

## Study of Gryllacridinae (Orthoptera: Stenopelmatidae) from Thailand and adjacent countries: the genera *Diaphanogryllacris* and *Gryllacris*

## Изучение Gryllacridinae (Orthoptera: Stenopelmatidae) из Таиланда и сопредельных стран: роды *Diaphanogryllacris* и *Gryllacris*

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A new material on the genera *Diaphanogryllacris* Karny, 1937 and *Gryllacris* Audinet-Serville, 1831 from Thailand and Laos is considered. Seven new species and subspecies are described: *D. adunca* sp. nov.; *D. orlovi* sp. nov.; *D. panitvongi* sp. nov.; *D. p. boulapa* subsp. nov.; *D. laeta makbuni* subsp. nov.; *G. thailandi facemarmiger* subsp. nov.; *G. longiloba* sp. nov.

Рассмотрен новый материал по родам *Diaphanogryllacris* Карны, 1937 и *Gryllacris* Аудинет-Сервилле, 1831 из Таиланда и Лаоса. Описаны семь новых видов и подвигов: *D. adunca* sp. nov.; *D. orlovi* sp. nov.; *D. panitvongi* sp. nov.; *D. p. boulapa* subsp. nov.; *D. laeta makbuni* subsp. nov.; *G. thailandi facemarmiger* subsp. nov.; *G. longiloba* sp. nov.

**Key words:** gryllacridines, taxonomy, Thailand, Laos, Orthoptera, Stenopelmatidae, Gryllacridinae, *Diaphanogryllacris*, *Gryllacris*, new taxa

**Ключевые слова:** древесные лжекузнечики, таксономия, Таиланд, Лаос, Orthoptera, Stenopelmatidae, Gryllacridinae, *Diaphanogryllacris*, *Gryllacris*, новые таксоны

### INTRODUCTION

This publication is the second paper in the series of papers prepared on the base of study of a new material on the subfamily Gryllacridinae from Thailand and some nearest countries. In the previous paper of this series (Gorochov et al., 2015), the genera *Ultragryllacris* Gorochov et Dawwrueng, 2015 and *Capnogryllacris* Karny, 1937 from Thailand, Laos and Cambodia were considered, and five new taxa from these genera were described. The present paper has a deal with the genera *Diaphanogryllacris* Karny, 1937 and *Gryllacris* Audinet-

Serville, 1831 from Thailand and Laos. The material on these genera is deposited in the following collections: Zoological Institute, Russian Academy of Sciences, St Petersburg (ZIN); Thailand Natural History Museum, Pathum Thani (THNHM).

### TAXONOMY

Genus *Diaphanogryllacris* Karny, 1937

The diagnostic characters of this genus were revised by Gorochov & Woznessenskij (2000) on the base of mainly Vietnamese and Chinese representatives with additions of some species from Java, Sumatra and Malacca. This work showed that *Diapha-*

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*nogryllacris* is distinctly characterized by the following features of male: 9th abdominal tergite is large and cup-like, with a pair of spine-like hooks on its lower part; these hooks are directed more or less downwards, situated rather far from each other, and having a widened (plate-like) base partly fused with this tergite; 10th abdominal tergite with a pair of more or less similar but often short hooks directed upwards and situated very near each other; genitalia are with a very characteristic long and thin sclerotized virga having a widened base and located inside a special membranous or partly membranous sac in the rest position. Majority of *Diaphanogryllacris* representatives have also more or less similar colouration and shape of body (Figs 1–3, 12–14, 25–39, 63), but their wings are varied in length (from very long to significantly shortened). Females of this genus may be identified by the presence of a large membranous area between the 7th abdominal sternite and the distal half of genital plate as well as development of diverse specializations on the above-mentioned sternite (partial membranization of this sternite, development of a process, tubercle or soft lobe with hairs on its posterior part, etc.).

This genus is undivided into subgenera, but consists of two groups of species: one group is similar to *D. translucens* Audinet-Serville, 1838 (type species of this genus from Java), having hooks on the male paraprocts, and distributed in Malacca and Greater Sunda Islands; and another (more numerous) group is lacking such hooks and distributed in Indochina to the north from Malacca.

***Diaphanogryllacris adunca*** Gorochov et Dawwrueng, **sp. nov.**  
(Figs 1–9)

*Material. Holotype* – male; **Thailand**, Tarutao I. (Andaman Sea) near Malaysian part of Malacca, partly primary / partly secondary forest near sea, on branch of bush at night, 14–19.XI.2014, A. Gorochov, M. Berezin, E. Tkatsheva (ZIN). *Paratype* – male; same data as for holotype (ZIN).

*Description.* Male (holotype). General view similar to other congeners, but body rather small. Colouration light, yellowish with following marks: eyes blackish; dorsum of epicranium with brownish to brown transverse band between posterior parts of eyes; each gena with brown spot under eye (near it) and vertical brownish stripe from this spot to subgena; rostrum with a pair of vertical whitish lateral ocelli and very small reddish marks under them; median ocellus also vertical and whitish but larger than lateral ocelli, and with indistinct edges; clypeus with a pair of dark dots in dorsolateral corners (Figs 1, 2); pedicel and proximal part of antennal flagellum light brown with greyish tinge; rest of this flagellum greyish brown; pronotum with brown borders and characteristic dark brown to brown pattern on rest part (Figs 2, 3); legs with reddish tinge on distal half of hind femur, with reddish yellow all tibiae and tarsi, with blackish spines on hind femur, with dark brown middle part of movable spines on fore and middle tibiae (their proximal and distal parts yellowish) as well as distal halves of dorsal spines of hind tibia; wings with transparent membranes and greyish brown to yellowish grey venation; abdomen with brown distal halves of spines on 9th and 10th abdominal tergites (Figs 4, 6). Shape of head and pronotum as in Figs 1–3; legs with 5 pairs of long movable spines on ventral surface of fore and middle tibiae (apical parts of these spines in shape of very thin and rather long claws), with 7–8 short immovable (denticle-like) spines on each edge of dorsal surface of hind tibia, and with a pair of not long subapical movable spines on ventral surface of this tibia (except 3 pairs of not long and movable apical spurs); wings rather long, reaching apices of hind tibiae in rest position, with tegmina comparatively narrow, and with venation typical of this genus; 9th abdominal tergite with a pair of hooks and transverse fold near posteroventral edge similar to those of *D. pelucens* Gorochov et Woznessenskij, 2000 from Malacca (Thailand) and *D. translucens* Gorochov et Woznessenskij, 2000 from Malacca (Thailand) and *D. translucens* Gorochov et Woznessenskij, 2000 from Malacca (Thailand).



**Figs 1–24.** *Diaphanogryllacris* Karny: 1–9, *D. adunca* sp. nov.; 10, 11, *D. pellucens* Gor. et Wozn.; 12–20, *D. orlovi* sp. nov.; 21, *D. panitvongi* sp. nov.; 22, *D. bezborodovi* sp. nov.; 23, *D. laeta makhbuni* subsp. nov.; 24, *D. panitvongi boulapha* subsp. nov. Head in front (1, 12); head with pronotum from above (2, 13) and from side (3, 14); male abdominal apex from behind (4, 15), from below (5, 16) and from side (6, 17); virga-like sclerite of male genitalia with partly semisclerotized sac in rest position (7) and in erected position (8–11, dorsal and ventral views); same sclerite with completely membranous sac or without it (20–24); lower half of female abdominal apex without ovipositor from side (18) and from below (19).

