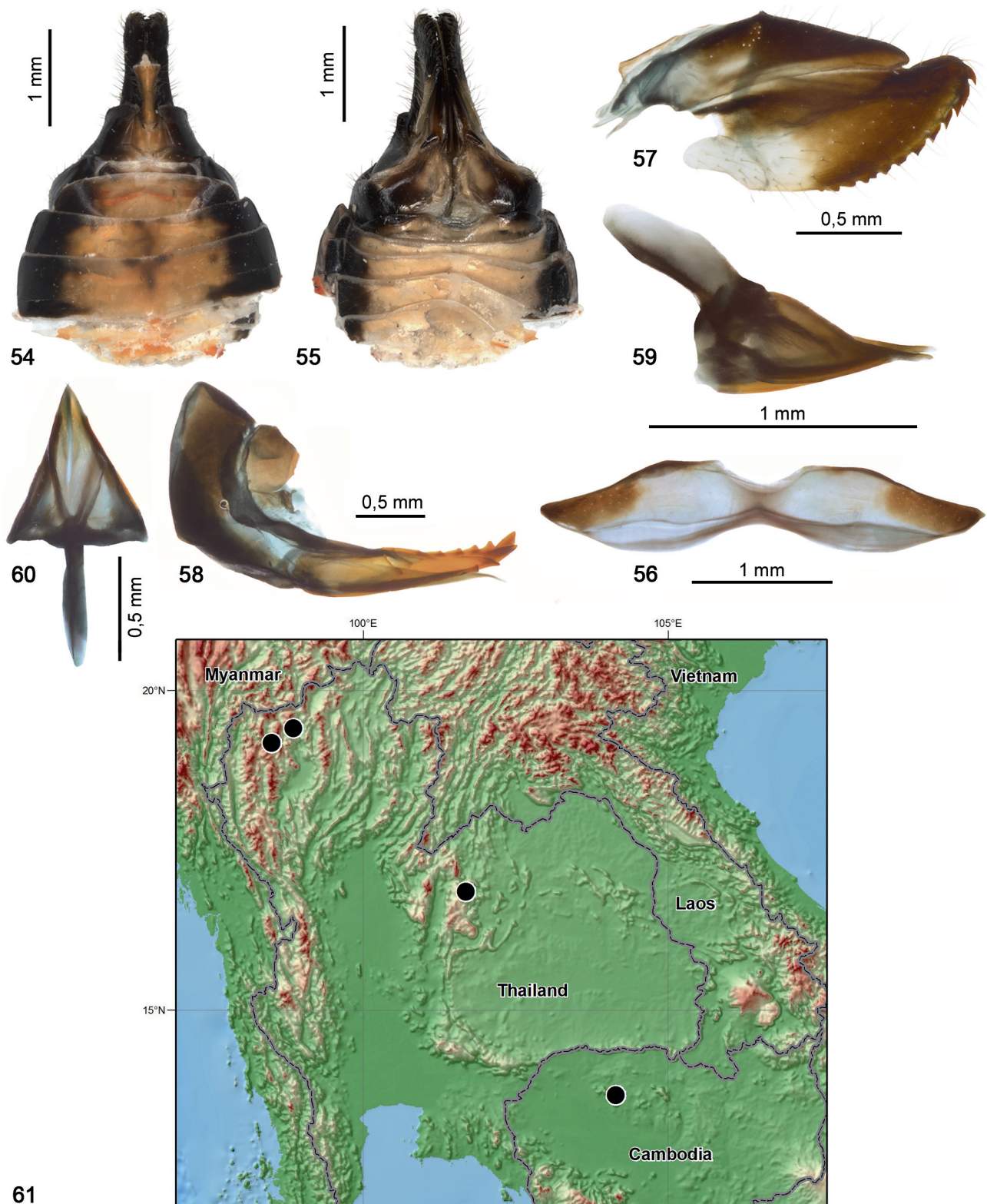
Figures 34–39. *Lukabates ecarinatus* gen. et sp. nov., holotype, SEM photographs, male, abdomen. (34, 36, 38) Abdomen: (34) dorsal view, (36) ventral view, (38) lateral view; (35–39) terminalia: (35) dorsal view, (37) ventral view, (39) lateral view.



