

## Fourth addition to the revision of Itarinae (Orthoptera: Gryllidae)

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A new subgenus and 9 new species of the genus *Itara* Walk. from North Borneo are described. *I. (Singitara) singularis* Gor. is recorded from Borneo for the first time.

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All specimens discussed in this paper are deposited at Zoological Institute, Russian Academy of Sciences, St. Petersburg.

Genus **Itara** Walker

Subgenus **Tinnitara** subgen. n.

Type species: *Itara (Tinnitara) tinnula* sp. n.

**Diagnosis.** General appearance typical of *Itara*. Size comparatively small. Coloration rather light, brownish yellow with sparse and more or less distinct darkenings. Male tegmina comparatively narrow; mirror distinctly transverse, slightly oblique and rather wide, similar to that of *I. (Phormincter) raggei* Gor. (Gorochov, 1997: Fig. 29); oblique veins similar to those of *I. (Bornitara) borneoensis* Gor. (Gorochov, 1997: Fig. 121), but longest oblique vein with somewhat less curved proximal (medial) part, and area between this vein and nearest oblique vein distinctly narrower. Male genitalia (Figs 1-5) with long epiphallus having narrow sclerotized neck between proximal part and rest of epiphallus, thin lower lateral sclerites of proximal epiphallic part, widened middle epiphallic part gradually narrowing to apical part, narrow and low apical part distinctly curved upwards, and a pair of long lower lobes denticulated on ventral surface; ectoparameres long, but shorter than epiphallus and with rather thin apical part not protruding behind epiphallic apex.

**Included species:** type species and *I. (T.) sympatrica* sp. n.

**Itara (Tinnitara) tinnula** sp. n.  
(Figs 1-3)

**Holotype.** ♂, **Malaysia, Sabah**, 5°33' N, 116°31' E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

**Paratypes.** 4 ♂, 1 ♀, same data as holotype.

**Description.** **Male** (holotype). Coloration light, but with almost dark brown dorsal part of head (from median ocellus to almost hind part of vertex), weakly darkened fore half of pronotal disc and spots at base of tegmina, greyish upper part of fore and middle tibiae, greyish brown upper part of hind tibiae (excepting spines and spurs), denticles of hind basitarsi, and exposed part of hind wings. Tegmina with mirror almost as in *I. (Ph.) raggei* (see subgeneric diagnosis); hind wings much longer than tegmina. Genitalia with not very narrow (not very low) distal part of epiphallus in profile (Fig. 1) and short, almost hooked distal part of ectoparameres (Figs 1-3).

**Variations.** Some paratypes with somewhat less uniformly dark dorsal part of head, weakly distinct darkish spots near apex of hind femora, and / or completely darkened distal part of hind tibiae.

**Female.** General appearance as in male, with not very dark areas on head and hind tibiae, but with weakly distinct spots on hind femora. Structure of tegmina and apex of ovipositor typical of *Itara*; ovipositor almost 1.05 times as long as hind femur.