*cens* (concavity between this fold and bases of hooks very narrow, slit-like; latter hooks straight, thin, rather long, directed downwards, and with wide and flattened bases hidden under above-mentioned fold); 10th abdominal tergite very short (in shape of transverse ribbon), with a pair of short and rather strong hooks located near one other and clearly curved upwards; epiproct also rather short, almost transversally triangular; each paraproct lobe-like, rather simple in shape but with distinct hook on its ventromedial part (hooks of both paraprocts directed more or less medially; Figs 4, 6); genital plate weakly transverse, with rather long styles and a pair of elongate lobules on posterior edge between them (Fig. 5); genitalia with virga-like sclerite moderately short and located inside partly membranous sac in rest position [this sac with semisclerotized area situated near base of this sclerite and folded in rest position; but in erected position (when latter sac turned inside out), semisclerotized area with a pair of short proximal lobes; Figs 7–9].

Variations. Second male with a pair of additional asymmetrical light brown spots above lateral ocelli, yellowish to light brown borders of pronotum, lighter (than in holotype) pattern on rest pronotal part, and darkish (greyish brown) marks on dorsal surface of fore and middle tibiae.

Female unknown.

Length (mm). Body 21–23; body with wings 32–36; pronotum 4.8–5.1; tegmen 24–28; hind femur 13–13.5.

*Comparison.* The new species is most similar to *D. pellucens* and *D. translucens* in the above-mentioned characters of male abdominal apex, but it is distinguished by the following features: from *D. pellucens*, by a smaller body size, somewhat more contrast colouration, shorter hooks of the 9th abdominal tergite in male (these hooks approximately twice as long as hooks of the 10th male abdominal tergite; in *D. pellucens*, this ratio is about 2.5), and the shape of a pair of proximal lobes in the male genital semisclerotized area near the virga-like

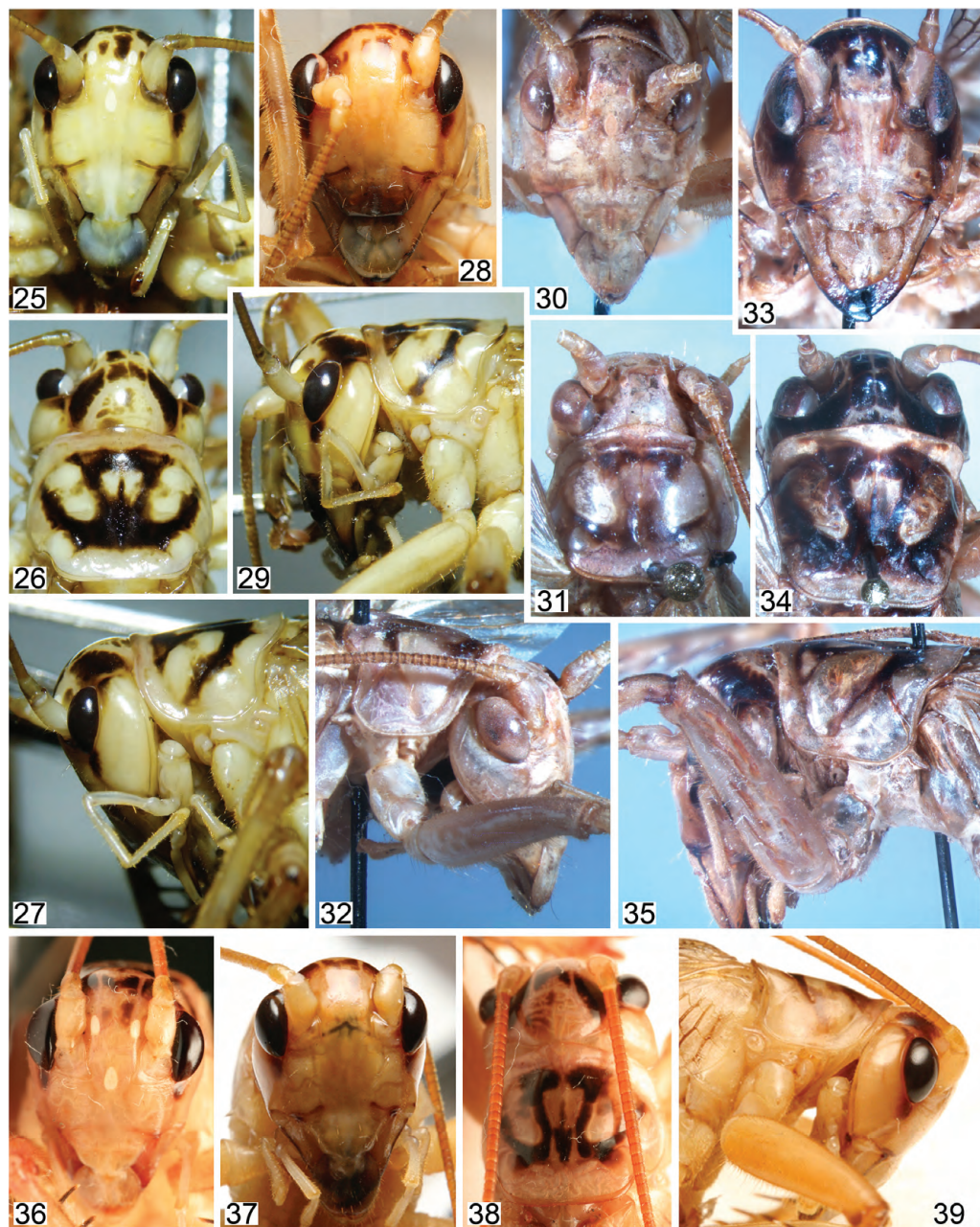
sclerite (for comparison see Figs 8, 9 and 10, 11); and from *D. translucens*, by longer hooks of the 9th male abdominal tergite (in *D. translucens*, these hooks almost 1.5 times as long as those of the 10th abdominal tergite) and distinctly larger proximal lobes of the male genital semisclerotized area. From all the other congeners, the new species differs in uniformly light tibiae in combination with the same features of male abdominal apex as in the both above-mentioned species (a slit-like concavity of the 9th abdominal tergite, characteristic shape of the hooks and genital plate lobules, and the presence of a semisclerotized area in the genitalia).

*Etymology.* This species name is the Latin word “adunca” (hooked) indicating the presence of hooks on the male paraprocts.

***Diaphanogryllacris orlovi* Gorochov**  
et Dawwrueng, **sp. nov.**  
(Figs 12–20, 56)

*Material.* *Holotype* – male; Laos, Khammouan Prov., Boulapha Distr., Bandey Vill., VI.2009, N. Orlov (ZIN). *Paratypes* – 4 females; same data as for holotype (ZIN).