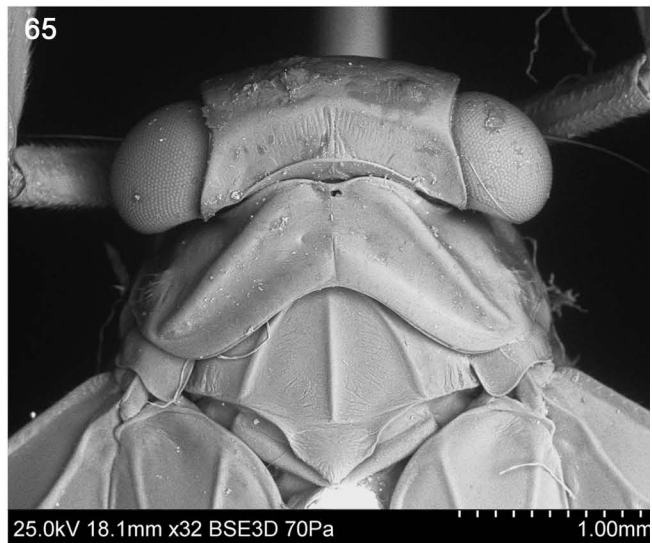
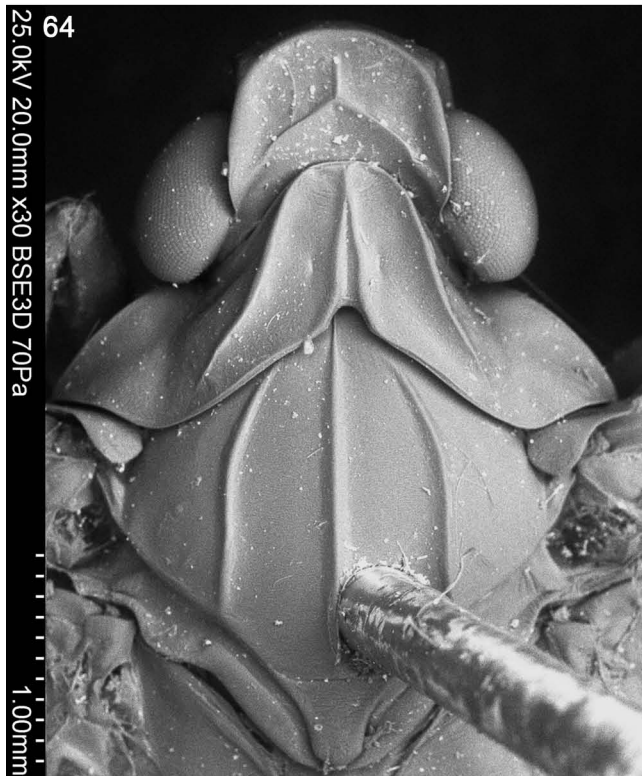
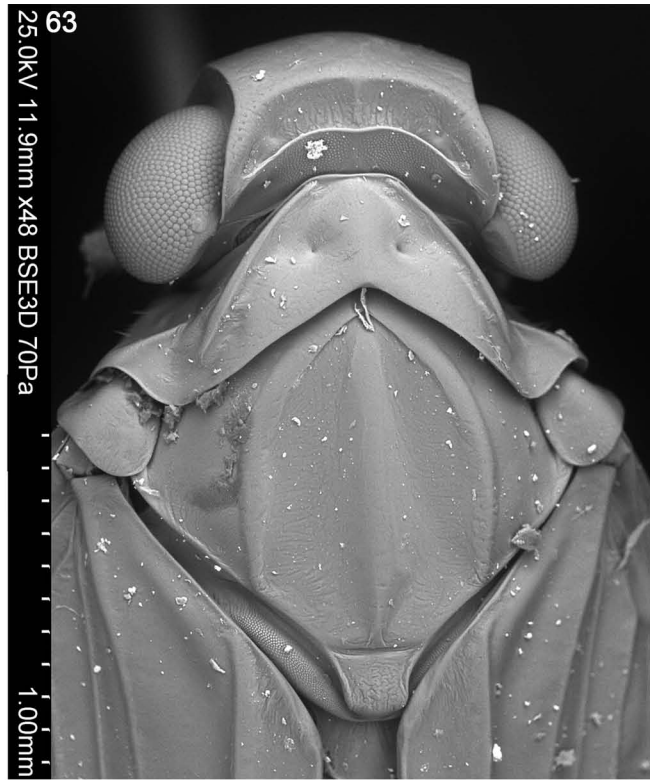
Figures 40–47. *Lukabales ecarinatus* gen. et sp. nov., holotype, male. (40–41) Abdomen: (40) dorsal view, (41) ventral view, (42) anal tube, dorsal view; (43) stylus, lateral view; (44–45) phallic complex: (44) dorso-lateral view, (45) dorsal view; (46–47) anal tube and phallic complex, lateral view: (46) left side, (47) right side.