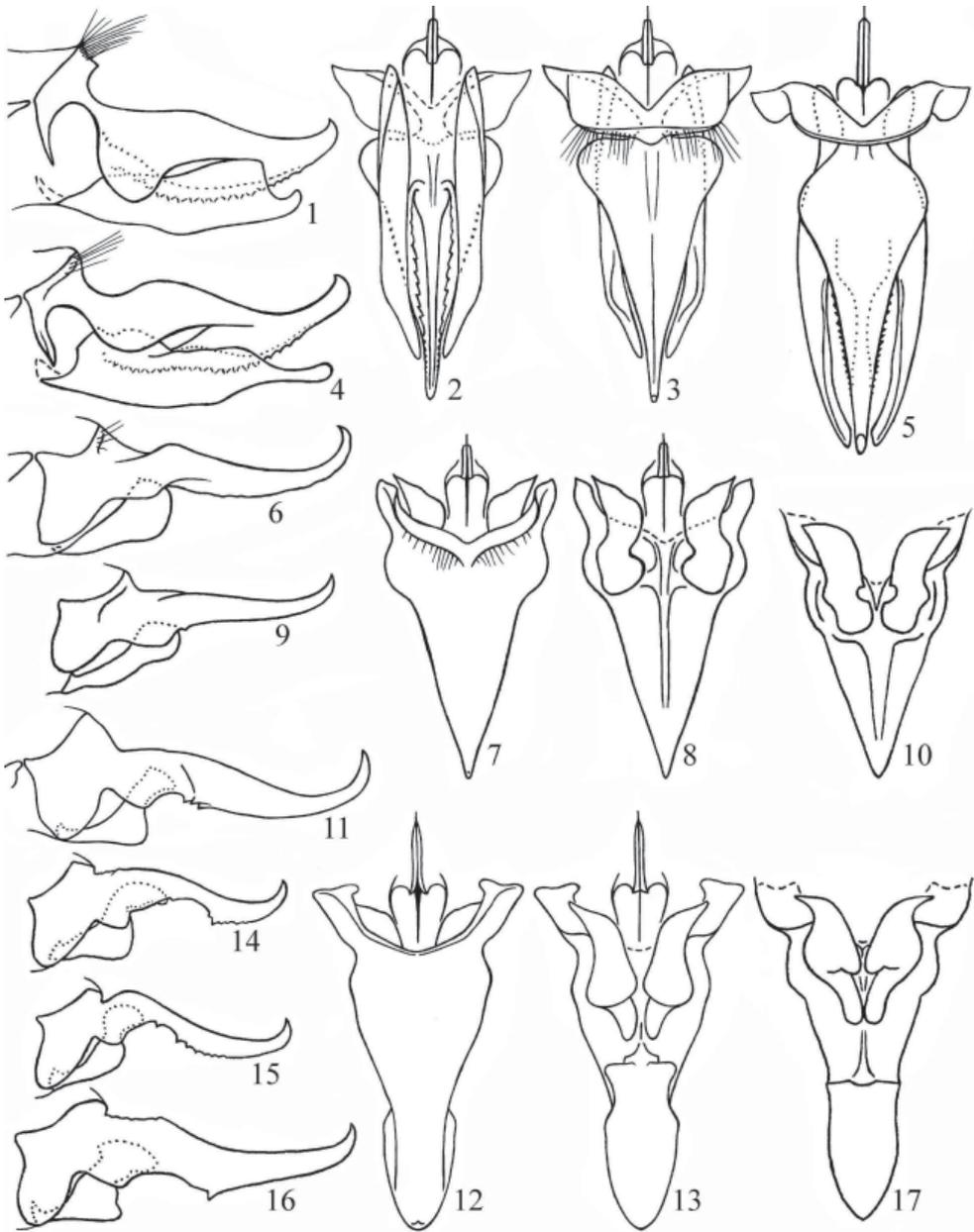
**Length (mm).** Body: ♂ 15.5-16.5, ♀ 13.5; body with wings: ♂ 24-25.5, ♀ 23; pronotum: ♂ 2.1-2.3, ♀ 2.2; tegmina: ♂ 14.5-15, ♀ 14; hind femora: ♂ 8.8-9.3, ♀ 8.5; ovipositor 9.

**Itara (Tinnitara) sympatrica** sp. n.  
(Figs 4, 5)

**Holotype.** ♂, **Malaysia, Sabah**, 5°33' N, 116°31' E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

**Paratype.** ♂, same data as holotype.

**Description.** **Male** (holotype). Coloration and structure of body parts similar to those of *I. (T.) tinnula*, but distinguished by following characters: darkened spot on head slightly less dark than in



**Figs 1-17.** *Itara* Walk., ♂. **1-3,** *I. (Tinnitara) tinnula* sp. n. (holotype); **4, 5,** *I. (T.) sympatricus* sp. n. (holotype); **6-8,** *I. (Bornitara) copiosa* sp. n. (holotype); **9, 10,** *I. (B.) borneoensis* Gor.; **11-13,** *I. (B.) trusmadi* sp. n.; **14,** *I. (B.) sarawakensis* Gor.; **15,** *I. (B.) kalimantanensis* Gor.; **16, 17,** *I. (B.) latipennis* Chop. Distal part of genitalia from side (1, 4, 6, 9, 11, 14-16), from below (2, 8, 10, 13, 17), and from above (3, 5, 7, 12). Pubescence of epiphallus not shown in Figs 2, 5, 9-17.

holotype of *I. tinnula* and uniform (more uniform than in some of paratypes of *I. tinnula*); pronotal disc completely weakly darkened (only with a few light lines and small spots); tegminal mirror hardly shorter (more transverse); tegminal apical area slightly darker (almost brown); femora with

slightly darkened middle part and clearly more distinct darkish spots near apex of hind femora; hind tibiae almost completely darkened (greyish brown); genitalia with narrower (lower) distal part of epiphallus in profile (Fig. 4) and longer, not hooked distal part of ectoparameres (Figs 4, 5).