*Description.* Male (holotype). General view similar to that of *D. adunca* but with following characteristic features: body somewhat larger; colouration with dark brown transverse band on dorsum (this band crossed by a pair of light longitudinal lines; Fig. 13), with dark brown area on epicranium along ventral and posterior edges of each eye, with narrower and brown to brownish vertical stripe on gena under each eye, with brown stripe along lateral thirds of clypeal suture (Fig. 12), with brownish grey antennae having two proximal segments yellowish, with almost dark brown pronotal disc having yellowish stripe along anterior edge and yellowish band along posterior edge, with yellowish lateral pronotal lobe having large dark brown spot fused with dark part of disc (Figs 13, 14), with apices of all femora and bases and apices of all tibiae as well as all spines of legs dark brown to blackish (but spines of fore and middle tibiae with almost whitish apical



**Figs 25–39.** *Diaphanogryllacris* Karny, male: 25–29, *D. panitvongi* sp. nov. (25–27, holotype; 28, 29, paratype); 30–32, *D. bezborodovi* sp. nov.; 33–35, *D. panitvongi boulapha* subsp. nov.; 36–39, *D. laeta makbuni* subsp. nov. (36, 37, same specimen in fresh and dry conditions, respectively). Head in front (25, 28, 30, 33, 36, 37); head with pronotum from above (26, 31, 34, 38) and from side (27, 29, 32, 35, 39).

part), and with brown to dark brown distal parts of hooks on 9th and 10th abdominal tergites; ocelli indistinct; hind femur with 7 short immovable spines on each ventral edge; tibiae with 5 pair of ventral spines in fore and middle legs, 1 dorsoapical spine in middle leg, and 6–7 spines on each dorsal edge of hind leg; wings somewhat longer than in *D. adunca* (reaching hind tarsi in rest position) and similar to those of this species in structure; 9th abdominal tergite with transverse fold having concavity under it less narrow (not slit-like), with hooks distinctly longer and with basal parts of these hooks moderately wide and having almost keel-like ventral borders (in profile, these hooks arcuately curved downwards and slightly forwards; Figs 15, 17, 56); 10th abdominal tergite with shorter hooks having elongate proximal inflations (pressed to each other) and short distal spines directed upwards (each spine with additional small subapical denticle on posterior surface: Figs 15, 17); epiproct small and almost oval; paraprocts without hooks; genital plate almost quadrate but with a pair of posterior lobules (situated between styles) almost as in *D. adunca* (Fig. 16); genitalia with virga-like sclerite located inside completely membranous sac in rest position (Fig. 20).

Female. General appearance as in male, but head usually with larger dark vertical stripe under each eye (this stripe sometimes widened near subgena), wings reaching apical parts of hind tibiae (in rest position) only, and abdominal apex more or less typical of female of this genus. However, 7th abdominal sternite and proximal part of genital plate membranous, with numerous transverse wrinkles and soft lobe-like process near base of this plate (this process very distinct but somewhat varied in size; Figs 18, 19); rest of genital plate rather small and having clearly narrower posterior half and narrowly rounded apex (Fig. 19); ovipositor very long and thin, gradually narrowing to very narrowly rounded apex.

Length (mm). Body: male 24, female 30–34; body with wings: male 41, female

39–41; pronotum: male 5.7, female 5.9–6.2; tegmen: male 33, female 31–33; hind femur: male 15, female 15.5–17; ovipositor 24–30.

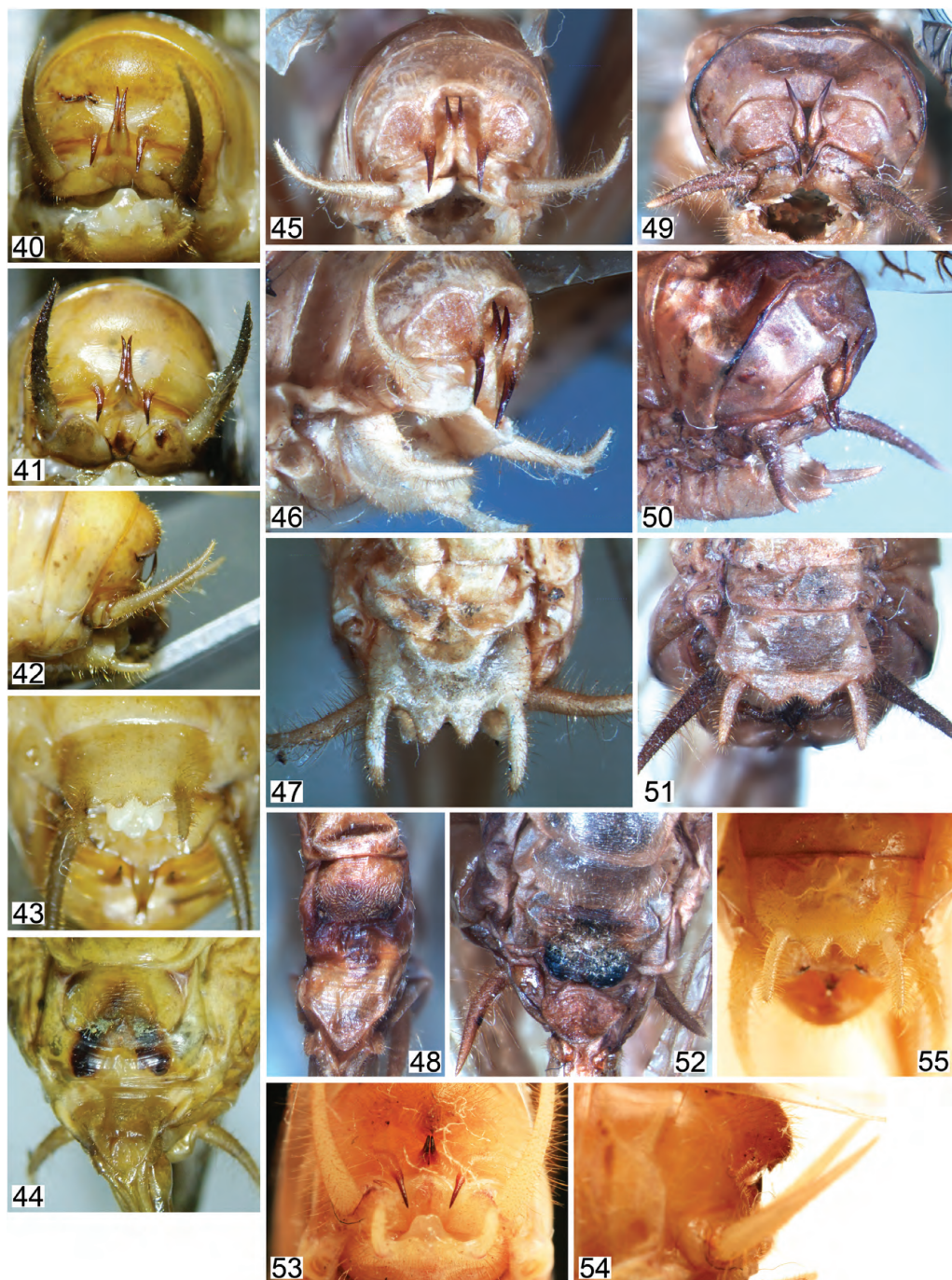
*Comparison.* The new species is clearly distinguished from all the other congeners with known males by distinct elongate proximal inflations of the hooks of 10th male abdominal tergite pressed to each other and having short (shorter than these inflations) and slightly bifurcate spines on upper parts of these inflations in combination with long spine-like hooks of the 9th male abdominal tergite having keel-like ventral edges of their basal parts, almost uniformly light tibiae, a completely membranous sac (for virga-like sclerite) in the male genitalia, and the presence of a characteristic soft and lobe-like process of the membranous distal part of 7th abdominal sternite in female.