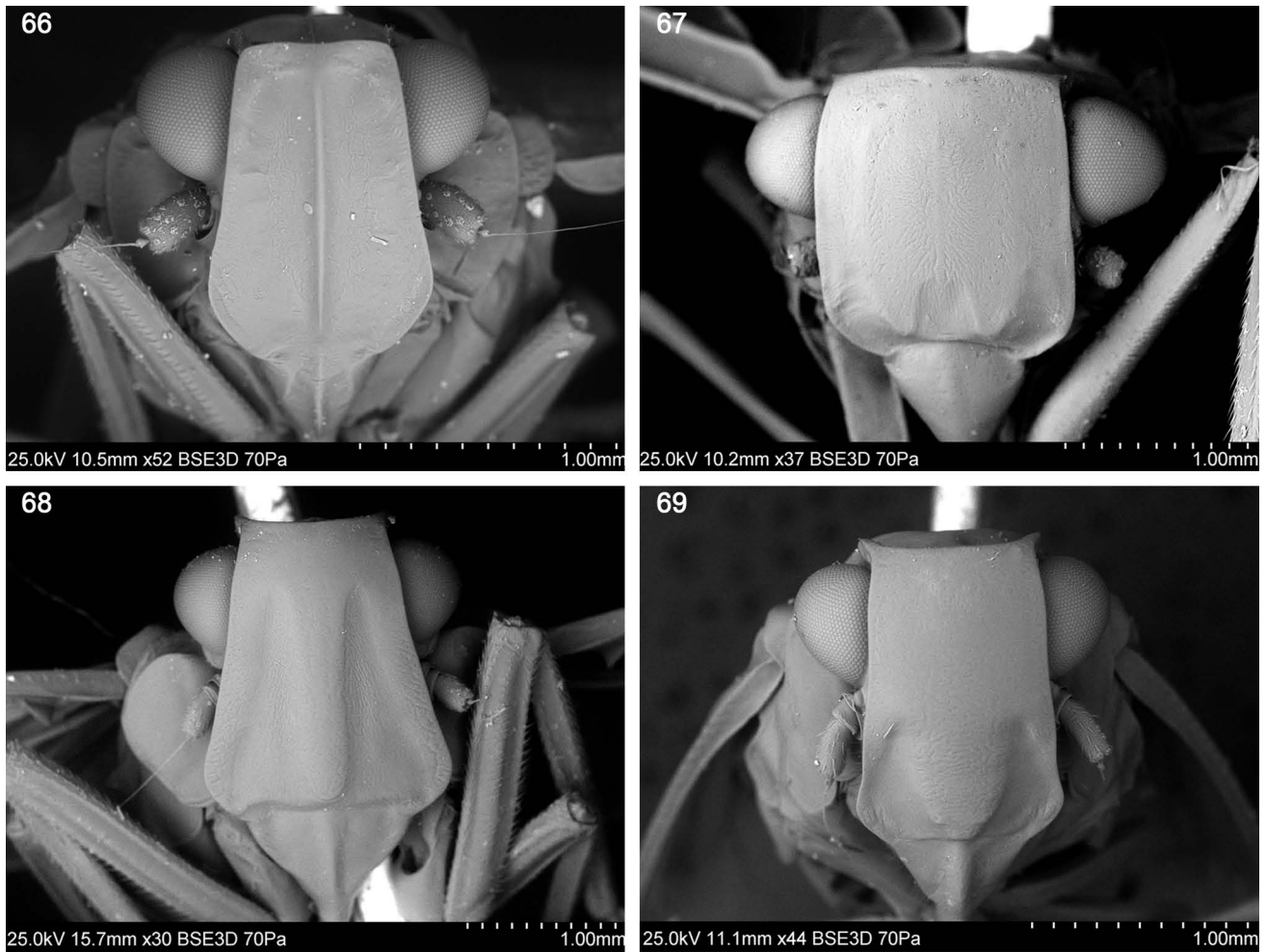
Figures 48–53. *Lukabales ecarinatus* gen. et sp. nov., paratype, female. (48, 50, 52) Abdomen: (48) dorsal view, (50) lateral view, (52) ventral view; (49–51) terminalia: (49) dorsal view, (51) lateral view; (53) margin of gonoplac, ventral view.