Variations. Paratype with ectoparameres more gradually narrowing to apex.

*Female* unknown.

Length (mm). Body 15-16; body with wings 24-25; pronotum 2.2-2.4; tegmina 14.2-14.8; hind femora 9-9.4.

*Comparison.* The differences from *I. (T.) tinnula* are given in this description.

Subgenus **Bornitara** Gorochov

**Itara (Bornitara) copiosa** sp. n.  
(Figs 6-8)

*Holotype.* ♂, **Malaysia, Sabah**, 5°33'N, 116°31'E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Paratypes.* 41 ♂, 17 ♀, same data as holotype.

*Description. Male* (holotype). Size comparatively large. Coloration light brown with following marks: brown dorsal part of head; dark brown spot between ocelli; uniformly greyish brown pronotum; yellowish sternites, coxae, and femora (excepting slight darkenings near femoral apex and very slight brownish oblique stripes on outer surface of hind femora); brownish grey upper part of fore and middle tibiae, middle part of fore and middle tarsi, and antennal flagellum; almost transparent tegmina (excepting whitish medial chord and spots on basal part of tegmina, brownish apical area, yellowish majority of other veins in dorsal part and areas along dorsal edge of lateral part); brownish grey exposed parts of hind wings. Structure of dorsal part of tegmina similar to that of *I. (B.) kalimantanensis* Gor. and *I. (B.) sabahensis* Gor. (Gorochov, 1997: Figs 122, 123), but with slightly more transverse mirror; hind wings distinctly longer than tegmina. Genitalia with epiphallus gradually narrowing to apex (Figs 7, 8), lacking denticles on ventral surface, and having characteristic S-shaped dorsal edge in profile (Fig. 6); epiphallic apex strongly curved upwards; ectoparameres simple, S-shaped, with wide distal part and rather short proximal part (Figs 6, 8).

Variations. Coloration sometimes slightly lighter or hardly darker, but always with very light chords (especially medial of them). Variability in structure of genitalia insignificant.

*Female.* General appearance as in male, but tegmina darker: dorsal part greyish brown (hardly lighter than exposed part of hind wings), lateral part with slightly lighter stripe along dorsal edge and brown or light brown longitudinal veins (rest of lateral part almost transparent). Ovipositor almost 1.1 times as long as hind femur.

Length (mm). Body: ♂ 15-17, ♀ 14-16; body with wings: ♂ 26-28.5, ♀ 25-27; pronotum: ♂ 2.7-3, ♀ 2.5-2.8; tegmina: ♂ 18-20, ♀ 16-17.5; hind femora: ♂ 9-10.5, ♀ 9.5-10.5; ovipositor 10.5-11.5.

*Comparison.* The new species is most similar to *I. (B.) borneoensis* Gor. in the structure of the male genitalia (Figs 6-10), but clearly distinguished from it by the structure of oblique veins in the male tegmina (these veins, except only the longest vein, with zigzag distal part in the new species and without distal part in *I. borneoensis*). There are also some differences between these species in the shape of epiphallic apex and epiphallic dorsal edge in profile (Figs 6, 9) as well as in the shape of ectoparameres (in *I. borneoensis*, distal part of ectoparameres is narrower, and their proximal part is longer; Figs 8, 10).

**Itara (Bornitara) trusmadi** sp. n.  
(Figs 11-13)

*Holotype.* ♂, **Malaysia, Sabah**, 5°33'N, 116°31'E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Paratypes.* 4 ♀, same data as holotype.

*Description. Male* (holotype). Size comparatively small. Coloration greyish brown (not dark) with following marks: yellowish lower part of epicranium; light brown scapes, mouthparts, sternites, coxae, proximal part of fore and middle femora, and inner surface of hind femora (excepting dorsal and distal parts); rather dark apical tegminal area, distal part of hind femora, most part of hind tibiae (their spines and spurs as well as hind tarsi only slightly lighter), and exposed part of hind wings. Structure of dorsal part of tegmina similar to that of *I. (B.) copiosa*, but with slightly less transverse mirror (this tegminal part almost indistinguishable from that of *I. kalimantanensis*; Gorochov, 1997: Fig. 122); hind wings distinctly longer than tegmina. Genitalia with epiphallus distinctly narrowing in middle part (Figs 12, 13) and having a few denticles on ventral surface (these denticles situated near proximal epiphallic part; Fig. 11); epiphallic apex strongly curved upwards; ectoparameres with short ventral lobe and longer dorsal lobe (Figs 11, 13).