*Etymology.* This species is named in honor of its collector.

***Diaphanogryllacris panitvongi*** Gorochov, Dawwrueng et Artchawakom, **sp. nov.** (Figs 21, 25–29, 40–44, 59, 60)

*Material.* *Holotype* – male; **Thailand**, Nakhon Ratchasima Province, environs of Sakaerat Environmental Research Station, 400–500 m, from branch of tree in forest, 23–26.V.2014, P. Dawwrueng, T. Dowwiangkan, K. Jiranaisakul (THNHM). *Paratypes* – 1 male, 1 female; same data as for holotype (THNHM).

*Description.* Male (holotype). Body approximately as in *D. orlovi* in size. Colouration yellowish with following marks: head with black transverse stripe over eyes (this stripe thrice interrupted in median part); vertex before this stripe (near it) with a pair of asymmetrical dark spots; dark vertical stripe under each eye rather short, not reaching subgena (Fig. 25); pronotum with dark brown pattern as in Figs 26, 27; all femora with weakly darkened apical part, and hind femur with black ventral denticles; tibiae with dark brown spines (spines of fore and middle tibiae with light apices, and tibial spines with light proximal parts); wings transparent with yellow venation having some veins brown. Wings



**Figs 40–55.** *Diaphanogryllacris* Karny: 40–44, *D. panitvongi* sp. nov. (40, 42, 43, holotype; 41, paratype); 45–48, *D. bezborodovi* sp. nov.; 49–52, *D. panitvongi boulapha* subsp. nov.; 53–55, *D. laeta makbuni* subsp. nov. Male abdominal apex from behind (40, 41, 45, 49, 53), from side (42, 46, 50, 54), and from below (43, 47, 51, 55); lower half of female abdominal apex without ovipositor from below (44, 48, 52).

long, reaching apices of hind tibiae in rest position; 9th abdominal tergite with small and shallow (not slit-like) concavity; hooks of this tergite moderately long, spine-like, with distinctly widened basal parts narrowing to almost angular middle curvature, and with rest part directed downwards and almost straight in profile (Figs 40, 42, 59); hooks of 10th abdominal tergite thin, very long, slightly arcuate in profile, and with rather short proximal parts slightly pressed to each other (Figs 40, 42); epiproct and paraprocts approximately as in *D. orlovi* (Fig. 40); genital plate with posterior lobules between styles short, distinctly shorter than in *D. adunca* and *D. orlovi* (Fig. 43); genitalia similar to those of *D. orlovi*, with virga-like sclerite as in Fig. 21.

Variation. Paratype with lower half of clypeus somewhat darkened (Figs 28, 29), with venation of tegmina slightly darker than in holotype, and with proximal parts of hooks of 10th abdominal tergite almost not pressed to each other (Fig. 41).

Female. General appearance as in male but with abdominal apex similar to that of female of *D. orlovi*; however, this abdominal part with membranous median area of 7th abdominal sternite which distinctly pubescent in distal half (but lacking lobe-like process), with a pair of blackish areas on membrane behind this sternite, and with smaller but more expressed lateral lobules at base of non-membranous part of genital plate (Figs 44, 60).

Length (mm). Body: male 31.5–32, female 33; body with wings: male 41, female 41.3; pronotum: male 5, female 5.5; tegmen: male 31.5–32, female 37.6; hind femora: male 15.8–16.7, female 16.1; ovipositor 22.6.

*Comparison.* The new species is most similar to *D. simulator* Gorochov et Woznessenskij, 2000 and *D. annamita* (Griffini, 1909) from Vietnam in narrow proximal parts of the hooks of male 9th abdominal tergite, but it differs from them in much longer hooks of the male 10th abdominal tergite. The latter character together with a characteristic colouration (almost uniformly light

tibiae) and the absence of any process or tubercle on the female 7th abdominal sternite allow us to distinguish the new species from majority of the other congeners.

*Etymology.* The species is named in honor of Dr. Nonn Panitvong, who is a founder of the biodiversity conservation group very useful for the development of biology in Thailand.

***Diaphanogryllacris panitvongi boulapha***

Gorochov et Dawwrueng, **subsp. nov.**

(Figs 24, 33–35, 49–52, 61, 62)

*Material.* Holotype – male; Laos, Khammouan Prov., Boulapha Distr., Bandy Vill., VI.2009, N. Orlov (ZIN). Paratype – female; same data as for holotype (ZIN).

*Description.* Male (holotype). Body approximately as in *D. orlovi* in size. Colouration light brown with following marks: head with black dorsum crossed by a few light stripes and lines as in Figs 33 and 34, with dark brown band along posterior edge of each eye, with dark brown to brown vertical area under each eye, with a pair of dark dots at dorsolateral corners of clypeus, and with 2 proximal segments of antenna yellowish; pronotum with dark brown to brown pattern as in Figs 34 and 35; legs with slightly darkened apices of femora and bases of tibiae, with dark brown most part of ventral spines on fore and middle tibiae, with blackish ventral denticles on hind femur and most part of dorsal spines on hind tibia, with brown distal halves of apical spurs on these tibiae, and with weakly darkened dorsal spot on basal part of fore tarsus; tegmina yellowish (semi-transparent) with brown to light brown venation; hind wings transparent with light brown venation; and hooks of abdominal apex with brown distal halves. Ocelli practically indistinct; wings long, reaching bases of hind tarsi in rest position; 9th abdominal tergite with almost slit-like (but not deep) transverse concavity and with moderately long and spine-like hooks similar to those of nominotypical subspecies but having basal (widened) part slightly narrower (Figs 49, 50, 61); 10th abdominal tergite with hooks





**Figs 56–62.** *Diaphanogryllacris* Karny: 56, *D. orlovi* sp. nov.; 57, *D. bezborodovi* sp. nov.; 58, *D. laeta makbuni* subsp. nov.; 59, 60, *D. panitvongi* sp. nov.; 61, 62, *D. p. boulapha* subsp. nov. Left hook of 9th abdominal tergite of male (including basal plate partly fused with this tergite), posterolateral view (56–59, 61); female genital plate from below (60, 62).

also similar to those of *D. p. panitvongi* but having bases of these hooks clearly pressed to each other (Figs 49, 50); epiproct and paraprocts as in this subspecies but with almost keel-like dorsolateral edges of paraprocts (Fig. 49); genital plate and genitalia also as in nominotypical subspecies, but posterior part of this plate somewhat more projected backwards (Figs 24, 51).