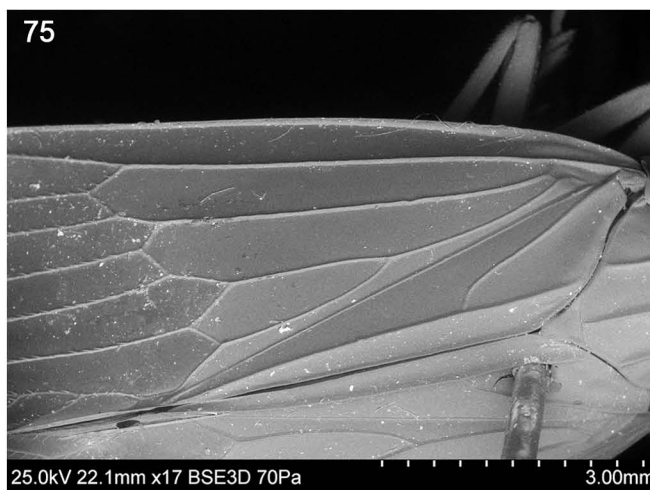
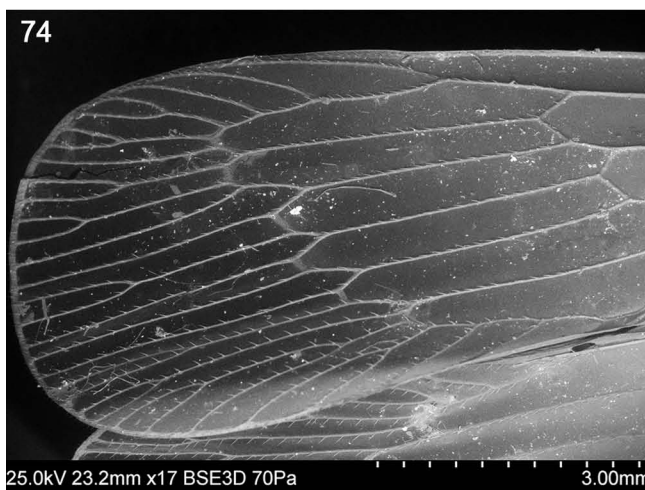
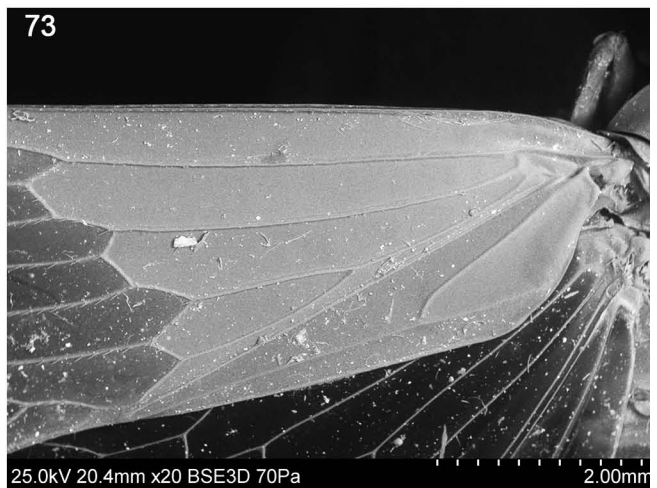
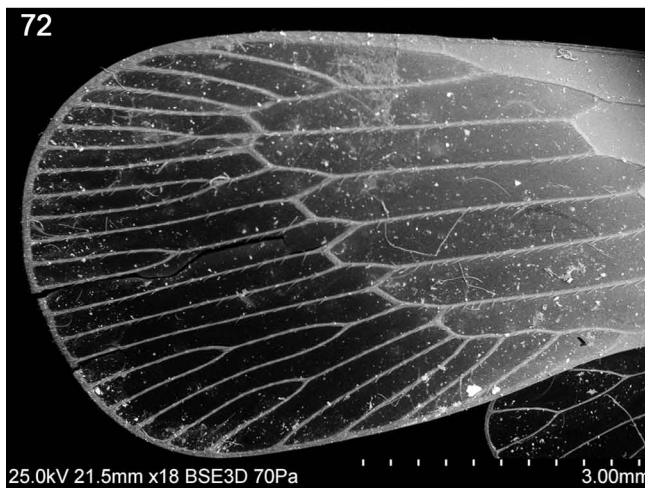
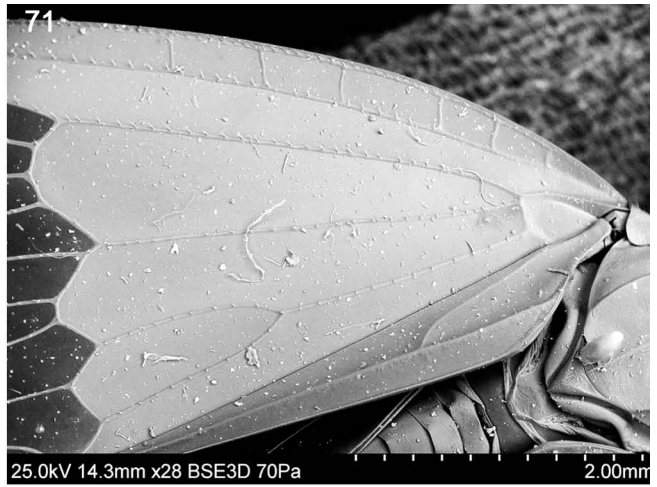
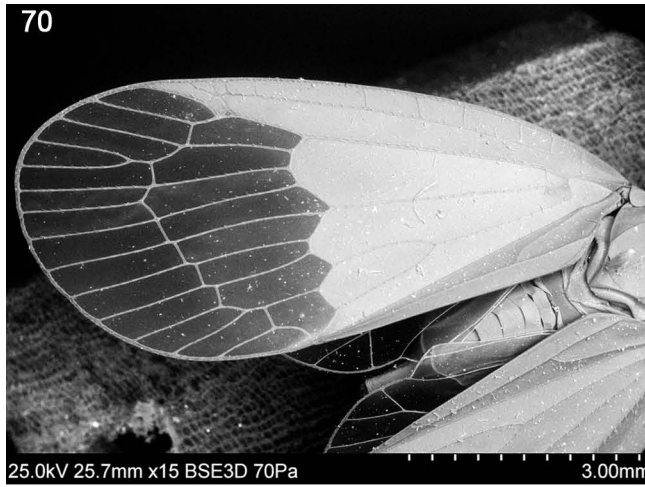
Figures 54–61. *Lukabales ecarinatus* gen. et sp. nov., paratype, female. (54–55) Abdomen: (54) dorsal view, (55) ventral view; (56) gonoplae, lateral view; (57, 60) gonapophyses IX and gonospiculum bridge: (57) lateral view, (60) dorsal view; (58) Pregenital sternite, flattened, ventral view; (59) gonapophysis VIII, lateral view; (61) distribution map.



