

Taxonomic and biogeographic revision of the genus *Lamellitettigodes* (Orthoptera: Tettigidae) with description of two new species and additional notes on *Lamellitettix*, *Probolotettix*, and *Scelimena*

JOSEF TUMBRINCK¹

¹ Auf der Hees 1, D-41849 Wassenberg, Germany

Corresponding author: *Josef Tumbrinck* (j.tumbrinck@t-online.de)

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Abstract

The genus *Lamellitettigodes* Günther, 1939 from Southeast Asia is reviewed. The genus currently includes seven species and is transferred to Tettiginae Rambur, 1838. Two new species are described: *Lamellitettigodes novaeguineae* sp. nov. from New Guinea and *Lamellitettigodes karwinkeli* sp. nov. from Yunnan, People's Republic of China. *Lamellitettigodes palawanicus* Günther, 1939 stat. nov. is no longer regarded as a subspecies of *L. contractus*, but a separate species. Two species are transferred from *Euparattettix* Hancock, 1904 to *Lamellitettigodes*: *Lamellitettigodes sagittatus* (Bolívar, 1887) comb. nov. and *Lamellitettigodes cultratus* (Bolívar, 1898) comb. nov. One species is transferred from *Tetrix* Latreille, 1802 to *Lamellitettigodes* - *Lamellitettigodes signatus* (Bolívar, 1887) comb. nov. *Xistra tricristata sumatrana* Bolívar, 1898 syn. nov., *Xistra tricristata* Bolívar, 1898 syn. nov., and *Probolotettix corticolus* Blackith & Blackith, 1987 syn. nov. are synonymized with *Lamellitettigodes contractus* (Bolívar, 1887). *Probolotettix kevani* Blackith & Blackith, 1987 syn. nov. is synonymized with *Euparattettix personatus* (Bolívar, 1887). Additionally, in the genus *Lamellitettix* Hancock, 1904, *Lamellitettix acutus* Hancock, 1904 stat. rev. is retransferred from a subspecies of *Lamellitettix gallinaceus* (Stål, 1877) to a separate species status.

Keywords

China, fauna, Metrodorinae, New Guinea, Southeast Asia, synonymy

Introduction

At the end of August 2019, there were 2031 known Tettigidae species worldwide (Cigliano et al. 2019). They occur on all the continents and inhabit almost all climatic zones from taiga to rainforests (Tumbrinck and Skejo 2017). Tettigidae can easily be identified by their pronotum, which typically extends far over the body. This feature is clearly unique and proves the allocation of the species without doubt. Since 2014, the Tettigidae of New Guinea has been revised in several papers (Tumbrinck 2014a, b, 2015, 2018, Tumbrinck and Skejo 2017). At the beginning of the revision, 67 species were known from New Guinea and the adjacent islands Aru, Biak, Waigeo, and Yapen. With the genus *Lamellitettigodes*, another genus is comprehensively revised within the

context of the ongoing revision of the Tettigidae of New Guinea. The genus was established by Günther (1939) and comprised two species with three subspecies. After 1939, for the first time the genus is fundamentally revised. With the addition of a new species described in this paper, there are currently 145 species known for New Guinea and the adjacent islands.

Material and methods

All specimens originate from the collections of several museums. Various cameras using various lenses were used to take photos, all in macro mode by using a stacking system with an integrated scale bar or with a macro lens and millimeter paper. No post-processing of photographs was done. Millimeter paper was placed close to the photographed specimen and subsequently used to construct a scale bar, included in the photograph, after which the millimeter paper was deleted. The morphological terminology and measurement methods follow Tumbrinck (2014a) and good taxonomic practice suggested in Lehmann et al. (2017). For many localities, the geographical coordinates were identified as accurately as possible by localization of the place found on the labels with different gazetteers and extracted using the Google Earth program. These localities are presented in square brackets.

Depository abbreviations

ANIC	Australian National Insect Collection, CSIRO, Canberra City, Australian Capital Territory, Australia
ANSP	Academy of Natural Sciences, Philadelphia, Pennsylvania, USA
BMEC	Bohart Museum Entomology Collection, Davis, California, USA
BMNH	The Natural History Museum, formerly British Museum (Natural History), London, UK
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii, USA
CDS	Collection Silva, Viçosa, Brasil
CJT	Collection Tumbrinck, Wassenberg, Germany
CMKT	Collection Tan, Singapore

IRSNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium
LEMQ	Lyman Entomological Museum and Research Laboratory, Quebec, Canada
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland
MLU	Martin-Luther-Universität, Zoologisches Institut, Halle, Germany
MNCN	Museo Nacional de Ciencias Naturales, Madrid, Spain
MNSL	Naturkundemuseum, Leipzig, Germany
MSNG	Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy
MZB	Museum Zoologicum Bogoriense, Bogor, Java, Indonesia
NHRS	Naturhistoriska Riksmuseet, Stockholm, Sweden
NMEG	Naturkundemuseum Erfurt, Germany
NMI	National Museum of Ireland, Dublin, Ireland
NMW	Naturhistorisches Museum Wien, Austria
OSF	Orthoptera Species File Database (http://orthoptera.speciesfile.org)
RMNH	Naturalis Biodiversity Center, Leiden, The Netherlands
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany
SMTD	Staatliches Museum für Tierkunde, Leipzig, Germany
ZFMK	Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany
ZMHU	Zoologisches Museum der Humboldt Universität, currently Museum für Naturkunde der Humboldt-Universität zu Berlin, Berlin, Germany
ZMUC	Universitets København, Zoologisk Museum, København, Denmark

Type specimens abbreviations

Holotype (HT); lectotype (LT); paralectotype (PLT); paratype (PT); syntype (ST).

Results

Taxonomy

Genus *Lamellitettigodes* Günther, 1939

Lamellitettigodes Günther, 1939: 123; Yin et al. 1996: 878; Otte 1997: 46.

Type species.—*Paratettix contractus* (Bolívar, 1887), by original designation.

Taxonomic placement and justification.—Günther (1939) assigned the genus *Lamellitettigodes* to the subfamily of Metrodorinae because of the lateral lobes: they are almost, but not completely, attached as in *Paratettix* Bolívar, 1887. This was the main character used when the subfamily was established by Bolívar (1887), and Günther also adopted it. Today, typically Metrodorinae are mainly characterized by having the median ocellus and the antenna placed below the eyes, a relatively small divergence of the rami of the frontal costa not forming wide scutellum, and a similar length of the first and third segments of the hind tarsus (Pavón-Gonzalo et al. 2012). Many species of Metrodorinae also exhibit the posterior angles of the lateral lobes of the pronotum produced outwards, often becoming acutely spinose. These characters taken together separate the subfamily from the other eight subfamilies

of Tetrigidae, although no single character is enough to characterize Metrodorinae by itself (Tumbrinck and Skejo 2017).

In contrast to Metrodorinae, in *Lamellitettigodes* the antenna is inserted at the lower margin of the eyes, and the first segment of the hind tarsus is longer than the third segment. The similarity of *Lamellitettigodes* species with *Paratettix* and *Euparatettix* is clear when comparing all morphological characters from most of the *Paratettix* and *Euparatettix* species of Southeast Asia. *Lamellitettigodes* species have typical characters of Tetriginae: rounded lateral lobes of pronotum close to pronotum (directed downwards, slightly sideways; this character is somewhat similar to Metrodorinae), presence of posthumeral spots on the pronotum, L-shaped carinae of the vertex, pulvilli of the hind tarsus with apical teeth (absent in some *Lamellitettigodes* species), and hind wings exceeding the tip of the pronotum. Therefore, *Lamellitettigodes* is very close to Tetriginae and did not belong to Metrodorinae: I transfer this genus to the subfamily of Tetriginae.

Description.—Günther (1939) gave a detailed description of the genus, which is no longer applicable in some of its parts and must be amended. An improved redescription based on his description is presented here.

Body of moderate size, slender. Head and pronotum smooth. Head and eye in lateral view not at all or slightly elevated above the pronotal discus. Antenna more than 1.5 times longer than fore femur, dorsal margin of antennal groove a little bit above the ventral margin of eye, between the eyes. Eyes small and in lateral view blunt and indistinctly conoidal. Antenna filiform, 14-segmented in male (including scapus and pedicel), 15-segmented in female. Fastigium of vertex in dorsal view as broad as or a little wider than the eye, fastigium in frontal view between the eyes slightly depressed. Fastigium in dorsal view with well-developed medial, lateral carinae, and fossula. Lateral carina clearly elevated, in lateral view weakly visible above the eyes and short, in dorsal view not converging towards the front, almost parallel, bending over at right angles to the medial carina (L-shaped). Transverse carina of the vertex in dorsal view slightly convex or straight. Frontal costa and facial carina in lateral view visible in front of eye (except in *L. novaeguineae*). Tip of fastigium and its frontal costa in lateral view protuberant. Facial carinae in lateral view concave in front of eye and slightly convex in front of antenna. Last segments of maxillary palps not foliaceous. Anterior margin of pronotum truncated. Pronotum slightly between shoulders. Prozonal carina and median carina clear, slightly elevated (lamellate in *L. cultratus* and *L. novaeguineae*), interhumeral carina absent, internal lateral carinae not clearly visible. Pronotum behind shoulders weakly depressed on both sides of median carina and here very often provided with black spots (posthumeral spots) on each side. Lateral lobes broadly rounded, not as close to body as in *Paratettix*. Tegmen almost as long as the fore femur, rather broad and at the end broadly rounded. Macropterous and macropronotal. Alae clearly exceed the pronotum apex. Hind femora with very small antegenicular and especially genicular teeth, with some sharply tuberculate raised slants of their middle outer surface. Posterior tibia distally not or slightly widened, with a few small spines on upper edges. First segment of the hind tarsus not longer than the third, pulvilli acute, in three species with apical teeth (*L. sagittatus*, *L. signatus*, *L. karwinkeli*). The coloration is highly variable and not a useful feature for either generic or specific diagnosis (as reported for Tetriginae in Lehmann et al. 2017).

Diagnosis.—The genus *Lamellitettigodes* is characterized by a protuberant tip of fastigium and frontal costa (in lateral view); facial carinae in lateral view visible and clearly concave in front of eye and slightly convex in front of antenna. Only in *L. novaeguineae* is tip of pronotum not visible in lateral view, but present. Additional characters for the genus are: 1) lateral carina of the vertex in frontal view clearly elevated as small fastigial horns, but in lateral view weakly visible above the eyes (Plate 5Q, R, V, W); 2) median carina continuous to the tip of the pronotum; 3) clearly keeled or lamellate median carina; and 4) keeled and more or less converging prozonal carinae.