Female. General appearance as in male, but wings slightly shorter, and abdominal apex distinguished from that of female of *D. p. panitvongi* by presence of rather large and dense convexity between 7th abdominal sternite and genital plate (this convexity completely dark brown) as well as by widely rounded (not lobule-like) lateral parts of base of genital plate (this plate gradually narrowing to narrowly rounded apex; Figs 52, 62).

Length (mm). Body: male 26, female 32; body with wings: male 45, female 44; pronotum: male 6.6, female 7.1; tegmen: male 36, female 33; hind femur: male 16.5, female 18; ovipositor 29.

**Comparison.** The new subspecies is most similar to nominotypical subspecies, but it differs from the latter in slightly wider proximal parts of the male 10th abdominal tergite hooks and the presence of a com-

pletely dark large convexity behind the female 7th abdominal sternite as well as the female genital plate with widely rounded (not concave near base) lateral parts. From all the other congeners, *D. p. boulapha* is distinguished by long hooks of the male 10th abdominal tergite, wide bases of the male 9th abdominal tergite hooks, short lobules on the posterior edge of male genital plate (between styles), almost uniformly light tibiae, the 7th abdominal sternite of female without process or tubercle, and shape of female genital plate.

**Etymology.** This species is named after the Boulapha District in Laos where it was collected.

#### ***Diaphanogryllacris bezborodovi***

Gorochov et Dawwrueng, sp. nov.  
(Figs 22, 30–32, 45–48, 57)

**Material.** *Holotype* – male; **Thailand**, Nakhon Ratchasima (Karat) Prov., Nong Bun Nak, 24.V. 2010, V. Bezborodov (ZIN). *Paratype* – female; same data as for holotype (ZIN).

**Description.** Male (holotype). Body approximately as in *D. orlovi* and *D. panitvongi* in size. Colouration very light: yellowish with light brown to brown pattern on pronotum (Figs 30–32), light brown middle part of ventral spines on fore and middle

tibiae as well as most part of antennal flagellum, dark brown ventral denticles on hind femur, brown distal halves of spines and spurs on hind tibia as well as of hooks on abdominal apex, light brown tarsi of all legs, and transparent membranes between veins and veinlets in wings (membranes of median band in tegmina with yellowish tinge; venation in all wings yellowish with some veins of tegmina almost greyish). All ocelli more or less distinct, rather small, vertically oval; wings very long, reaching apical parts of hind tarsi in rest position; concavity of 9th abdominal tergite rather small and not slit-like; each hook of this tergite long, with spine-like part directed downwards, with middle curvature somewhat less angular than in *D. panitvongi*, and with proximal part very wide and flat (plate-like) (Figs 45, 46, 57); hooks of 10th abdominal tergite also long and spine-like but directed upwards, barely curved in profile, with low keel along posterior edge of distal half of each hook, and with rather long (high) light proximal parts of these hooks looking as almost not inflated vertical ridges of this tergite (Figs 45, 46); genital plate similar to that of *D. adunca* and *D. orlovi* (Fig. 47); genitalia similar to those of *D. orlovi* and *D. panitvongi* (Fig. 22).

Female. General appearance as in male, but abdominal apex distinguished from that of female of *D. p. boulapha* in some characters only: anterior half of 7th abdominal sternite not membranous; its posterior half without process but soft and with abundant pubescence; distal half of genital plate more gradually narrowing to narrowly rounded apex (Fig. 48).

Length (mm). Body: male 23, female 31; body with wings: male 46, female 48; pronotum: male 5.5, female 6.2; tegmen: male 39, female 39; hind femur: male 15.2, female 17; ovipositor 32.

**Comparison.** The new species is most similar to *D. panfilovi* Gorochov et Woznesenskij, 2000 from China in the presence of very wide (plate-like) proximal parts of the 9th abdominal tergite hooks in male, but it

differs from the latter species by longer and almost not inflated basal parts of the hooks of male 10th abdominal tergite which also not pressed to each other. From *D. panitvongi*, the new species differs in longer hooks of the male 9th abdominal tergite, wider proximal parts of these hooks, and shorter spines of the hooks of male 10th abdominal tergite. From all the other congeners, *D. bezborodovi* differs in longer hooks of the male 10th abdominal tergite in combination with not slit-like concavity of the male 9th abdominal tergite, wider proximal parts of the latter tergite hooks, uniformly light tibiae, the absence of any semisclerotized area (near virga-like sclerite) in the male genitalia and of process or tubercle on the female 7th abdominal sternite, and a roundly angular apex of the female genital plate.

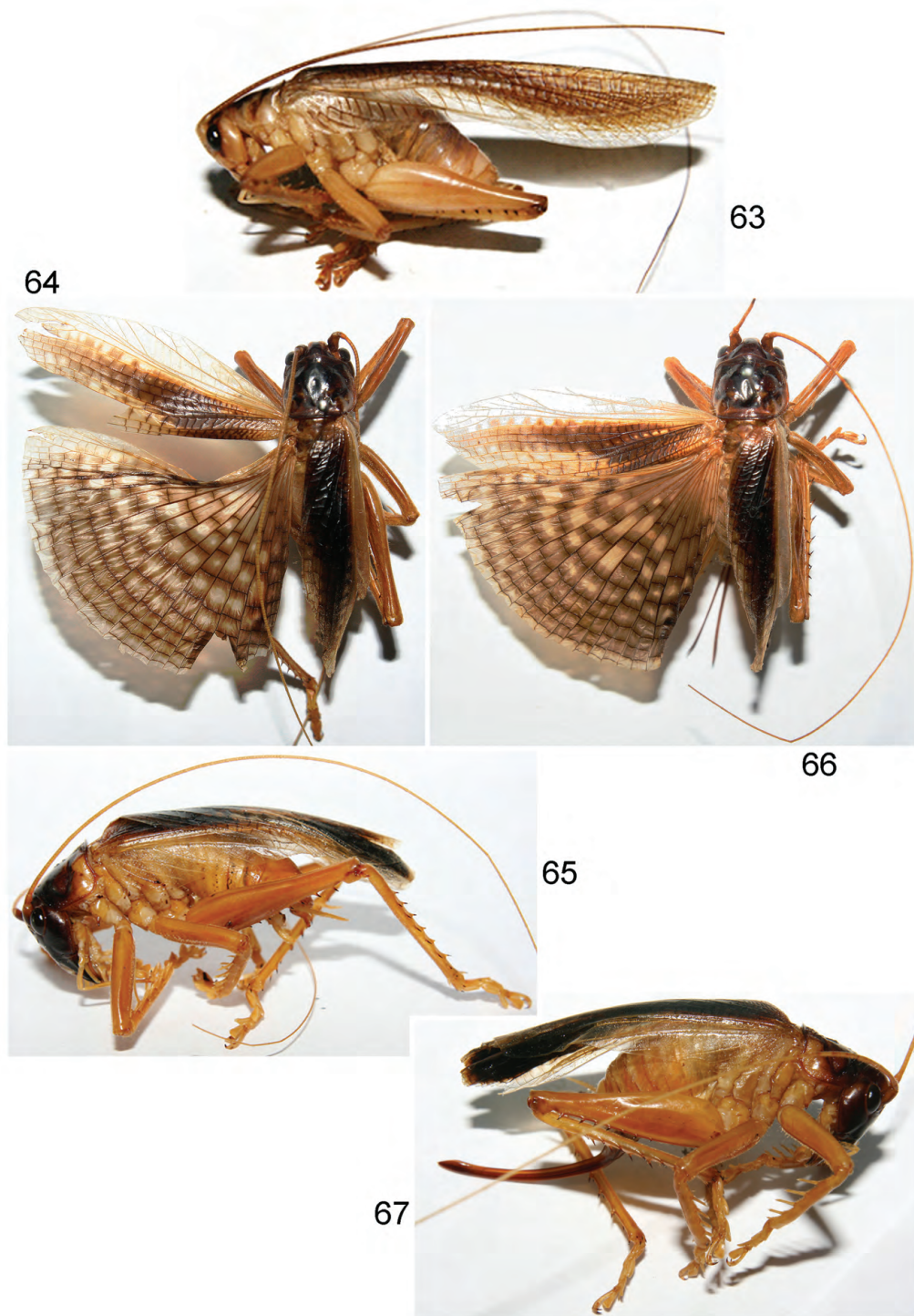
**Etymology.** This species is named after its collector.