*Female.* General appearance as in male, but clypeus and labrum hardly lighter, pronotum and dorsal tegminal part slightly darker (almost dark brown), and fore and middle both tibiae and tarsi dark. Ovipositor almost 1.1 times as long as hind femur.

Length (mm). Body: ♂ 14, ♀ 12-13; body with wings: ♂ 23, ♀ 21-22; pronotum: ♂ 2.4, ♀ 2-2.2; tegmina: ♂ 15.8, ♀ 13-14; hind femora: ♂ 8.8, ♀ 8.7-9.1; ovipositor 8-8.3.

*Comparison.* The new species is similar to *I. (B.) sarawakensis* Gor., *I. (B.) latipennis* Chop., and *I. (B.) kalimantanensis* in the shape of ectoparameres in the male genitalia, but clearly distinguished from them by the long epiphallus with apical part strongly curved upwards, a few denticles on ventral surface of epiphallus situ-

ated only near the proximal epiphallic part, and somewhat different shape of ectoparameral lobes (see Figs 11, 13-17).

Subgenus **Maxitara** Gorochov

**Itara (Maxitara) parallela** sp. n.

(Figs 18-20)

*Holotype*. ♂, **Malaysia, Sabah**, 5°33'N, 116°31'E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Paratypes*. 3 ♂, 2 ♀, same data as holotype.

*Description. Male* (holotype). Size large. Shape of body typical of *Itara*, but with very large tegmina. Coloration brownish grey (not dark) with following marks: dark brown area between ocelli; yellowish fore part of epicranium under ocelli and under medial part of eyes, but with brownish reversed V-shaped spot between antennal cavities, small median spot near clypeal suture, and a pair of elongate spots near this suture under antennal cavities; rest of epicranium darkened, but distinctly lighter than area between ocelli; clypeus yellowish with brownish median spot on upper part and a pair of vertical lateral stripes on lower part; labrum yellowish; mandibles and palpi brownish with darker spots at base of mandibles; pronotum almost uniform with slightly lighter lower part of lateral lobes; femora with not very strongly darkened apex, distinct oblique stripes (darkish and light) on outer surface of hind femora and darkish spots near their apices; tibiae and tarsi rather dark (almost dark brown), but with somewhat lighter spines and spurs of hind tibiae, spot on outer surface of fore tibiae (near tympanum), and base of hind basitarsi; tegmina with semitransparent membranes (greyish in dorsal part, lighter in lateral part), light brown and yellowish veins in basal and stridulatory areas, and darker (brown) veins in apical area and lateral part; cerci light brown with yellowish base. Structure of tegmina as in *I. (M.) maxima* Gor. (Gorochov, 2001: Fig. 1), but with slightly wider and more transverse mirror; hind wings distinctly longer than tegmina. Genitalia also similar to those of *I. maxima*, but epiphallus with almost parallel rows of denticles on dorsal surface (in *I. maxima*, these rows distinctly not parallel) and much narrower apical part (for comparison see Figs 18 and 21), and ectoparameres with distinctly longer distal part (see Figs 19, 20 and 22, 23).

*Variations*. Sometimes area inside reversed V-shaped spot between antennal cavities completely or almost completely darkish, and apex of apical tegminal area somewhat darker than rest of this area.

*Female*. General appearance as in male, but pronotum virtually uniform (without lighter band on lower part of lateral lobes), dorsal tegminal part hardly darker, all veins of tegmina brown, and

spines and spurs of hind tibiae as well as base of hind basitarsi darkened. Ovipositor hardly longer than hind femur.

Length (mm). Body: ♂ 22-23, ♀ 18-19; body with wings: ♂ 34-36, ♀ 33-34; pronotum: ♂ 3.5-3.7, ♀ 3.1-3.3; tegmina: ♂ 24-25, ♀ 22-22.5; hind femora: ♂ 12.5-13, ♀ 12.5-13.3; ovipositor 12.7-13.8.