The genus is close to *Euparatettix* and *Paratettix* (see above). In the typical representatives of mentioned genera, the tip of the fastigium is not protruding, but more or less rounded. Also, frontal horns are absent. In *Paratettix* the median carina is absent in the frontal margin of pronotum. A similarity exists also with *Lamellitettix* Hancock, 1904. The type species of the genus is *Lamellitettix acutus* Hancock, 1904 **stat. nov.** Blackith (1988) synonymized *L. acutus* and *L. pluricarinatus* Hancock, 1909 with *Lamellitettix insularis* (Bolívar, 1887), and *L. insularis* and *L. fletcheri* Hancock, 1915 with *Lamellitettix gallinaceus* (Stål, 1877) without giving evidence for the synonymy (Blackith 1992). Types of *L. gallinaceus* were examined by the author in NHRS and those of *L. pluricarinatus* in UMO. *L. acutus* and *L. pluricarinatus* are rather different from *L. gallinaceus* by the form of the pronotum, but it remains uncertain whether *L. acutus* and *L. pluricarinatus* are separate species. Further studies of the type of *L. acutus* and more specimens are needed. *Lamellitettix*, with its genotype *L. acutus*, is different from *Lamellitettigodes* by the tip of the fastigium which is, in lateral view, not protuberant, by the lateral carinae that are curved in dorsal view forward towards the medial carina and are not parallel, and by the lateral lobes that are acutely pointed sideways. A similarity exists also to *Xistra* Bolívar, 1887 and *Xistrella* Bolívar, 1909. In the typical representatives of *Xistra* and *Xistrella*, the antenna is inserted in a considerable distance below the ventral margin of the eye. In *Lamellitettigodes*, the antenna is inserted as high as the ventral margin of the eye (Plate 5Q–X).

Composition and distribution.—Altogether seven species are now assigned to the genus *Lamellitettigodes*: one hitherto described species (widely distributed *L. contractus* from peninsular Malaysia, Singapore, Sumatra, Java, Borneo, Sulawesi, and Solomon Isl.) supplemented with a subspecies (*L. c. palawanicus* inhabiting Palawan archipelago of the Philippines) here elevated to the species level, two new combinations (widely distributed *L. sagittatus* from Vietnam, Thailand, peninsular Malaysia, Sumatra, Java, Borneo, Philippines, Moluccas Isl., Sulawesi, New Guinea, and Timor, and *L. signatus* from the Philippines) and two species described here as new to science (*L. novaeguineae* inhabiting SE New Guinea, and *L. karwinkeli* inhabiting Yunnan, PR China). One hitherto described species (*L. sumatrana*) and a subspecies (*L. contractus tricristatus*) are synonymized with *L. contractus*.

Key to species of *Lamellitettigodes*

- 1 Median carina in frontal part of pronotum compressed and elevated (Plate 1D) *L. cultratus* (Bolívar, 1898) **comb. nov.**
- Median carina in frontal part of pronotum not compressed and elevated (Plates 1A–C, 2E, H)..... 2
- 2 Distance between upper margin of paired ocelli and frontal margin of fastigium in frontal view less than a diameter of an ocellus (Fig. 1A); bifurcation of the frontal costa into facial carinae near frontal margin of fastigium..... 3

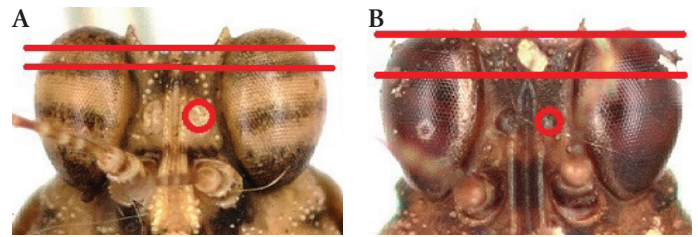


Fig. 1. Comparison of frontal costa between A. *L. novaeguineae* ♀ HT and B. *L. palawanicus* ♀ NT.

- Distance between upper margin of paired ocelli and frontal margin of fastigium in frontal view significantly larger than a diameter of an ocellus (Fig. 1B); bifurcation of the frontal costa into facial carinae in frontal view near ocelli or in the middle between ocelli and frontal margin of fastigium 6
- 3 Pronotum, in lateral view, more or less flattened (Plate 1B, C) 4
- Pronotum, in lateral view, undulated (Plate 2F–H)..... 5
- 4 Median carina in lateral view continuously bent to tip of pronotum (Plate 1C)..... *L. signatus* (Bolívar, 1887) **comb. nov.**
- Median carina, in lateral view, not continuously bent to tip of pronotum; in prozona rising again (Plates 1B, 2H)..... *L. sagittatus* (Bolívar, 1887) **comb. nov.**
- 5 Median carina in lateral view slightly undulated but without depression above beginning of tegmen (Plate 1B)..... *L. novaeguineae* sp. nov.

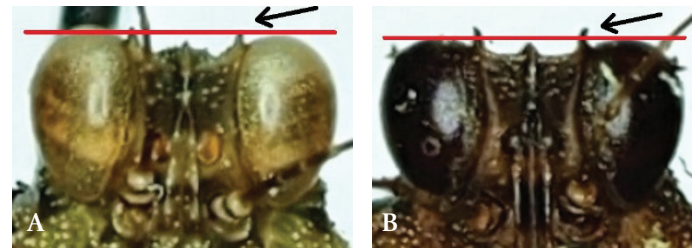


Fig. 2. Comparison of fastigial horns between A. *L. contractus* ♀ NT from Sumatra and B. *L. palawanicus* ♀ NT.

- Median carina in lateral view with depression above beginning of tegmen (Plate 2H) *L. karwinkeli* sp. nov.
- 6 Fastigial horns in frontal and lateral view not or slightly visible above eyes (Fig. 2A) *L. contractus* (Bolívar, 1887)
- Fastigial horns in frontal and lateral view clearly visible above eyes (Fig. 2B) *L. palawanicus* Günther, 1939, **stat. nov.**

***Lamellitettigodes contractus* (Bolívar, 1887)**
Plates 1A, 3I, 5Q

Paratettix contractus Bolívar, 1887: 188, 272, 281; Hancock 1907a: 56; Kirby 1910: 33; Bruner 1915: 54; Günther 1935: 262–263; Günther 1937: 136; Günther 1939: 124.
Tetrix contractus: Hancock 1907b: 236, 239; Hancock 1909: 412; Hancock 1913: 52; Günther 1939: 124.
Lamellitettigodes contractus: Günther 1939: 124–125; Steinmann 1970a: 228; Blackith 1992: 100; Paris 1994: 235; Yin et al. 1996: 878; Otte 1997: 46.

Type material.—LT *Lamellitettigodes contractus* (here designated): ♀, [Indonesia, Borneo], MNCN (Cat. Tipos No 243), original label

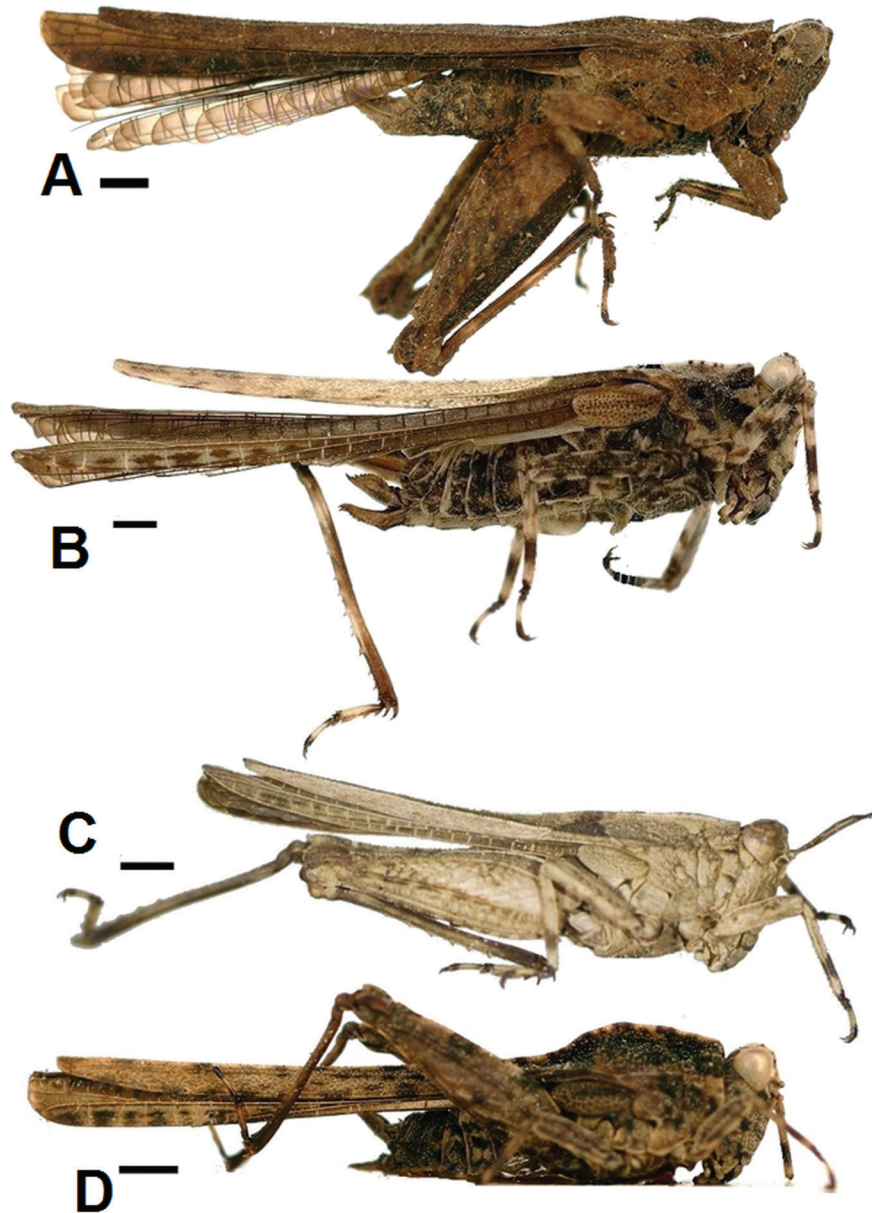


Plate 1. A–D (lateral view). A. *Lamellitettigodes contractus*, ♀ HT; B. *Lamellitettigodes sagittatus*, ♀ HT; C. *Lamellitettigodes signatus*, ♀ HT; D. *Lamellitettigodes cultratus*, ♀ HT. Scale bars: 1 mm.

from Bolívar "*Paratettix contractus* Bol." and label "Sintipo ?" from Mercedes Paris.

PLT *Lamellitettigodes contractus* (here designated): ♀, Philippines, NHRS (NRW-ORTH 0013201).

***Lamellitettigodes tricristatus* (Bolívar, 1898), syn. nov.**

Xistra tricristata Bolívar, 1898: 75–76; Hancock 1907a: 46; Kirby 1910: 27; Willemse 1930: 30; Willemse 1931: 44; Günther 1939: 125.

Paratettix tricristatus: Günther 1935: 263.

Lamellitettigodes contractus tricristatus: Günther 1939: 125; Steinmann 1970a: 228; Paris 1994: 251.

Lamellitettigodes tricristatus: Otte 1997: 46.