#### *Diaphanogryllacris laeta makbuni*

Gorochov et Dawwrueng, **subsp. nov.**  
(Figs 23, 36–39, 53–55, 58, 63)

**Material.** *Holotype* – male; **Thailand**, Kanchanaburi Province, Sri Sawat District, Ban Khao Jod, 200–300 m, at light beside main road in town, 1.V.2015, N. Makbun (THNHM).

**Description.** Male (holotype). Body yellowish with following marks: head with narrow black transverse band over eyes (this band thrice interrupted in median part), a pair of unequal brown spots between upper edges of lateral ocelli, short dark vertical stripe under each eye, whitish ocelli, light brown antennal flagellum and areas on mandibles; pronotum with characteristic dark brown pattern on disc (Figs 36, 38, 39) [but in dry condition (Fig. 37), colouration of holotype slightly different: labrum somewhat darkened, and ocelli less distinct]; femora with darkish (light brown to brown) apical part and black spines on hind femur (Fig. 63); tibiae with brown to dark brown spines (spines of fore and middle tibiae with light apices); wings transparent, with majority of tegminal veins brown, and with some of them yellow. Structure of body similar to that of



**Figs 63–67.** *Diaphanogryllacris* and *Gryllacris*: 63, *D. laeta makhuni* subsp. nov.; 64–67, *G. thailandi facemarmiger* subsp. nov. (63–65, male; 66, 67, female). General view of body from side (63, 65, 67) and from above with left wings spread (64, 66).

all congeners previously described here, but with following characteristic peculiarities: wings long (extending slightly beyond apices of hind tibiae in rest position; Fig. 63); 9th abdominal tergite with posterior convexity distinctly projected backwards and having unpaired denticle located on ventral surface of this convexity and directed downwards (Fig. 54); each hook of this tergite with basal part rather narrow, with middle curvature almost as in *D. panitvongi* and slightly more angular than in *D. bezborodovi*, and with spine-like part long, almost straight and directed downwards (Figs 53, 58); hooks of 10th abdominal tergite short and directed upwards (Figs 53, 54); genital plate similar to that of *D. adunca*, *D. orlovi* and *D. bezborodovi* but with lobules between styles slightly shorter (Fig. 55); genitalia with virga-like sclerite having rather narrow proximal widening (Fig. 23).

Female unknown.

Length (mm). Body 26.2; body with wings 44.5; pronotum 5.2; tegmen 38.2; hind femur 15.2.

**Comparison.** The new subspecies is distinguished from *D. laeta laeta* (Walker, 1869) described from southern China and distributed also in northern Vietnam (Gorochov & Woznessenskij, 2000), by a distinctly lighter colouration of the head and pronotum, the presence of only a single small ventral denticle on the posterior convexity of 9th abdominal tergite in male (in nominotypical subspecies, this convexity is with a few very small ventral denticles; one of them is somewhat larger than the others and median in the location), and thinner hooks of the 10th abdominal tergite in male.

**Etymology.** The subspecies is named in honor of its collector, Mr. Noppadon Makbun.

Genus *Gryllacris* Audinet-Serville, 1831

*Gryllacris maculicollis* Audinet-Serville, 1831 (type species of this genus) from Java was synonymized by Kirby (1906) with *Gryllus* (*Tettigonia*) *signifera* Stoll, 1813

described from "Oostindie" (Stoll, 1813). Stoll's description is insufficient for the species determination; type material on *G. signifera* is most probably lost, and different previous authors had not identical understanding of this species (Eades et al., 2015). It was a reason that a male from Java ("Buitenzorg") determined as *G. signifera* by Griffini and deposited in ZIN was designated as neotype of Stoll's species (Gorochov, 2007). Thus, probability of synonymy of *G. maculicollis* and *G. signifera* increased, but a more exact decision may be proposed only after restudy of Audinet-Serville's type material. Unfortunately in the Orthoptera Species File (Eades et al., 2015), this important nomenclatural action was almost not taken into account.