*Comparison*. The new species differs from *I. (M.) maxima* mainly in the structure of the male genitalia. These differences are listed in the description.

**Itara (Maxitara) latiapex** sp. n.

(Figs 24-26)

*Holotype*. ♂, **Malaysia, Sabah**, 5°33'N, 116°31'E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Paratype*. ♀, same data as holotype.

*Description. Male* (holotype). Shape of body and coloration similar to those of holotype of *I. (M.) parallela*, but size somewhat smaller, head and legs lighter: head light brown with dark brown area between ocelli, greyish brown band along hind edge of vertex, yellowish epicranium under ocelli and eyes, almost yellowish genae and mouthparts (excepting palpi and base of mandibles), and greyish brown antennal flagellum; spots and stripes on femora less distinct; fore and middle tibiae with darkened upper part only; hind tibiae and tarsi almost not darkened. Structure of tegmina as in *I. (M.) maxima* (Gorochov, 2001: Fig. 1), but distal loop of longest oblique vein slightly shorter; hind wings distinctly longer than tegmina. Genitalia clearly distinguished from those of *I. maxima* and *I. parallela* by strongly widened apical part of epiphallus provided with a pair of high dorsal projections as well as intermediate size of ectoparameres (Figs 24-26).

*Female*. General appearance as in male, but coloration somewhat different: head with more darkened dorsal area between hind halves of eyes; pronotal lateral lobes without lighter band on lower part; dorsal tegminal part slightly darker; all veins of tegmina brown and dark brown. Ovipositor almost 1.15 times as long as hind femur.

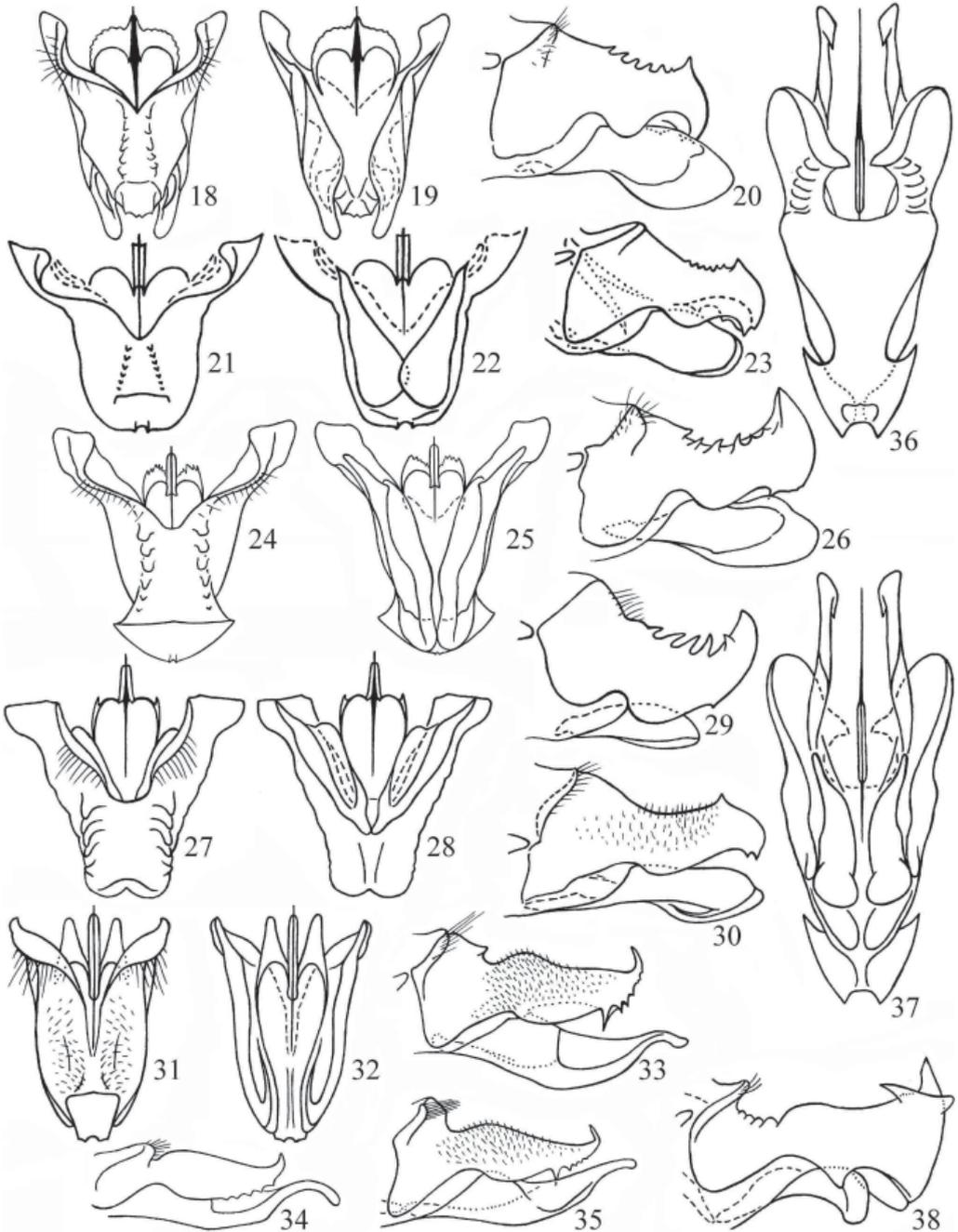
Length (mm). Body: ♂ 19, ♀ 16; body with wings: ♂ 32, ♀ 31; pronotum: ♂ 3.2, ♀ 3; tegmina: ♂ 22.5, ♀ 21.5; hind femora: ♂ 12, ♀ 12; ovipositor 13.8.