Tetrix cuspidata Hancock, 1907 (Synonym)

Tetrix cuspidatus Hancock 1907b: 239–240; Hancock 1909: 413; Günther 1935: 263; Günther 1939: 125; Blackith 1992: 100.

Acrydium cuspidata: Kirby 1910: 579.

Type material.—LT *Lamellitettigodes tricristatus* (here designated): ♂, [Indonesia], Java, 1893, leg. H. Fruhstorfer, MNCN (Cat. Tipos No 39)

PLTs *Lamellitettigodes tricristatus* (here designated): 2♂♂+3♀♀, [Indonesia], Java, 1893, leg. H. Fruhstorfer, MNCN (Cat. Tipos No 40–44); ♂, [Indonesia], Java, Sakabumi, 1893, leg. H. Fruhstorfer, IRSNB.

Notes.—Bolívar (1898) described the species under the section *Metrodorae* as belonging to *Xistra*, while earlier he described *L. contractus* within the section *Tettigiae*, assigned to the genus *Paratettix*. The two sections were distinguished by morphology of the lateral lobes—projected sideways in *Metrodorae*, directed downwards in *Tettigiae*. When comparing types, I did not see differences in this feature.

Günther (1939) regarded *L. contractus tricoloratus* as a subspecies of *L. contractus*, distinguished from the nominal by smaller size, sharper keeled prozonal carinae and, in lateral view, clearly visible fastigial horns (above the eyes). *L. c. tricoloratus* should be slightly smaller and should have wavy margins of the fore legs (Günther 1935). All these features are, however, in the range of variation of the species and are not of diagnostic value. Moreover, I did not find reported differences when comparing the types. Otte (1997) gave the specific status to the subspecies only with the reason of occurrence on different islands.

All these data prove that *L. tricoloratus* (Bolívar, 1898) is conspecific with *L. contractus*.

Synonym *Tetrix cuspidata* Hancock, 1907

Notes.—Günther (1935) also synonymized *Tetrix cuspidata* Hancock, 1907 with *L. contractus*, but without giving detailed information. I have seen the STs and agree with his decision.

Type material.—LT *Tetrix cuspidata* (here designated): ♀, [Indonesia], Java, Pengalangan, 4000 ft, 1893, leg. Fruhstorfer (Type 727 1/3).

PLTs *Tetrix cuspidata* (here designated): 2♂♂, [Indonesia], Java, Pengalangan, 4000 ft, 1893, leg. Fruhstorfer (Type 727 2/3+3/3).

Hancock refers to four specimens from the same locality but in UMO only three specimens are present.

Lamellitettigodes sumatrana (Bolívar, 1898), syn. nov.

Xistra tricolorata var. *sumatrana* Bolívar, 1898: 76; Willemse 1928: 4; Willemse 1930: 30–31; Günther 1935: 262–263; Günther 1939: 124; Paris 1994: 250–251.

Xistra tricolorata sumatrana: Hancock 1907a: 46.

Xistra sumatrana: Steinmann 1970a: 230.

Xistra tricolorata sumatrensis: Blackith 1992: 100.

Lamellitettigodes sumatrana: Otte 1997: 46.

Type material.—LT *Lamellitettigodes sumatrana* (here designated): ♀, Indonesia, Sumatra, Si-Rambé, XII.1890–III.1891, leg. E. Modigliani, MNCN (Cat. Tipos No 68), original label from Bolívar "*Xistra var. sumatrana* Bol." and label "Sintipo" from Mercedes Paris.

PLTs *Lamellitettigodes sumatrana* (here designated): ♂, ♀, [Indonesia], Sumatra, Si-Rambé, XII.1890–III.1891, leg. E. Modigliani, MNCN (Cat. Tipos No 69–70); 2♂♂, [Indonesia], Mentawai, Si Oban, IV–VIII.1894, leg. E. Modigliani, MNCN (Cat. Tipos No 71, 73); ♂, [Indonesia], Mentawai, Sipora, Sereinu, IV–VIII.1894, leg. E. Modigliani, MNCN (Cat. Tipos No 74); ♀, [Indonesia], Eng[g]ano, Bua-Bua, V–VI.1891, leg. E. Modigliani, MNCN (Cat. Tipos No 72); 7 specimens, [Indonesia], Sumatra, Si-Rambé, XII.1890–III.1891, leg. E. Modigliani, MSNG [not seen]; 5 specimens, [Indonesia], Mentawai, IV–VIII.1894, leg. E. Modigliani, MSNG [not seen]; 2 specimens, [Indonesia], Eng[g]ano, Bua-Bua, V–VI.1891, leg. E. Modigliani, MSNG [not seen]; 1 specimen, [Indonesia], Nias, leg. E. Modigliani, MSNG [not seen]; 2♂♂, 2♀♀, [Indonesia], Sumatra, Si-Rambé, XII.1890–III.1891, leg. E. Modigliani, IRSNB [not seen]; ♀, [Indonesia], Mentawai, Sipora, Sereinu, V–VI.1894, leg. E. Modigliani, RMNH; ♂, [Indonesia], Mentawai, Si Oban, IV–VIII.1894, leg. E. Modigliani; ♀, [Indonesia], Sumatra, Si-Rambé, XII.1890–III.1891, leg. E. Modigliani, NHRS (NRM-ORTH 0013047 + 0013046).

Notes.—Bolívar (1898) described the taxon as a variety of *Xistra tricolorata*. In contrast to *L. tricoloratus*, the prozonal carinae are not curved to the middle and not keeled. The margins of the fore legs

are slightly undulated. Günther (1935) synonymized *Xistra tricolorata* var. *sumatrana* with *Paratettix contractus* without giving details. According to Günther (1939), the specimens of *L. sumatrana* have in lateral view only slightly visible elevated lateral carinae above the eyes and wavy median carina in front of and behind the shoulders. In the specimens of *L. contractus* from Borneo, these undulations are weaker. Otte (1997) gave the subspecies a specific status based on occurrence on different islands (as in *L. tricoloratus* mentioned above). All these features are within the range of variation of the species and do not represent diagnostic traits. I did not find differences when comparing the types and, therefore, *L. sumatrana* (Bolívar, 1898) (original combination *Xistra tricolorata sumatrana*) is regarded as conspecific with *L. contractus*.

Probolotettix corticolus Blackith & Blackith, 1987, syn. nov.

Probolotettix corticolus: Blackith and Blackith 1987: 5–8; Blackith 1990: 89–90; Blackith 1992: 146; Yin et al. 1996: 902 (error: *corticulus*); Otte 1997: 57.

Type material.—HT *Probolotettix corticolus*: ♀, Indonesia, Sulawesi, Minehassa Prov., Dumoga-Bone National Park, 13.III.1985, leg. Blackith, RMNH (not seen, probably lost).

PTs *Probolotettix corticolus*: ♂, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, I–III.1985, leg. R. & R. Blackith, BMNH; ♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, I–III.1985, leg. R. & R. Blackith, LEMQ; ♂+♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, I–III.1985, leg. R. & R. Blackith, NMI (not seen), MZB (not seen).

Notes.—After the description and the drawing of the HT in Blackith and Blackith (1987), this species is a typical *L. contractus*. I have seen the PT in BMNH and LEMQ and there is no doubt that they are *L. contractus*.

Additional material examined.—Philippines: 3♂♂, Siargao, 9°52'33"N, 126°00'35"E, on leaf, 28 m, 7.IV.2018, leg. M. K. Tan, Yeo, H., Yap, S. A. & Baroga, J. B., CMTK. Indonesia: ♀, Sumatra, Lac de Toba, 1.V.1929, leg. Prince Leopold, RMNH; ♀, Sumatra, Soekaranda, leg. Dohrn, SMTD; ♀, W. Sumatra, Padang Panjang, 28.VIII.1991, leg. W. Guidetti, CJT; ♀, Sumatra, Sibolangit, 550 m, 11.X.1921, leg. J. B. Corporaal, RMNH; ♂, ♀, Sumatra, Fort de Kock, 920 m, 1926, leg. E. Jacobson, RMNH; ♂, ♀, Sumatra, Lubuksikaping (Sumatra's Westkust), 450 m, 1926, leg. E. Jacobson, RMNH; 2♂♂, 7♀♀, Sumatra, S. W. Lampong distr., Mt. Tanggamoos, Gisting ult., 500 m, XII.1939, leg. M. A. Liefinck, RMNH; 2♂♂, Mentawai, Siberoet, 24.+28.IX.1924, leg. H. H. Karny, RMNH; ♂, Mentawai, Sipora, 11.X.1924, leg. H. H. Karny, RMNH; ♀, Nias, Sisobahili I, Tankec, ca. 14 km v. Gunung Sitoli, IX.1991, leg. W. Guidetti, CJT; ♂, ♀, Westjava, Mt. Guntur, Garoet, 1350 m, leg. Overbeck; ♂, ♀, Java, G. Tjikorai, 900 m, X.1934, leg. E. Jacobson, RMNH; ♂, Java, Tjikadjang, Bandung, W. Java, 800–900 m, 7.–10.IV.1939, leg. M. A. Liefinck, RMNH; ♂, Java, Penandjoeng Bay, Kalinnoetjang, 300 m, VII.1936, leg. M. A. Liefinck, RMNH; 3♂♂, 4♀♀, Borneo, Midden O. Borneo, 19.VIII.1925, RMNH, leg. H. C. Siebers; ♀, Borneo, Tabang, Bengen River, East Borneo, 125 m, 10.IX.1956, leg. A. M. R. Wegner, RMNH; ♀, Borneo, O. Borneo, Tandjong Redeb, leg. Mjöberg, NHRS; ♀, Borneo, Sarawak Distr., leg. Mjöberg, NHRS; 3♂♂, 2♀♀, Borneo, Long Navang, leg. Mjöberg, NHRS; 2♂♂, 3♀♀, Borneo, Kajan River, leg. Mjöberg, NHRS; ♀, Borneo, East-Sabah, Sepilok RDC, 5°87'57.57"N, 117°94'75.76"E, leg. T. Kirschey, CJT. Solomon Islands: 2♂♂, Malaita, Auki, 2–20 m, 22.IX.1957, leg. J. L. Gressitt, BPBM.

Differential diagnosis.—*L. contractus* has more or less parallel prozonal carinae, slightly bent backwards. The distance between the upper margin of the superior ocelli and frontal margin of the fastigium is significantly larger than a diameter of an ocellus in frontal view. The species is similar to *L. palawanicus*. This species can be easily separated by the tip of fastigium and frontal costa, which are distinctly protuberant in front of the eyes, and the fastigial horns, which are clearly visible above the eyes.

Measurements.—(in mm) *L. c. contractus* (LT/PLT): Pronotum length 12.61/11.63; pronotum lobe width 3.25/2.92; pronotum height 2.53/1.58; vertex width 0.54/0.45; eye width 0.45/0.45; tegmen length 1.60/1.50; hind wing length 11.18/10.88; postfemur length LT 5.46; postfemur width LT 1.70.