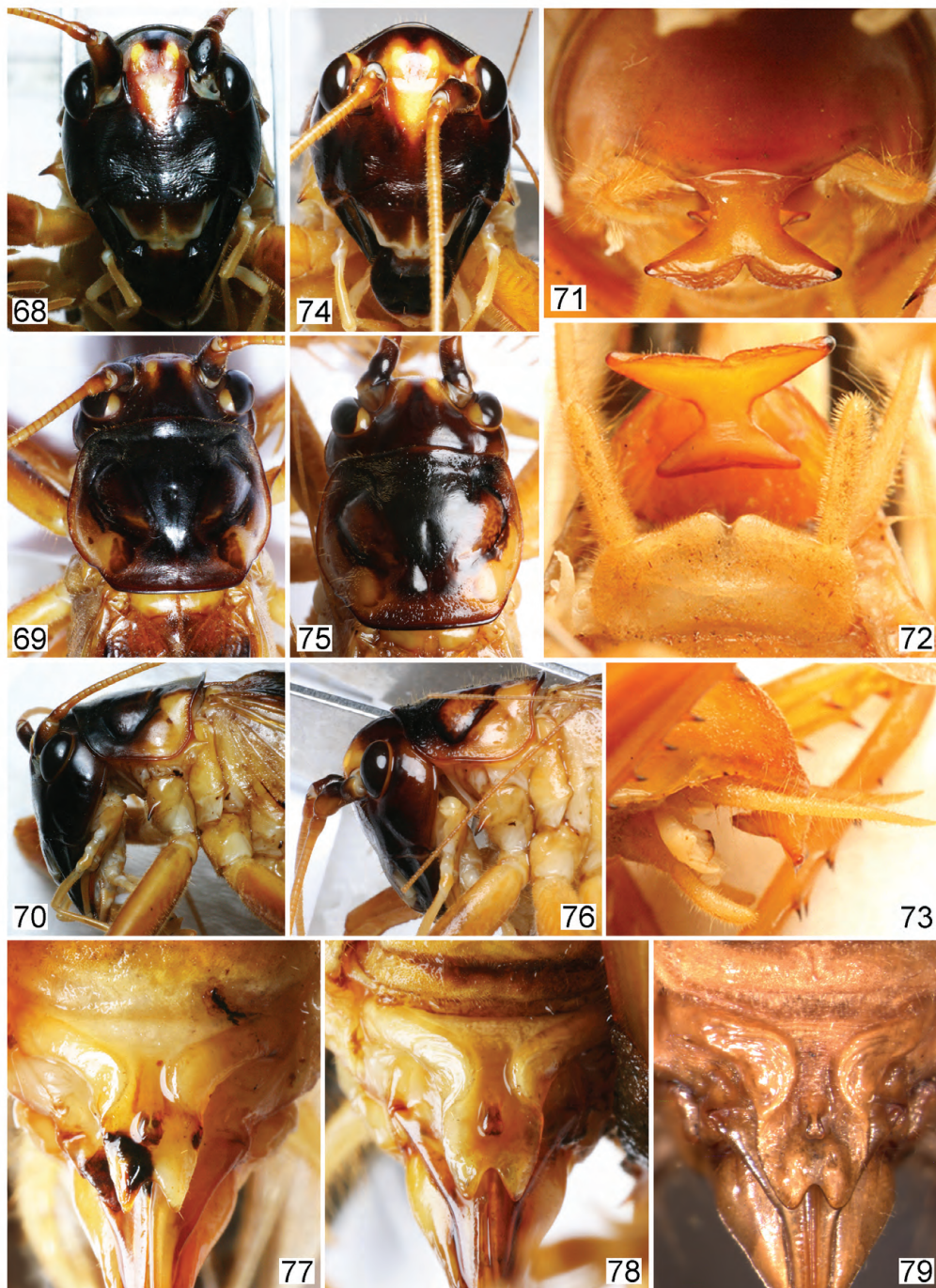
This genus includes rather large representatives usually having long wings, a characteristic posterior convexity on the 9th abdominal tergite in male (this convexity is usually with finger-like processes often united in a rather complicate structure of different shape; Figs 71–73, 84–87), unpaired ventral lobe on this tergite also provided with rather diverse structures, reduced 10th abdominal tergite, completely membranous male genitalia, and the female genital plate elongate and narrowed in the distal part as well as with a small median process or lobule on its ventral surface (Figs 77–79, 88). This genus is not divided into subgenera, but it is possible, that some old related genera must be considered as its subgenera (Gorochov, 2007).

### *Gryllacris thailandi facemarmiger*

Gorochov, Dawwrueng et Artchawakom  
**subsp. nov.**  
(Figs 64–78)

**Material.** *Holotype* – male; **Thailand**, Nakhon Ratchasima Province, environs of Sakaerat Environmental Research Station, 400–450m, dry evergreen, on tree branch, 27.VII.2014, P. Dawwrueng, K. Yimyo (THNHM). *Paratypes* – 2 females; same data as for holotype (THNHM).

**Description.** Male (holotype). Head and pronotum dark brown (almost black) but



**Figs 68–79.** *Gryllacris*: 68–78, *G. thailandi facemarmoriger* subsp. nov. (68–73, male; 74–78, female); 79, *G. th. thailandi* Gor. Head in front (68, 74); head with pronotum from above (69, 75) and from side (70, 76); median process of 9th abdominal tergite of male, posterodorsal view (71); male abdominal apex from below (72) and from side (73); female genital plate from below (77, 78, 79).

with rather large lighter (reddish) spot in region of ocelli (including all ocelli), light narrow stripes along ventral and lateral margins of lower part of clypeus as well as along median line of this part and along ventral edge of labrum, light brown maxillae and labium as well as areas on posterior parts of pronotal lateral lobes, and almost yellowish palpi and antennae (but scape dark brown with brown distal part, and pedicel light brown) (Figs 65, 68–70); tegmen yellowish grey (semitransparent) but with large dark brown (almost black) longitudinal area occupying middle and anal parts of tegmen and running to its apical part, and with dark cross-veins around this dark area (Fig. 64, 65); hind wing with rather numerous dark grey transverse bands, somewhat lighter (grey) spaces between them in distal third, and much light (almost transparent) spaces between dark bands in proximal two thirds (Fig. 64); other parts of body light brown but having legs and apical part of abdomen with orange tinge (ventral spines of fore and middle tibiae with whitish apical parts, and spines of hind leg with darkened distal parts) as well as cerci and most part of body venter almost yellowish. Structure of body very similar to that of nominotypical subspecies, but median ocellus distinctly larger than lateral ocelli, tegmina clearly projecting beyond apices of hind femora but strongly not reaching apices of hind tibiae, hind wings slightly projecting beyond tegminal apices (Fig. 65), posterior convexity of 9th abdominal tergite with strong process having two pairs of characteristic lobes (a pair of upper and a pair of lower ones) (Figs 71–73), ventral lobe of this tergite triangular and with median longitudinal groove as well as with very shallowly notched (almost truncate) apical part, and genital plate short (transverse) and with long styles (longer than this plate) as well as with obtusely angular posterior projection between these styles having small apical notch (Fig. 72).

Female. Colouration and structure of body as in male (66, 67, 74–76), but large

spot in region of ocelli lighter (reddish yellow) and abdominal apex distinguished from that of female of *G. thailandi thailandi* Gorochov, 2007 by somewhat deeper apical notch of genital plate only (Figs 77, 78).

Length (mm). Body: male 30.2, female 30–33; body with wings: male 50, female 46–52; pronotum: male 8.8, female 8.2–9; tegmen: male 40.2, female 34.8–39; hind femur: male 22.7, female 21–23; ovipositor 22.7–25.