*Comparison*. The new species is clearly distinguished from *I. (M.) maxima* and *I. (M.) parallela* by the above-mentioned characters of the male genitalia (see Description).

**Itara (Maxitara) megacephala** sp. n.

(Figs 27-29)

*Holotype*. ♂, **Malaysia, Sabah**, Coco Range, environs of National park Gunung Arab, about 1500 m, primary forest,



**Figs 18-38.** *Itara* Walk., ♂. **18-20,** *I. (Maxitara) parallela* sp. n. (holotype); **21-23,** *I. (M.) maxima* Gor.; **24-26,** *I. (M.) latiapex* sp. n.; **27-29,** *I. (M.) megacephala* sp. n. (holotype); **30-32,** *I. (Phormincter?) mira* sp. n.; **33,** *I. (Ph.) finitima* sp. n.; **34,** *I. (Ph.) mjobergi* Chop. (after Chopard, 1930); **35,** *I. (Ph.) raggei* Gor.; **36-38,** *I. (Singitara) singularis* Gor. Distal part of genitalia from above (18, 21, 24, 27, 31, 36), from below (19, 22, 25, 28, 32, 37), and from side (20, 23, 26, 29, 30, 33-35, 38). Pubescence of epiphallus not shown in Figs 19, 21-23, 25, 32, 36, 37.

at night, on forest floor among dry leaves, 26-27.V.2007, A. Gorochov.

*Paratype*. ♂, same data as holotype.

*Description*. *Male* (holotype). General appearance different from typical representatives of *Itara* and *Itarinae*, more or less similar to that of *Gryllinae*. Head large, widened, with wide interspace between antennal cavities (this interspace almost twice as wide as scape) and a pair of slight concavities near ventromedial edges of antennal cavities; coloration of head black with yellowish ocelli, antennal cavities, and subgenae, brown antennae, lower part of labrum, and spots on clypeus and base of mandibles, light brown labium and maxillae, their palpi, genae, areas under eyes, lower and lateral parts of clypeus, upper part of labrum, and rest of mandibles. Pronotum uniformly dark brown, with almost parallel lateral margins of disc. Fore tibiae not inflated, with normal for *Itara* outer tympanum and small, more or less narrow, almost not immersed inner tympanum; coloration of legs light brown with slightly darker upper part of fore and middle tibiae. Tegmina similar to those of other species of *Maxitara* Gor., but smaller: somewhat less wide (mirror with slightly concave lateroproximal edge) and with almost twice shorter apical area; coloration of tegmina greyish with darker apical area, distal part of lateral area, and band along dorsal edge of lateral part; hind wings also greyish, much shorter than tegmina. Abdomen and pterothorax light greyish brown; genitalia distinguished from those of *I. (M.) maxima*, *I. (M.) parallela*, and *I. (M.) latiapex* by distinctly longer denticles on dorsal part of epiphallus, much wider interspace between rows of these denticles, high and unpaired dorsal projection of apical epiphallic part, and clearly smaller ectoparameres (Figs 27-29).