L. c. tricristatus **syn. nov.** LT: Pronotum length 8.71; pronotum lobe width 2.57; pronotum height 1.95; vertex width 0.43; eye width 0.39; tegmen length 1.07; hind wing length 7.28; postfemur length 3.95; postfemur width 1.25.

L. c. sumatrana **syn. nov.** (LT/PLT): Pronotum length 10.40/10.01; pronotum lobe width 2.99/2.73; pronotum height 2.74/2.21; vertex width 0.50/0.49; eye width 0.41/0.39; tegmen length 1.56/1.43; hind wing length 10.27/9.23; postfemur length 5.07/4.55; postfemur width 1.69/1.43.

T. cuspidata (LT/PLT2/3/PLT3/3): Pronotum length 10.79/10.92/8.71; pronotum lobe width 3.25/2.80/2.65; pronotum height 1.65/1.50/1.35; vertex width 0.50/0.47/0.45; eye width 0.47/0.47/0.41; tegmen length 1.55/1.45/1.30; hind wing length 8.97/10.53/8.58; postfemur length 5.20/4.40/4.24; postfemur width 1.65/1.45/1.35.

Additional measurements: (in mm) ♀ Sumatra, Lac de Toba: Pronotum length 9.75; pronotum lobe width 2.95; pronotum height 2.29; vertex width 0.54; eye width 0.41; tegmen length 1.30; hind wing length 9.23; postfemur length 4.88; postfemur width 1.45. ♀, Borneo, Sepilok RDC: Pronotum length 10.79; pronotum lobe width 3.00; pronotum height 1.45; vertex width 0.47; eye width 0.45; tegmen length 1.55; hind wing length 10.27; postfemur length 4.81; postfemur width 1.60. ♂, Solomon Is., Malaita: pronotum length 9.88; pronotum lobe width 2.60; pronotum height 1.45; vertex width 0.47; eye width 0.43; tegmen length 1.35; hind wing length 8.97; postfemur length 4.42; postfemur width 1.40.

Distribution.—The species inhabits the Southeast Asian mainland (Günther 1939), Singapore (Hancock 1909), islands of Southeast Asia - Sumatra (and adjacent Nias, Mentawai, and Enggano), Java, Borneo, Sulawesi (Günther 1939), and finally the Solomon Islands. The species has not been found hitherto in New Guinea. Hancock (1907a), however, refers to New Guinea under *Xistra tricristata*, and Günther (1935) wrote " (...) also known to me from SE New Guinea". I have not been able to detect this species in New Guinea and the Bismarck Archipelago, although it is found to inhabit the Solomon Islands. Hancock's (1907a) and Günther's (1935) records could belong to *L. novaeguineae* **sp. nov.**

Lamellitettigodes sagittatus (Bolívar, 1887), **comb. nov.**

Plates 1B, 3J, 5R

Paratettix sagittatus Bolívar, 1887: 188, 280–281.

Xistra sagittata: Bolívar 1898: 76; Hancock 1907a: 46; Kirby 1910: 27; Willemse 1930: 31, 207; Günther 1939: 160; Blackith 1992: 197; Paris 1994: 248; Yin et al. 1996: 930 (error: *sagittaria*); Otte 1997: 67

Euparatettix sagittatus: Günther 1937: 138–139; Günther 1938: 2–3, 41; Günther 1941: 155–156; Günther 1942: 345; Steinmann 1970a: 232; Yin et al. 1996: 870; Zheng et al. 2011: 385; Deng 2016: 302.

Type material.—LT *Lamellitettigodes sagittatus* (designated by Paris 1994): ♀, Philippines, Daraga, MNCN (Cat. Tipos No 126), original label from Bolívar "*Xistra sagittata* Bol." and label "Lectotipo" from Mercedes Paris.

ST (= PLT) *Lamellitettigodes sagittatus*: ♀, Philippines, NHRS [referred by Bolívar 1887 but not found in NHRS].

Synonym *Euparatettix pulvillus* Hancock, 1910: 360; Günther, 1937: 131, 138.

HT *Euparatettix pulvillus*: Malaysia, Selangor, Riverside Estate Kwala, IX.1907, leg. H. C. Pratt, UMO.

Note: Günther (1937) synonymized *E. pulvillus* Hancock, 1910 with *L. sagittatus* after the description of Hancock. I have seen the HT and agree with his decision.

Synonym *Tetrix polypictus* Hancock, 1913: 52–53; Günther, 1937: 131, 138; Otte, 1979: 41

Acrydium polypictum: Hancock, 1915: 135.

HT *Tetrix polypictus*: ♀, Malaysia, Borneo, Kuching, ANSP (not seen).

Note: Günther (1937) synonymized *T. polypictus* Hancock, 1913 with *L. sagittatus* after the description of Hancock.

Additional material examined.—Vietnam: 3 ♂♂, 5 ♀♀, Bac Giang Prov., Tay Yen Tu Nat. Res. Thanh So'n, 18.–21.V.2015, leg. A. Skale, CJT, NMEG; 1 ♀, Thai Nguyen Province, vic. Ngoc Thanh, vic. Me Linh (IEBR station), 21°23'03"N, 105°42'44"E, 2.V.2012, leg. A. Weigel, CJT.

Thailand: ♀, Khao Soi Dao, 15.X.1985, leg. S. Ingrisch, CJT; ♀, Chanthaburi Khao Soi Dao, 12.VI.1988, leg. S. Ingrisch, CJT.

Malaysia: ♀, Selangor, Riverside Estate Kwala, IX.1907, leg. H. C. Pratt, UMO; ♂, 2 ♀♀, Pahang, Bukit Chitmani along overgrown path at base of limestone crop, 3°26'48"N, 102°0'47"E, 12.III.2016, leg. L. Willemse, RMNH, CJT; ♂, Pahang, Bukit Chitmani along overgrown path at base of limestone crop, 3°26'48"N, 101°55'59"E, 11.III.2016, leg. L. Willemse, RMNH.

Malaysia: Borneo: ♂, Banguay [Pulau Banggi], 1935, SMTD; 6 ♂♂, 5 ♀♀, East-Sabah, Sepilok RDC, 16.XI.2016, leg. T. Kirschey, CJT; ♂, ♀, Sabah, Kinabalu National Park, 5.–7.VIII.1984, leg. S. Ingrisch, CJT; ♂, ♀, Sabah, Kinabalu National Park, 8.VIII.1984, leg. S. Ingrisch, ZFMK; ♀, Sarawak, Ng. Jagau, Sg. Ngemah, 3 Div., ex hill padi, single hill sample JF-2-18, 22.XI.1974, leg. D. Munroe, LEMQ.

Indonesia: Sumatra: ♂, Padang, MLU; ♀, Soeruil, IV.1878, ♀, Eng[g]ano, Bua-Bua, V.1891–VI.1891, leg. E. Modigliani, MSNG; RMNH; ♂, 4 ♀♀, Pangherang-Pisang, X.1890–III.1891, leg. E. Modigliani, MSNG; ♀, Fort de Kock, 920 m, 1925, leg. E. Jacobson, RMNH; 4 ♂♂, ♀, Anai Kloof (Sumatra's Westkust), 500 m, 1925+1926, leg. E. Jacobson, SMTD, RMNH; ♂, ♀, Medan, Gedong Djohore, 7.II.1928, leg. M. Mohr, RMNH; ♀, S. W. Lampung distr., Mt. Tanggamoos, Gisting ult., 500 m, XII.1939, leg. M. A. Lieftinck, RMNH; ♀, Palembang Office, Dinas Kehutanan, [2°56'42.245"S, 104°43'44.663"E], 17 m, leg. T.Kirschey, CJT;

Mentawai: ♀, Siberoet, 18.IX.1924, leg. H. H. Karny, RMNH;

Sulawesi: ♂, Nr. Morowali, Ranu River area, 27.I.–20.IV.1980, leg. M. J. D. Brendel, BMNH; ♂, street Kotamobagu-Motoling (North Sulawesi), 15.–16.I.2001, leg. M. Hoffmann, MNSL; 2 ♀♀, Prov. Gorontalo, Taman Nasional Nani Bogani Wartabone, 7.VIII.2016, leg. T. Kirschey, CJT;

Java: ♀, Salatiga, [7°19'S, 110°33'E], leg. W. Roepke, RMNH; ♀, Tjimandala [Cimandala], XII.1923, SMTD; 2♀♀, G. Tjikorai, X.1934, leg. E. Jacobson, RMNH; ♀, Buitanzorg [Bogor], 17.IX.1941, leg. P. A. Blijdorp, RMNH; ♂, Bogor, Botanical Garden, 21.III.1993, leg. S. Ingrisich, CJT; 4♂♂, 8♀♀, Bogor, Botanical Garden, 6°35'51"S, 106°47'58"E, 21.II.+31.VII.2016, leg. T. Kirschey, CJT; ♀, Surabaya 43 km SW, Mt. Pennggungan, hotel PPLH, 370 m, 7°36'29"S, 112°09'40"E, 18.–19.VIII.2017, leg. D. Telnov, NMEG;

Borneo: ♂, Tandjong Redeb, leg. Mjöberg, NHRS;

Moluccas: ♀, Buru, Nal Beti, 10.V.1921, leg. L. J. Toxopeus, RMNH; ♀, Isl. Batjan, Salawaku river, 50–100m, 17.VI.1963, RMNH;

Aru: ♀, Aru, Wokan, 1873, leg. O. Beccari, MSNG;

Waigeo: 3♂♂, 4♀♀, 3 km W Waisai, 40–50 m, 0°26'04"S, 130°47'41"E, 18.II.2012, leg. D. Telnov, CJT, NMEG;

West Papua: ♂, ♀, Cyclops Mts., Sabron, Camp 2 [2°30'S, 140°25'E], 2000 ft, VI.1936, leg. L. E. Cheesman, BMNH; ♀, Cyclops Mts., Sabron, Camp 1 [2°30'S, 140°25'E], 1200 ft, 13.V.1936, leg. L. E. Cheesman, BMNH; ♀, Cyclops Mts., Sabron, Camp 1 [2°30'S, 140°25'E], 9300 ft, VI.1936, leg. L. E. Cheesman, BMNH; ♀, Cyclops Mts., Jayapura, Sentani, [2°36'S, 140°37'E], 100 m, 15.VI.1959, leg. J. L. Gressitt, BPBM; 3♀♀, Waris, S. of Hollandia [Jayapura], [3°11'S, 140°53'E], 450–500 m, 8.–15.VIII.1959, leg. T. C. Maa, CJT; 2♂♂, Doberai Peninsula, Arfak mts., Anggi Gigi Lake S env., Uper vill., 2200 m, 1°18'05"S, 133°54'24"E, 10.–11.IX.2015, leg. D. Telnov, CJT;