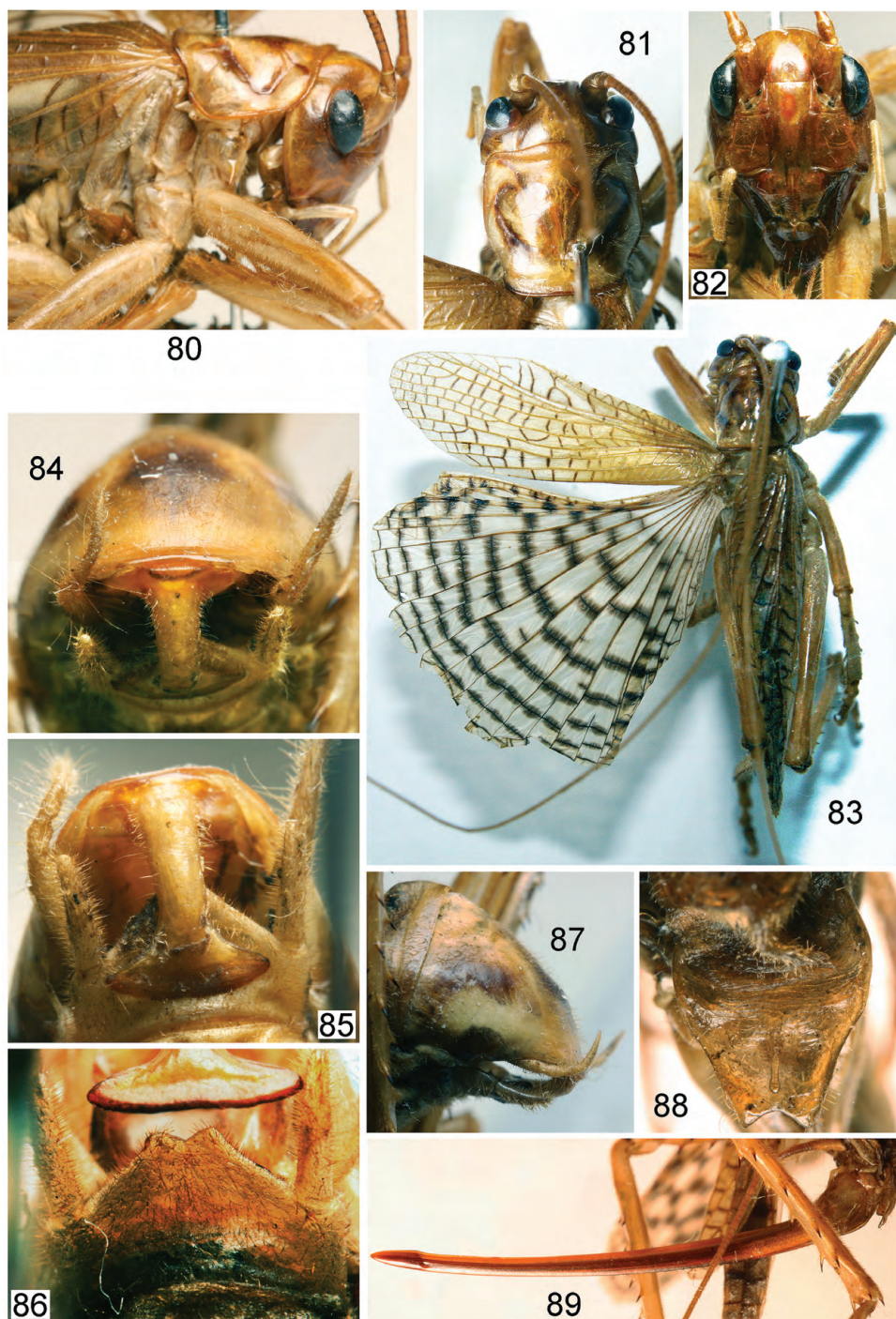
*Comparison.* This subspecies is distinguished from *G. th. thailandi* Gorochov, 2007 distributed in a different part of Thailand (Phetchaburi Province) by a reddish or reddish yellow rostrum between the antennal cavities (in the nominotypical subspecies, this rostral part is blackish with light ocelli), larger blackish area on the tegmen occupying its median and proximal parts (in *G. th. thailandi*, there is the median blackish area only), and deeper posteromedian notch of the female genital plate (for comparison see Figs 77–79).

*Etymology.* This subspecies name consists of the Latin words “facem” (torch) and “armiger” (bearer), i. e. it may be translated as “torch-bearer” in English due to characteristic colouration of head rostrum.

***Gryllacris longiloba*** Gorochov  
et Dawwrueng, **sp. nov.**  
(Figs 80–89)

*Material.* *Holotype* – male; **Thailand**, Tak Province, Ban Mae Salid Noi, Ta Song Yang district, 400–450m, dry evergreen forest, on tree branch, 12.IX.2015, P. Dawwrueng, W. Kummoo (THNHM). *Paratypes* – 1 male, 2 females; same data as for holotype (THNHM).

*Description.* Male (holotype). General view similar to other congeners, but body rather small. Head (Figs 80–82) reddish brown but with somewhat lighter large spot on rostrum (this spot including all ocelli), blackish eyes, dark brown mandibles and labrum, light brown most part of maxillae and of labium, light brown palpi having slight apical darkening, and brown antennae; pronotum (Figs 80, 81) with light brown



**Figs 80–89.** *Gryllacris longiloba* sp. nov. (80–87, male; 88, 89, female): 80, 81 – head with pronotum from side (80) and from above (81); 82 – head in front; 83 – body with left wings spread from above; 84, 85 – male abdominal apex from behind (84) and from behind / below (85); 86 – male genital plate and apical part of process of 9th abdominal tergite from below; 87 – male abdominal apex from side; 88 – female genital plate from below; 89 – ovipositor from side.

lateral lobes having a few brown to dark brown stripes, and with almost brown disc; tegmen (Fig. 83) yellowish (semitransparent) in proximal half and transparent with greyish brown veins in distal half; hind wing (Fig. 83) with light brown longitudinal veins, rather numerous dark grey transverse bands and much light (almost transparent) areas between them; rest parts of body light brown but with legs and apical part of abdomen having light orange tinge, with ventral spines of fore and middle tibiae brown, and with spines of hind leg having darkened distal parts. Wings rather long, slightly protruding beyond apices of hind femora; distal tegminal part almost narrowly rounded (Fig. 83). Abdomen with 8th tergite large (its posteromedian part rather long and almost cup-like); 9th abdominal tergite clearly smaller and situated almost under 8th one; process of 9th abdominal tergite situated near base of this tergite and sharply turned downwards from the base of this process; this process with rather narrow (thin) middle part and with wide and almost lamellar plate semicircular in shape and directed partly forwards (Figs 84–87); ventral lobe of this tergite similar to that of *G. thailandi*; genital plate also more or less similar to that of this species but with angular lobe between styles clearly longer, less obtuse, and having barely larger apical notch (Fig. 86).

Variations. Second male with lighter labrum and pronotum (brown and mostly light brown, respectively).

Female. Colouration and structure of body as in male, but abdominal apex similar to that of other females of this genus and distinguished only by peculiarities of genital plate and ovipositor: genital plate gradually narrowing to rather widely and shallowly notched apex, and with very thin ventromedian lobule having its base located near middle of this plate and its apex rounded (slightly inflated) and slightly not reaching to posterior edge of genital plate (Fig. 88); ovipositor long and rather thin, gradually narrowing to subapical part, with barely widened (in profile) subapical part,

and with very narrowly rounded (almost acute) apical part (Fig. 89).

Length (mm). Body: male 23.4–23.7, female 25.6–25.8; body with wings: male 32.6–34.4, female 31.8–33.6; pronotum: male 6, female 6.3–6.6; tegmen: male 24.4–25.5, female 22.9–25.2; hind femur: male 17.5, female 17–17.2; ovipositor 20.5–23.7.

*Comparison.* Male of the new species is more or less similar to that of *G. appendiculata* Brunner-Wattenwyl, 1888 from Papuan region in a rather large 8th abdominal tergite (this tergite with a comparatively long and almost cup-like posteromedian part) and rather small 9th abdominal tergite which is clearly smaller than previous one, but it is distinguished from the latter species by the process of 9th abdominal tergite longer, turned downwards from the base of this process (*vs.* from its middle part), and thinner in the middle part. From the other congeners, *G. longiloba* differs in the same characters of the above-mentioned process and presence of a wide and almost lamellar plate on the distal part of this process.

*Etymology.* This species name is the Latin adjective “longiloba” (with long lobe) given in connection with the presence of a long lobe (process) on the 9th abdominal tergite in male.

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