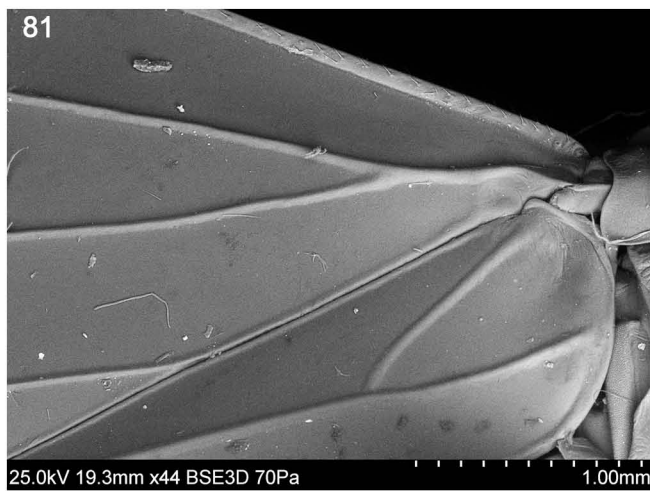
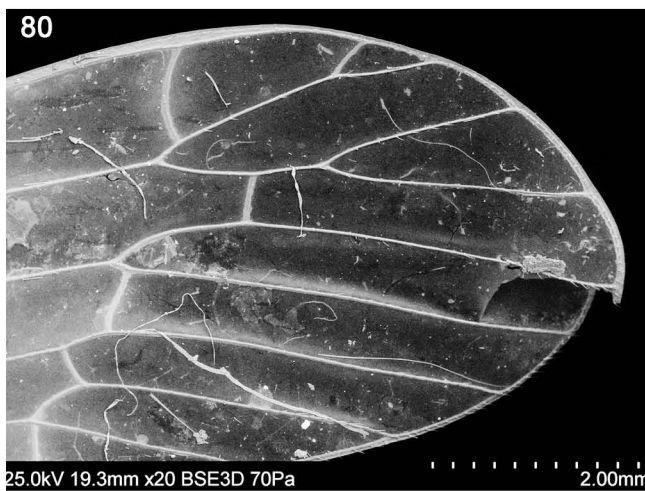
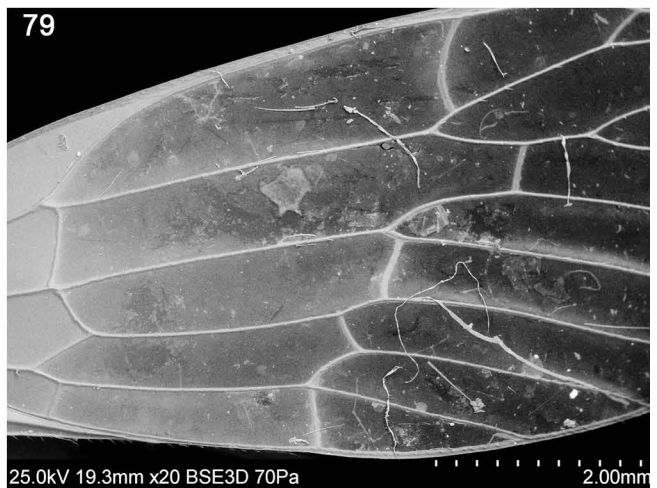
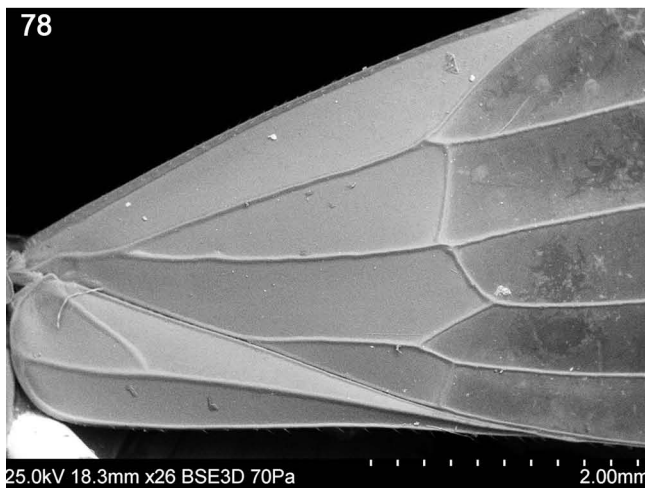
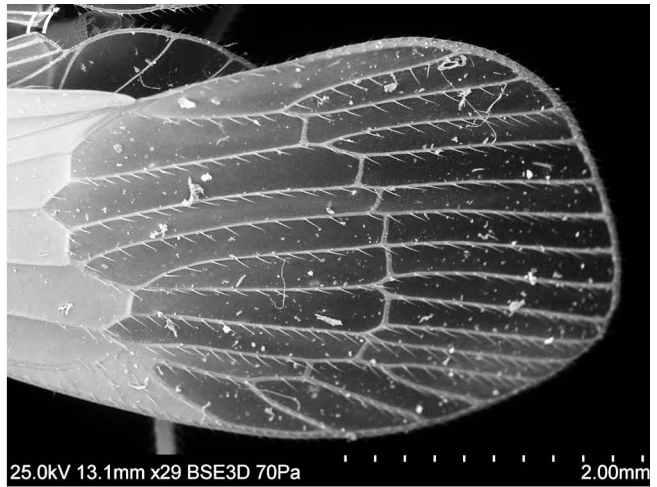
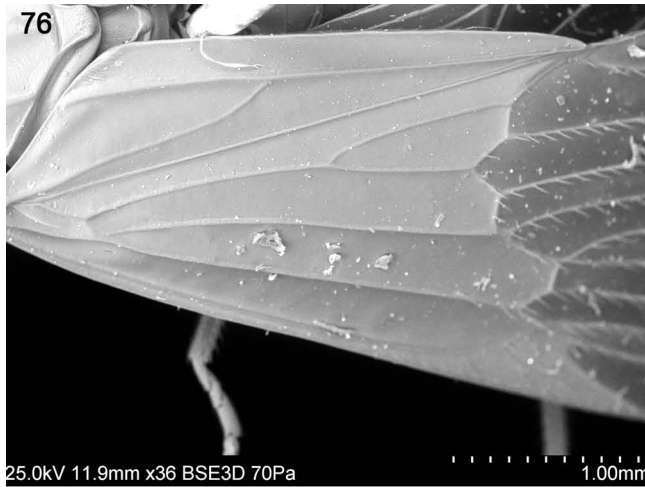
Figures 62–65. Paricanini, anterior part of body, dorsal view. (62) *Stacota breviceps* (Walker, 1858); (63) *Paricana dilatipennis* Walker, 1857; (64) *Leusaba marginalis* Walker, 1857; (65) *Paricanoides orientalis* Liang, 2003.



Figures 66–69. Paricanini, frons and clypeus, frontal view. (66) *Stacota breviceps* (Walker, 1858); (67) *Paricana dilatipennis* Walker, 1857; (68) *Leusaba marginalis* Walker, 1857; (69) *Paricanoides orientalis* Liang, 2003.



Figures 70–75. Paricanini, tegmina. (70–71) *Stacota breviceps* (Walker, 1858); (72–75) *Leusaba marginalis* Walker, 1857.



Figures 76–81. Paricanini, tegmina. (76–77) *Paricana dilatipennis* Walker, 1857; (78–81) *Paricanoides orientalis* Liang, 2003.