Papua New Guinea: ♂, Standlager bei Malu, [4°13'S, 142°49'E], leg. S. G. Bürgers, III.–IV.1912, ZMHU; ♂, Kokoda, 1200 ft, VIII.1933, leg. L. E. Cheesman, SMTD; ♂, Kokoda, 1200 ft, VII.1933, leg. L. E. Cheesman, BMNH; ♂, Orrori, 3500 ft, VII.1933, leg. L. E. Cheesman, BMNH; ♂, Upper Jimmy Valley, Wum, [5°34'S, 144°35'E], 840 m, 18.VII.1955, leg. J. L. Gressitt, BPBM; 2♂♂, 2♀♀, Lae, Gurukor, under Coffee, 1800 ft, 7.VII.1957, leg. J. H. Ardley, ANIC; 2♀♀, Gurukor, Wampi Valley, under Coffee, [6°49'S, 146°37'E], 3000 ft, 7.VII.1957, leg. J. H. Ardley, ANIC; 2♀♀, Maprik [3°39'S, 143°03'E], 18.X.1957, leg. J. Smart, BMNH; ♀, Bokondini, 40 km N of Baliem Val., 1300 m, 5.–11.XI.1961, leg. S. & L. Quate, BPBM; 2♀♀, Bulolo, 800–900 m, 14.XI.1961, leg. J. & M. Sedlacek, BPBM; 4♂♂, 4♀♀, Lae, [6°44'S, 144°00'E], 10 m, 18.I.–24.I.1962, BPBM; ♂, Keria, Amazon Bay area, 1650 ft, 29.VI.–22.VII.1962, leg. W. W. Brandt, ANIC; ♀, Sum-Sum, 64 km N. of Wau, 15.II.1963, leg. H. W. Clissold, BPBM; 2♀♀, Wau, [7°20'S, 146°43'E], 1200 m, 15.IV.1963, leg. J. Sedlacek, BPBM; ♂, 7.V.1963, Ambunti, Sepik River, 200 m, leg. R. Straatman, BPBM; ♀, Northern district, Managalese area, VIII.1964, leg. R. Pullen, ANIC; ♂, Popondetta, [8°46'S, 148°14'E], 25 m, VI.1966, leg. Shanahan & Lippert, BPBM; ♀, Markham R. to Gabensis Village near Lae, 30.V.1967, leg. R. E. & R. M. Blackith, ANIC; 2♂♂, 3♀♀, Mt. Missim, [7°13'S, 146°49'E], 1800 m, 20.VII.1969, leg. J. L. Gressitt & Y. Hirashima, BPBM; ♂, 2♀♀, Morobe Prov., Wau, W.E.I., 22.V + 25.V.1982, leg. P. Grootaert, IRSNB; ♂, ♀, Brahman Miss. (St. 017), 5.+6.V.1988, leg. J. van Stalle, IRSNB; ♂, Madang Prov., Bundi [5°43'S, 145°13'E], 8.V.–10.V.1988, leg. J. van Stalle, IRSNB.

Differential diagnosis.—*L. sagittatus* has, together with *L. signatus* and *L. karwinkeli*, pulvilli of the hind tarsi bearing apical teeth. Bifurcation of the frontal costa into facial carinae is close to the transverse carinae of the vertex. In *L. signatus*, the median carina is bent to the tip of the pronotum while in *L. sagittatus* and *L. karwinkeli* the median carina rises again in the prozona. In contrast to *L.*

karwinkeli, the median carina of *L. sagittatus* is flat or weakly wavy. In frontal view, there is a right angle between lateral and transverse carina in *L. karwinkeli*, while in *L. sagittatus* the angle is rounded.

Notes.—Günther (1937) retransferred this species to *Euparatettix*, with the note "although certainly related to *Lamellitettigodes*". Günther wrote in 1939 (translation): "I tend to think that the real affinity [of *Lamellitettigodes*] at least to *Euparatettix sagittatus* Bol. exists; but this species represents a true *Paratettix* or *Euparatettix*, and is to be left in these genera." *L. sagittatus* corresponds much better to the genus characteristics of *Lamellitettigodes* than those of *Euparatettix* or *Paratettix*. The carinae are clearly keeled. The prozonal carinae are the same as in *L. contractus*, and the tip of the fastigium is clearly protuberant in lateral view. I have examined the HT of *Euparatettix pulvillus* and agree with the synonymization by Günther (1937). I have not examined the type of *Tetrix polypictus* and was not able to check the synonymization by Günther (1937).

Specimens of *L. sagittatus* have variable size and coloration. Specimens from New Guinea have in frontal view less flattened fastigium than specimens from other regions. However, they belong to *L. sagittatus* because all other characteristics are the same.

Measurements.—(in mm) HT: Pronotum length 11.05; pronotum lobe width 3.00; pronotum height 2.07; vertex width 0.43; eye width 0.50; tegmen length 1.50; hind wing length 11.18; postfemur length 5.20; postfemur width 1.65.

E. pulvillus HT: Pronotum length 12.22; pronotum lobe width 3.19; pronotum height 3.37; vertex width 0.56; eye width 0.56; tegmen length 1.59; hind wing length 12.35; postfemur length 5.60; postfemur width 1.80.

Distribution.—The species inhabits Vietnam, Thailand, peninsular Malaysia, Sumatra and adjacent islands (Enggano, Mentawai), Java, Borneo, the Philippines, Moluccas Isl. (= whole Southeast Asia after Günther 1938), New Guinea (with adjacent islands Aru, Waigeo), and Timor (Günther 1937).

***Lamellitettigodes signatus* (Bolívar, 1887), comb. nov.**

Plates 1C, 3K, 5S

Tettix signatus Bolívar, 1887: 268.

Acrydium signatum: Kirby 1910: 45.

Tetrix signatus: Bruner 1915: 54; Blackith 1992: 185; Paris 1994: 249; Otte, 1997: 131.

Tetrix signata: Steinmann 1970a: 233; Yin et al. 1996: 920.

Type material.—HT (designated as LT by Mercedes Paris 1994) *Lamellitettigodes signatus*: ♀, Philippines, [Prov. Eastern Samar], Dolores, MNCN (Cat. Tipos No 123), original label from Bolívar "T. signatus Bol." and label "Lectotipo" from Mercedes Paris.

Additional material examined.—Indonesia: ♀, Indonesia, Ins. Buru, leg. H. Kühne, NMW.

Differential diagnosis.—*L. signatus* is unique in having median carina extended in a small flattened arch to the frontal margin of pronotum. Other characters are the shorter pronotum and hind wings, but possibly in other species there are specimens with shortened pronotum and hind wings that have not been found yet.

Measurements.—(in mm) HT: Pronotum length 10.89; pronotum lobe width 3.00; pronotum height 2.54; vertex width 0.66; eye

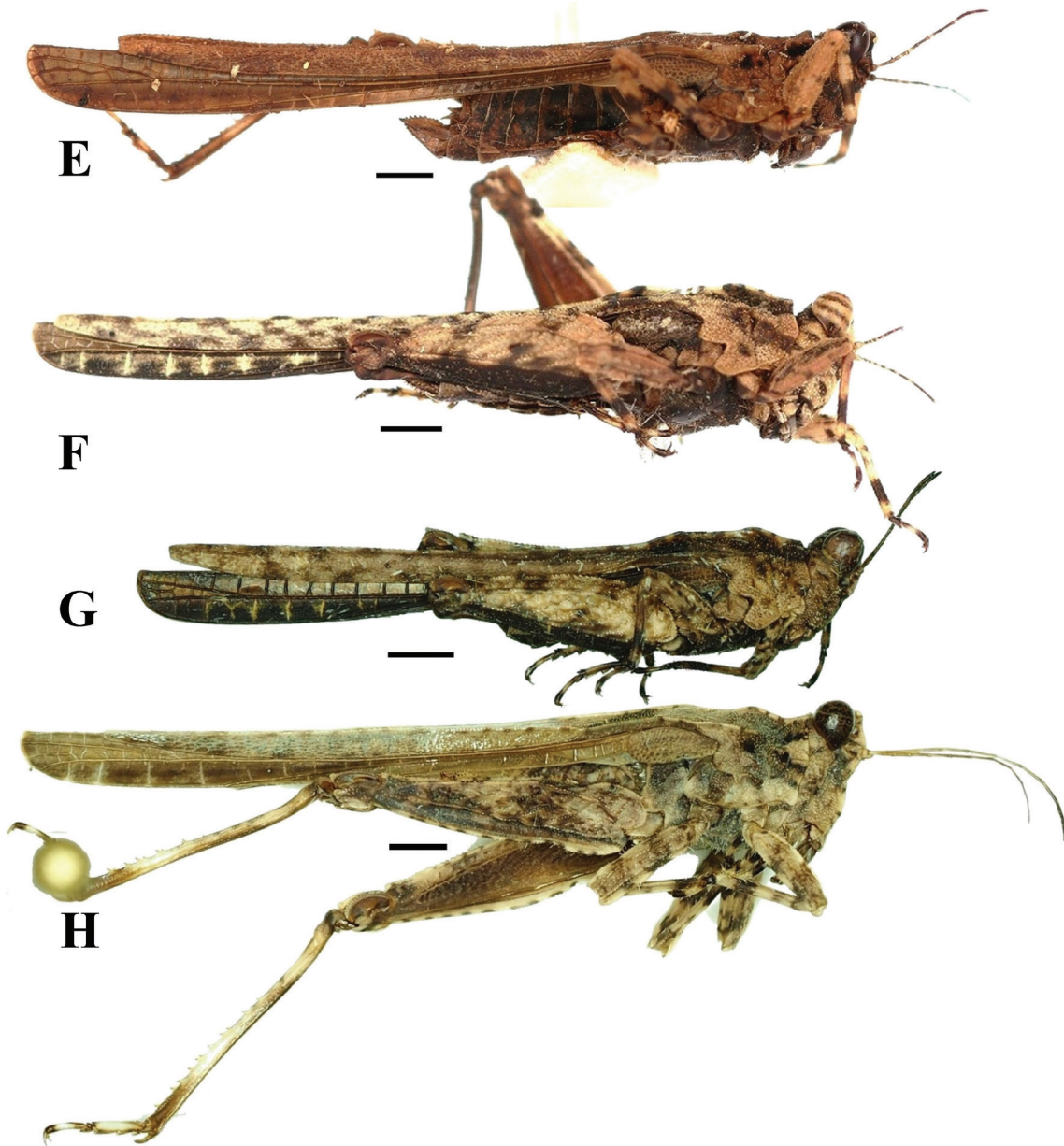


Plate 2. E–H (lateral view). E. *Lamellitettigodes palawanicus* (SMTD), ♀; F. *Lamellitettigodes novaeguineae*, ♀ HT; G. *Lamellitettigodes novaeguineae*, ♂ PT 9/12; H. *Lamellitettigodes karwinkeli*, ♀ HT. Scale bars: 1 mm.

width 0.55; tegmen length 1.54; hind wing length 9.94; postfemur length 6.69; postfemur width 1.95.

Distribution.—Known from the locus typicus (Dolores, Philippines) and from Buru (Maluka, Indonesia).

I identified one ♀ from Thailand (Khon Kaen, Nam Nao National Park, 24.V.1988, leg. S. Ingrisich, CJT) as *Lamellitettigodes* cf. *signatus*, but further investigations are needed to confirm this identification.

Lamellitettigodes cultratus (Bolívar, 1898), comb. nov.
Plates 1D, 3L, 5T

Paratettix cultratus Bolívar, 1898: 188, 77–78; Hancock 1907: 56; Kirby 1910: 33; Günther 1936: 349; Günther 1938: 3, 41; Steinmann 1970b: 162; Paris 1994: 236; Yin et al. 1996: 895.

Euparatettix cultratus: Blackith 1992: 63.

Type material.—HT *Lamellitettigodes cultratus*: ♀, [Indonesia, West-Papua], Andai [0°55'S, 134°01'E], VIII.1872, leg. L. M. D'Albertis, MSNG.

Additional material examined.—Indonesia: West Papua, Biak NE, 10 km N Bosnik, prim. Urwald, 10.II.1998, leg. A. Weigel, NMEG; ♀, Biak, Kampong, Landbouw, 40 m, 25.–28.V.1958, leg. J. L. Gressitt & T. C. Maa, ZFMK; ♀, Biak, Mangrowawa, 50–100 m, 29.V.1959, leg. T. C. Maa, CJT; ♂, ♀, West Papua, Star Range, Sibil (op licht), [4°45'S, 140°40'E], 1260 m, 16.V.1959, Neth. New Guinea Exp. 1959, RMNH; ♀, West Papua, Nabire, S. Geelvink Bay, [3°22'S, 135°28'E], 0–30 m, 2.–9.VII.1962, leg. J. L. Gressitt, CJT; 2♂♂, ♀, West Papua, Nabire, S. Geelvink Bay, [3°22'S, 135°28'E], 10–40 m, 10.X.1962, light trap, leg. N. Wilson, CJT; ♂, ♀, West Papua, Nabire, jungle along stream, 5–50 m, 25.VIII.–2.IX.1962, leg. H. Holtmann, BPBM; ♀, West Papua, Bodem, [1°58'S, 138°44'E], 10.–17.VII.1959, leg. T. C. Maa, BPBM; ♀, West Papua, Bodem, 11

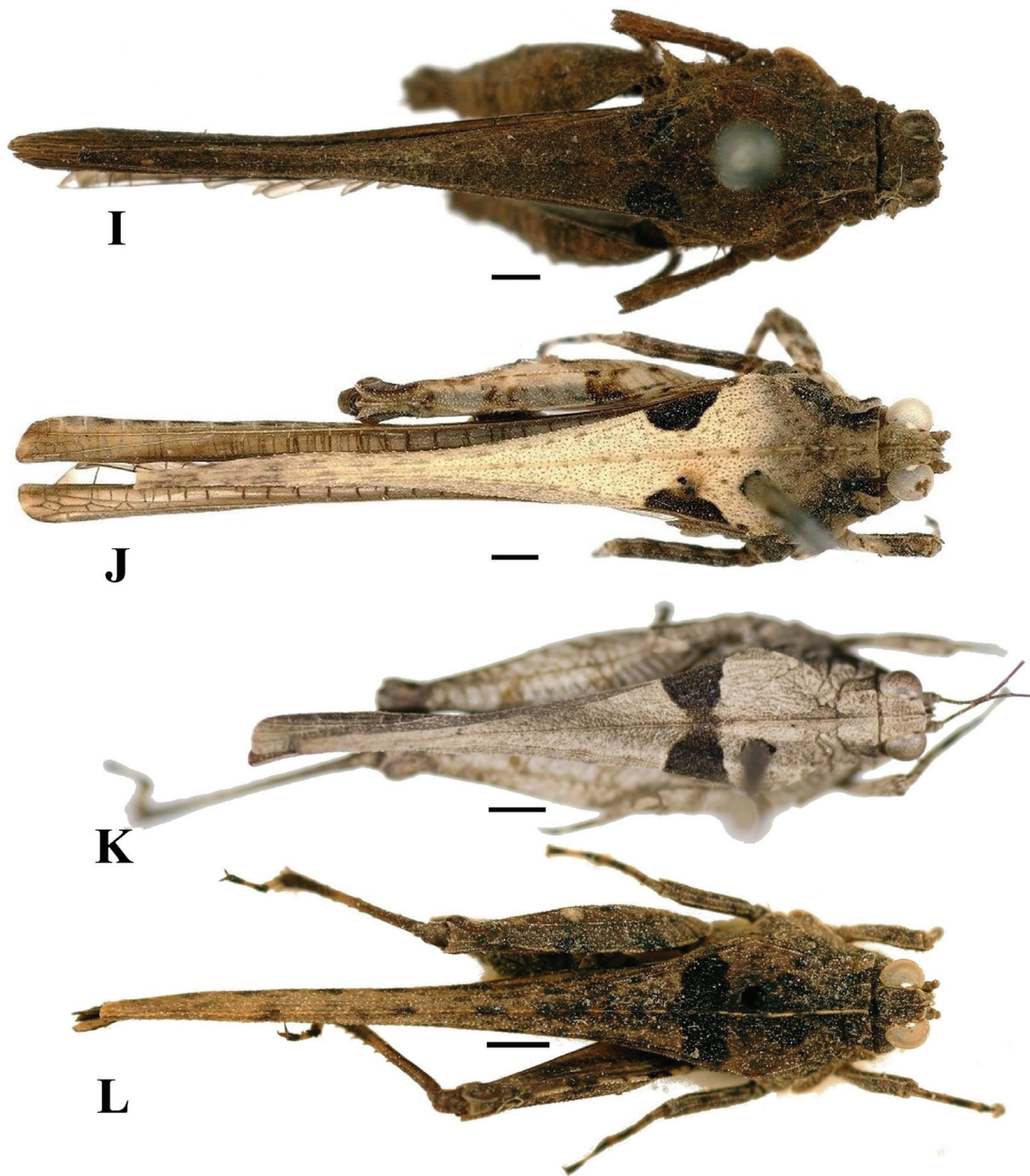


Plate 3. I–L (dorsal view). I. *Lamellitettigodes contractus*, ♀ HT; **J.** *Lamellitettigodes sagittatus*, ♀ HT; **K.** *Lamellitettigodes signatus*, ♀ HT; **L.** *Lamellitettigodes cultratus*, ♀ HT. Scale bars: 1 mm.

km SE of Oerberfaren, [1°58'S, 138°44'E], 100 m, 7.–17.VII.1959, M. V. light trap, leg. T. C. Maa, CJT; ♂, West Papua, Vogelkop, Manokwari, [0°52'S, 134°05'E], 75 m, 11.VIII.1957, leg. H. D. Elmo, CJT; ♂, West Papua, River Tor (mouth), 4 km E of Hol Maffen, [1°59'S, 138°58'E], 19.VII.1959, leg. T. C. Maa, CDS; ♂, West Papua, Cyclops Mountains, Jayapura, Sentani, [2°36'S, 140°37'E], 100 m, 15.VI.1959, leg. J. L. Gressitt, BPBM; ♀, West Papua, Waris, S of Hollandia, [3°11'S, 140°53'E], 400–450 m, 1.–7.VIII.1959, leg. T. C. Maa, CJT. Papua New Guinea: ♀, Gulf Prov., Lakekamu Basin, Ivimka Res. Station, 120 m, 7°44'S, 146°30'E, 18.IV.2000, leg. T. A. Sears, CJT; 2♀♀, [Central Prov.], Kokoda, [8°39'S, 147°15'E], 1200 ft, VIII.1933, leg. L.E. Cheesman, BMNH & SMTD; 2♀♀, [Central Prov.], Kokoda, [8°39'S, 147°15'E], 1200 ft, VIII.1933, leg. L.E. Cheesman, BMNH; ♂, Orrori, 3500 ft, VII.1933, leg. L. E. Cheesman, BMNH; ♂larve, ♀larve, [Northern Prov.], Kokoda-Pitoki, 400 m, [8°55'S, 147°44'E], 23.III.1956, leg. J. L. Gressitt,

BPBM; ♀ larve, [Northern Prov.], Kokoda-Pitoki, 450 m, [8°55'S, 147°44'E], 24.III.1956, leg. J. L. Gressitt, CJT; ♀, [Morobe Prov.], Garaina, [7°53'S, 147°08'E], 830 m, 13.–15.I.1968, leg. J. & M. Sedlacek, BPBM; ♀, [Morobe Prov.], Garaina, [7°53'S, 147°08'E], 550–750 m, 16.I.1968, leg. J. & M. Sedlacek, BPBM; ♀, [Western Prov.], Fly River, Olsobip, [5°23'S, 141°32'E], 700–1150 m, leg. J. & M. Sedlacek, CJT; 2♀♀, [Western Highlands Prov.], Upper Jimmi Valley, Wum, [5°34'S, 144°35'E], 840 m, 18.VII.1955, leg. J. L. Gressitt, MNSL & BPBM; ♂, [Chimbu Prov.], Karimui, South of Goroka, [6°30'S, 144°51'E], 1000 m, 2.VI.1961, leg. J. L. & M. Gressitt, ZFMK;

♀ larve, New Britain, Karavat (+ 20 km), sous de vieilles souches, 300 m, 18.VII.1979, leg. J. D. Bourne, MHNG; ♂, New Britain, Gazelle Pen., Upper Warangoi, 350–600 m, 28.–29.XI.1962, leg. J. Sedlacek, CJT; ♀ larve, New Ireland, Danu, Kalili Bay, 30.IV.1962, leg. Noona Dan Expedition 61–62, ZMUC.

Differential diagnosis.—*L. cultratus* is unique in having highly lamellate and arcuate median carina above the shoulders. This character is already visible in nymphal stages. Additional unique characters are the short and strongly converging prozonal carinae and short antennae (1.3 times longer than fore femur).

Measurements.—(in mm) Pronotum length HT 12.09; pronotum lobe width 2.90; pronotum height HT 2.15; vertex width HT 0.54; eye width HT 0.47; tegmen length HT 1.50; hind wing length HT 11.18; postfemur length HT 4.70; postfemur width HT 1.45.

Distribution.—The species inhabits New Guinea, Biak, and the Bismarck Archipelago – New Britain and New Ireland.

***Lamellitettigodes palawanicus* Günther, 1939, stat. nov.**

Plates 2E, 4M, 5U

Lamellitettigodes contractus palawanicus Günther, 1939: 79–80.

Type material.—LT *Lamellitettigodes palawanicus* (here designated): ♀, Philippines, N. Palawan, Binaluan, XI–XII.1913, leg. G. Boettcher, SDEI.

PLTs *Lamellitettigodes palawanicus* (here designated): 11♂♂, 7♀♀, Philippines, N. Palawan, Binaluan, XI–XII.1913, leg. G. Boettcher, SDEI.

Note: Günther refers to 4♂♂, 15♀♀ as STs.

Additional material examined.—2♀♀, Philippines, N. Palawan, Binaluan, XI–XII.1913, leg. G. Boettcher, SMTD.

Differential diagnosis.—*L. palawanicus* has almost parallel prozonal carinae that are slightly bent backwards. The distance between upper margin of superior ocelli and frontal margin of the fastigium, in frontal view, is significantly larger than the diameter of ocellus. The species is similar to *L. contractus*. *L. palawanicus* can be separated from the similar species by the tip of fastigium and frontal costa that are distinctly protuberant in front of the eyes and by fastigial horns that are clearly visible above the eyes.

Measurements.—(in mm) ♀, Philippines, Binaluan (SMTD): Pronotum length 11.96; pronotum lobe width 3.4; pronotum height 1.90; vertex width 0.50; eye width 0.45; tegmen length 1.60; hind wing length 12.74; postfemur length 6.50; postfemur width 1.95.

Distribution.—The species is hitherto known only from Palawan (Binaluan), the Philippines.

***Lamellitettigodes novaeguineae* sp. nov.**

<http://zoobank.org/DF0F6588-4DC4-477B-9E4E-F7DC8DD56A76>

Plates 2F, G, 4N, O, 5V, W

Material examined.—HT *Lamellitettigodes novaeguineae*: ♀, Papua New Guinea, Gulf Prov., Lakekamu Basin, Ivimka Res. Station (Malaise Trap), 7°44'S, 146°30'E, 120 m, 4.–6.III.2000, leg. T. A. Sears, BMEC.

Type material.—PTs *Lamellitettigodes novaeguineae*: ♂, ♀ (1/12+2/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, (M[alaise]T[rap]), 7°44'S, 146°30'E, 120 m, 4.–6.III.2000, leg. T. A. Sears, BMEC (deposited in ZFMK); 3♀♀ (3/12–5/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, 7°44'S, 146°30'E, 120 m, 5.III.2000, leg. T. A. Sears, BMEC; ♀

(6/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, (M[alaise]T[rap]), 7°44'S, 146°30'E, 120 m, 19.–23.IV.2000, leg. T. A. Sears, BMEC (deposited in BMNH); ♀ (7/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, 7°44'S, 146°30'E, 120 m, 15.–20.IV.2000, leg. T. A. Sears, BMEC (deposited in ZMHU); ♀ (8/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, (M[alaise]T[rap]), 7°44'S, 146°30'E, 120 m, 18.IV.2000, leg. T. A. Sears, BMEC (deposited in RMNH); ♂ (9/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, 7°44'S, 146°30'E, 120 m, 18.IV.2000, leg. T. A. Sears & binatung brigade, BMEC (deposited in RMNH); ♂ (10/12), Papua New Guinea, Gulf [Prov.], Lakekamu Basin, Ivimka Res. Station, (M[alaise]T[rap]), 7°44'S, 146°30'E, 120 m, 26.III.2000, leg. T. A. Sears & binatung brigade, BMEC; 2♀♀ (11/12+12/12), Papua New Guinea, Fly River, Kiunga, 35 m, VIII.1969, leg. J. & M. Sedlacek, BPBM.

Diagnosis.—The species is easily recognizable by the raised median carina with broad depression between the shoulders. This depression clearly distinguishes it from *L. cultratus*. It is also slightly raised in Chinese *L. karwinkeli* but does not reach the same height and is not lamellated. As a further feature, the fastigium tip is only slightly visible in front of the eyes.

Description.—Body of moderate size and slender. Head and pronotum smooth. Head and eye in lateral view weakly elevated above the pronotal discus. Dorsal margin of antennal groove slightly above the ventral margin of eye. Eyes small and in lateral view blunt and indistinctly conoidal. Antenna filiform, 14-segmented in male (including scapus and pedicel), while 15-segmented in female, 1.5–2.0 times longer than fore femur. Fastigium of vertex in dorsal view slightly wider than one eye. Fastigium in frontal view between the eyes slightly depressed. Fastigium in dorsal view with well-developed medial and lateral carinae and fossulae. Lateral carina clearly elevated, but in lateral view as high as the dorsal margin of eyes, short, not converging towards the front, bending over at nearly right angles to the medial carina. Transverse carina in dorsal view straight. Frontal costa and facial carina in lateral view minimally visible in front of eye. Tip of fastigium and frontal costa in lateral view slightly, but still clearly, protuberant. Bifurcation of frontal costa into facial carinae between dorsal margin of lateral ocelli and transverse carina, close to transverse carina by less than one diameter of ocellus. Facial carinae in lateral view clearly concave in front of eye and slightly convex in front of antenna. Last segments of maxillary palp not widened. Anterior margin of the pronotum truncated. Pronotum slightly widened between shoulders. Clearly keeled prozonal carinae converging backwards. Median carina distinctly lamellate from anterior margin of the pronotum to the end of tegmen, with a broad depression between shoulders. Interhumeral carinae absent. Internal lateral carinae weak. Pronotum behind shoulders weakly depressed on both sides of median carina, with large black spots like a broad black band (posthumeral). Lateral lobes broadly rounded, more or less close to body. Tegmen almost as long as the fore femur, rather broad, at the end broadly rounded. Macropterous and macropnotal. Alae clearly exceed the pronotum apex. Fore and middle femora short and widened, with wavy margins. Hind femora with very small antegenicular and especially genicular teeth and with some sharply tuberculated raised lobes on the middle outer surface. Posterior tibia distally not or weakly widened, with a few small spines on upper edges. First segment of the hind tarsus not longer than third segment. Pulvilli acute.

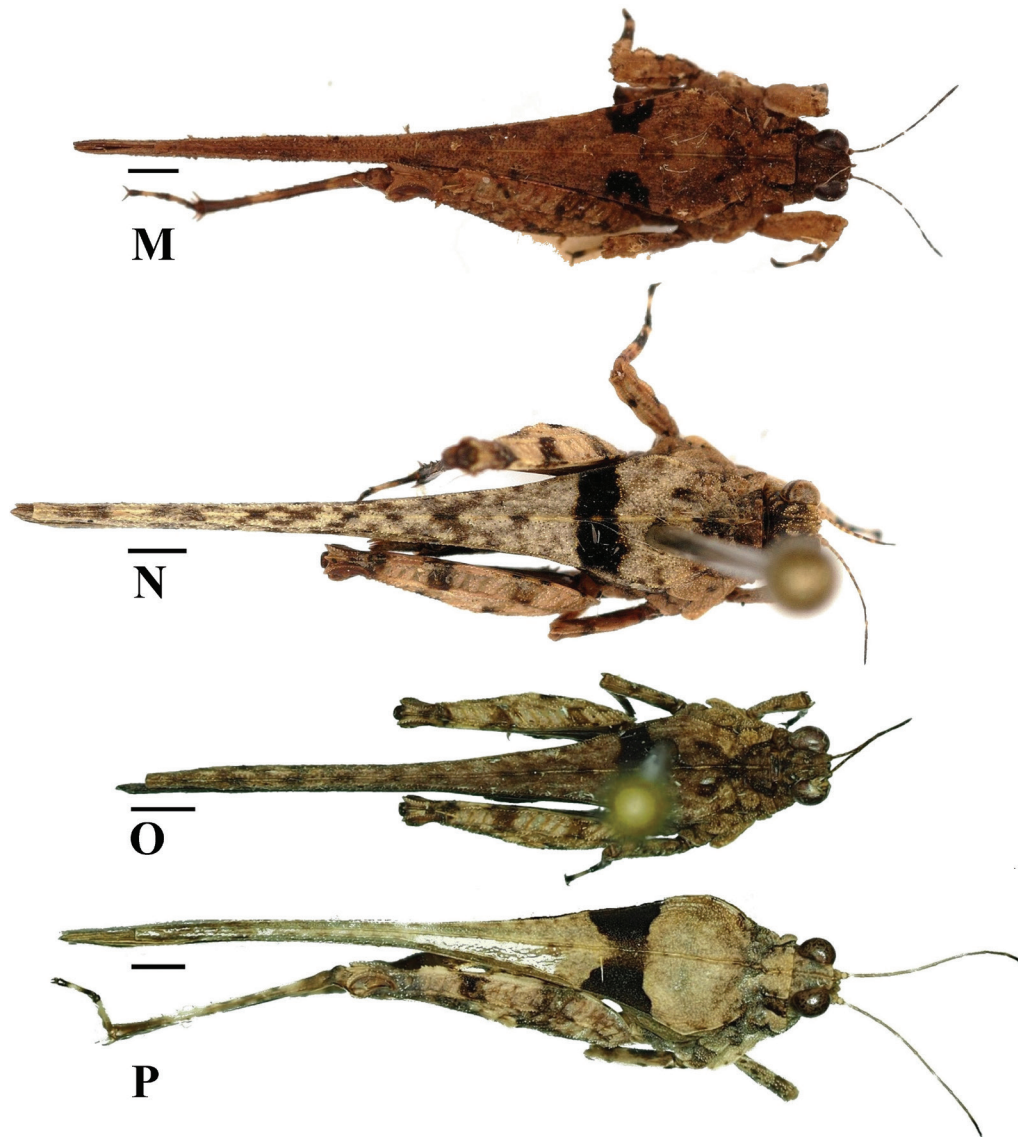


Plate 4. M–P (dorsal view). M. *Lamellitettigodes palawanicus* (SMTD), ♀; N. *Lamellitettigodes novaeguineae*, ♀ HT; O. *Lamellitettigodes novaeguineae*, ♂ PT 9/12; P. *Lamellitettigodes karwinkeli*, ♀ HT. Scale bars: 1 mm.

Measurements.—(in mm) HT: Pronotum length 12.87; pronotum lobe width 3.10; pronotum height 1.85; vertex width 0.52; eye width 0.45; tegmen length 1.50; hind wing length 10.79; postfemur length 4.68; postfemur width 1.45.

3 PT♂♂: Pronotum length 9.88–10.40, average 10.18; pronotum lobe width 2.35–2.45, average 2.40; pronotum height 1.3–1.55, average 1.42; vertex width 0.43–0.43, average 0.43; eye width 0.39–0.43, average 0.41; tegmen length 1.20–1.25, average 1.23; hind wing length 8.97–9.75, average 9.45; postfemur length 4.00–4.10, average 4.05; postfemur width 1.15–1.20, average 1.16.

9 PT♀♀+HT: Pronotum length 10.27–12.74, average 11.62; pronotum lobe width 2.75–3.10, average 2.96; pronotum height 1.65–1.90, average 1.82; vertex width 0.43–0.52, average 0.49; eye width 0.41–0.45, average 0.43; tegmen length 1.30–1.65, average 1.51; hind wing length 9.36–11.96, average 10.88; postfemur length 4.30–4.75, average 4.55; postfemur width 1.30–1.50, average 1.38.

Pictures of HT and PT are available in higher resolution in OSF (Cigliano et al. 2019).

Distribution.—The species is only known from lowlands in the South of New Guinea (surroundings of Fly River and Lakekamu River).

Etymology.—The species is named after the island of New Guinea (*Nova Guinea*) where it is an endemic species of the genus *Lamellitettigodes*. The specific epitheton is made of two words, adjective and noun of the first (A) Latin declension, both in Genitive case (*Novae Guineae* = *novaeguineae*).

Lamellitettigodes karwinkeli sp. nov.

<http://zoobank.org/85026102-A4E2-412C-9310-A8432766EED2>
Plates 2H, 4P, 5X

Material examined.—HT *Lamellitettigodes karwinkeli*: ♀, China, S-Yunnan, Xishuangbanna, 23 km NW Jinghong, vic. NA Ban Village (NNNR), 22° 10'N, 100° 39'E, 700–1000 m, V.–VII.2009 (di-verse traps), leg. L. Meng, NMNG.

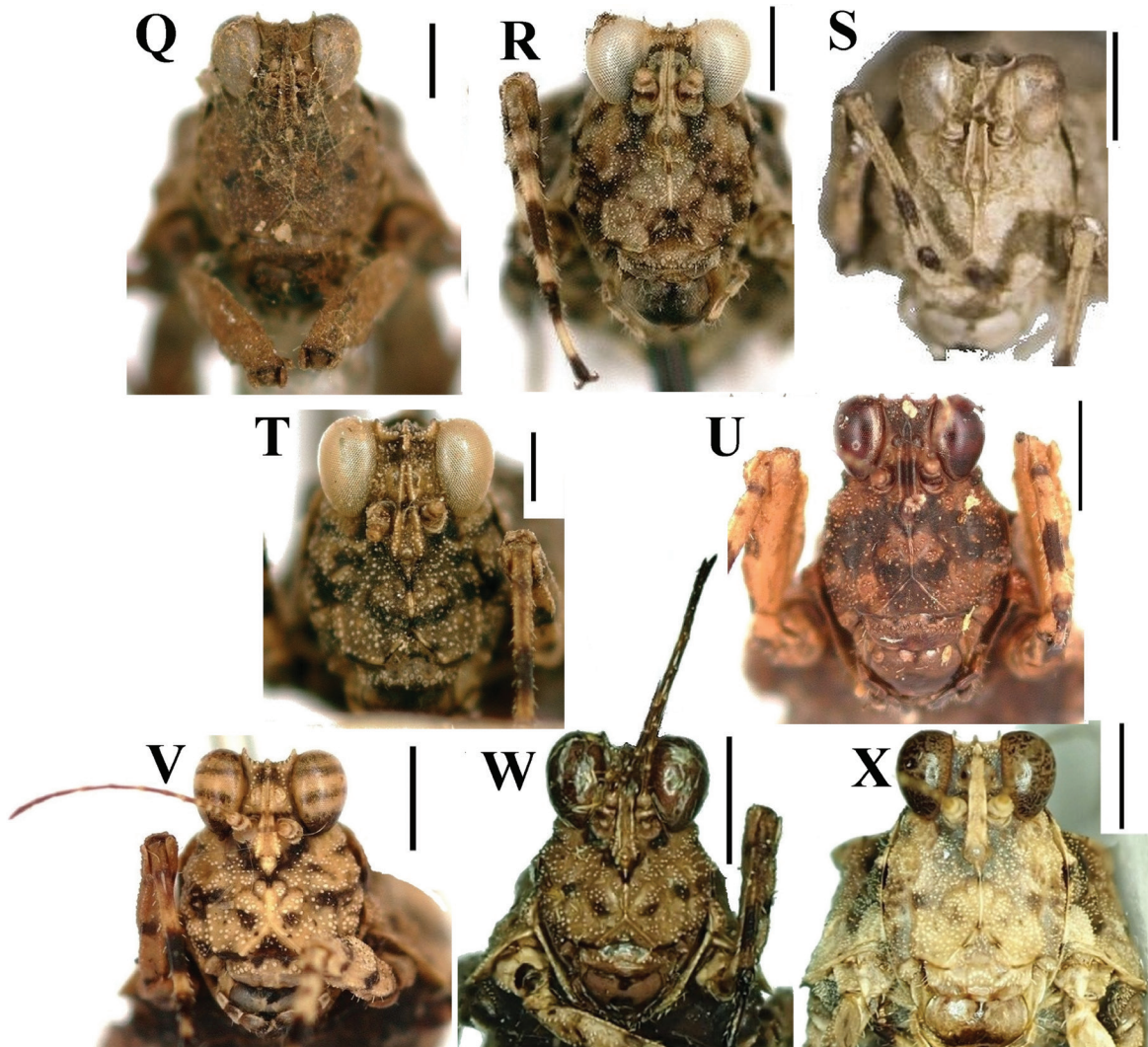


Plate 5. Q–X (frontal view). Q. *Lamellitettigodes contractus*, ♀ HT; R. *Lamellitettigodes sagittatus*, ♀ HT; S. *Lamellitettigodes signatus*, ♀ HT; T. *Lamellitettigodes cultratus*, ♀ HT; U. *Lamellitettigodes palawanicus* (SMTD), ♀; V. *Lamellitettigodes novaeguineae*, ♀ HT; W. *Lamellitettigodes novaeguineae*, ♂ PT 9/12; X. *Lamellitettigodes karwinkeli*, ♀ HT. Scale bars: 1 mm.

Diagnosis.—*L. karwinkeli*, together with *L. sagittatus* and *L. signatus* species, has pulvilli with apical teeth. Together with *L. sagittatus* it is a species with long and slender antennae (more than 2 times longer than fore femur. It differs from *L. sagittatus* by the higher pronotum with a broad depression between the shoulders and morphology of fastigium; in frontal view the ventral margin of transverse carina form a right angle with the lateral carina in *L. karwinkeli*, while it is rounded in *L. sagittatus*.

Description.—Body long and slender. Head and pronotum smooth. Head and eye in lateral view clearly elevated above pronotal discus. Dorsal margin of antennal groove between eyes, slightly above ventral margin of eye. Eyes small and in lateral view blunt and indistinctly conoidal. Antenna (4.5 mm) filiform with long and slender segments, 15-segmented in female (including scapus and pedicel), 2.4 times longer than fore femur. Fastigium of vertex in dorsal view smaller than width of one eye. Fastigium in frontal view between the eyes depressed. Ventral margin of transverse carina forming with lateral carina square (right angle). Fastigium in dorsal view with well-developed medial and lateral carinae and fossulae. Lateral carina clearly elevated, but in lateral view as high as the dorsal

margin of eye, short and not converging towards front, bending over at right angles to the medial carina. Transverse carina in dorsal view slightly convex. Frontal costa and facial carina in lateral view clearly visible in front of eye. Tip of fastigium and frontal costa in lateral view distinctly protuberant. Bifurcation of frontal costa into facial carinae close to transverse carina. Facial carinae in lateral view clearly concave in front of eye and slightly convex in front of antenna. Last segments of maxillary palp not widened. Anterior margin of pronotum truncated. Pronotum expanded between shoulders. Clearly keeled prozonal carinae slightly converging backwards. Median carina from the anterior margin of the pronotum to the level of the end of tegmen distinctly keeled, with two flattened elevations before and behind shoulders. Interhumeral carinae absent. Internal lateral carinae weak. Pronotum behind shoulders weakly depressed on both sides of median carina with black spots (posthumeral spots) forming broad black band. Lateral lobes broadly rounded, more or less close to body. Tegmen slightly shorter than fore femora, slender, at the end broadly rounded. Macropterous and macropronotal. Alae clearly exceed the pronotum apex. Fore and middle femora slender, with slightly undulated margins. Hind femora with very small antegenicular and especially genicular teeth, with some

sharply tuberculate raised lobes on the middle outer surface. Posterior tibia distally not or weakly widened, with a few small spines on upper edges. First segment of the hind tarsus not longer than the third segment of tarsus. Pulvilli distinctly acute with apical teeth.

Measurements.—(in mm) HT: Pronotum length 15.05; pronotum lobe width 3.50; pronotum height 2.15; vertex width 0.47; eye width 0.56; tegmen length 1.65; hind wing length 12.61; postfemur length 6.11; postfemur width 1.43.

Pictures of HT are available in higher resolution in OSF (Cigliano et al. 2019).

Distribution.—The species is only known from the type locality near Xishuangbanna (Yunnan, PR China).

Note: I cannot find any other species of *Lamellitettigodes* from PR China. There are likely to be further species from PR China that should be assigned to *Lamellitettigodes*, but since there are only drawings and only a few photographs, such work remains for future revisions.

Etymology.—This species is dedicated to Fabian Karwinkel, a great ornithologist and a committed young conservationist from Northrhine-Westphalia. The specific epitheton is second (US) declension Genitive case of the Fabian's Latinized version of the surname (*Karwinkelus* = *karwinkelii*).

Probolotettix Günther, 1939

Probolotettix kevani Blackith & Blackith, 1987, **syn. nov.**

Probolotettix kevani: Blackith and Blackith 1987: 5–8; Blackith 1990: 89–90; Blackith 1992: 146; Yin et al. 1996: 902; Otte 1997: 57.

Type material.—HT *Probolotettix kevani*: ♂, Indonesia, Sulawesi Tengah, Ramu Camp, Kolonodale area, 5.II.1980, leg. P. G. Kevan, LEMQ.

PTs *Probolotettix kevani*: ♂, Indonesia, Sulawesi, Minehassa Prov., Dumoga-Bone National Park, I.–III.1985, leg. R. & R. Blackith, BMNH, NHMUK10924442; 3♂♂, 2♀♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, leg. Blackith, NMI, MZB, MNHNP (not seen); ♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, VII.1985, leg. Butlin, NHMUK10924441; ♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, 17.V.–16.VII.1985, leg. Butlin, LEMQ; ♂, ♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, 17.V.–16.VII.1985, leg. Butlin, BMNH, NMI (not seen); ♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, at light, 19.VII.1985, leg. Butlin, RNMH (not seen, probably lost); ♀, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, 6.VII.1985, leg. Kirk-Spriggs, BMNH.

The HT is a typical *E. personatus* (elevated head, short prozona, hind tibia with a bright light ring). Therefore, I synonymize *Probolotettix kevani* with *E. personatus*. The description and the drawing of the PT in Blackith and Blackith (1987) refer to a typical *Lamellitettigodes sagittatus* and I was able to examine three PTs in BMNH and one paratype in LEMQ: there is no doubt that they are *L. sagittatus* and do not belong to a new species or to *Euparatettix personatus*.

Scelimena Serville, 1838

Scelimena novaeguineae (Bolívar, 1898)

Notes.—I published a wrong specimen as LT (Tumbrinck 2018). The male from IRSNB is a PLT. The correct LT is the following specimen: ♂, Indonesia, New Guinea, Haveri [9° 22'S, 147° 32'E], leg. Loria, vii–xi.1893. It is one specimen of a series of 43 specimens from Haveri. The other 42 are PLT.

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