Variations. Paratype with slightly darkened part of hind femora near apex and almost without darkening on middle tibiae.

*Female* unknown.

Length (mm). Body 19-21; pronotum 3.1-3.4; tegmina 13.7-14; hind femora 12.5-13.2.

*Comparison*. The new species clearly differs from all other congeners in the not inflated fore tibiae, small and almost not immersed inner tympanum, large head, parallel lateral margins of pronotal disc, somewhat shortened male tegmina (extending to apex of abdomen only), strongly shortened hind wings, and above-mentioned characters of the male genitalia (see Description).

*Note*. This species belongs to *Maxitara* as it has the male genitalia similar to those of other representatives of this subgenus. The great difference in general appearance may be connected with a transition from mode of life typical of *Itara* to that characteristic of ground crickets from the related subfamily *Gryllinae*. Similar adaptations (but less developed) are present also in a species

of the subgenus *Gryllitara* Chop. (*I. pendleburyi* Chop.).

### Subgenus **Phormincter** Saussure

#### **Itara (Phormincter?) mira** sp. n. (Figs 30-32)

*Holotype*. ♂, **Malaysia**, *Sabah*, 5°33'N, 116°31'E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Paratypes*. 3 ♂, 2 ♀, same data as holotype.

*Description*. *Male* (holotype). Body medium-sized, typical of *Itara*. Coloration light brown with following darkenings: antennal flagellum, upper part of epicranium, distal part of maxillary palpi, and spots on scape brown; area between ocelli, apex of fore and middle femora, upper part of tibiae, short humeral spot at base of tegmina, and exposed part of hind wings almost dark brown; fore part of pronotum (excepting light lower area of lateral lobes) and stridulatory areas of dorsal tegminal part (excepting light oblique veins) slightly darkened; apical tegminal area greyish brown; veins of lateral tegminal part and tarsi darkish. Structure of tegmina very similar to that of *I. (Ph.) melanocephala* Gor. (Gorochov, 1997: Fig. 23), but cell between distal part of longest oblique vein and CuA hardly wider, and proximal part of this oblique vein more S-shaped; hind wings distinctly longer than tegmina. Genitalia (Figs 30-32) distinguished from those of all other representatives of *Phormincter* Sauss. by strongly shortened apical part of ectoparameres (in other species of *Phormincter*, this part more or less long, thin, and usually curved; Figs 34, 35) and narrow proximal epiphallic part provided with deep median notch.

*Female* unknown.

Length (mm). Body 18; body with wings 29; pronotum 2.9; tegmina 20; hind femora 11.

*Comparison*. The new species differs from all species of *Phormincter* in the above-mentioned (in the description) characters of the male genitalia.

*Note*. The presence of more or less long and thin apical part of ectoparameres is one of the diagnostic characters of this subgenus. This part is very short in *I. mira*, which forces me to doubt belonging of this species to *Phormincter*.

#### **Itara (Phormincter) finitima** sp. n. (Fig. 33)

*Holotype*. ♂, **Malaysia**, *Sabah*, 5°33'N, 116°31'E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Paratypes*. 2 ♀, same data as holotype.

*Description*. *Male* (holotype). Size rather small. Shape of body typical of *Itara*. Coloration light brown with following marks: dark brown upper

part of head (including area between ocelli); slightly darkened antennal flagellum, distal part of maxillary palpi, pronotal disc (but with a pair of light, not large, transverse spots), upper part of fore and middle tibiae, spot near apex of hind femora, and stridulatory tegminal areas; distinctly lighter some veins of these tegminal areas; greyish brown apical tegminal area and exposed part of hind wings (the latter part somewhat darker). Structure of tegmina similar to that of *I. (Ph.) raggei* Gor. (Gorochov, 1997: Fig. 29), but longest oblique vein with somewhat less curved proximal part and shorter distal part, other oblique veins distinctly longer (as compared to *I. raggei*), and mirror hardly shorter (more transverse); hind wings distinctly longer than tegmina. Genitalia also most similar to those of *I. raggei*, but dorsal edge of proximal epiphallic part with very distinct tubercle near middle epiphallic part in profile, distal epiphallic part distinctly narrower (lower) in profile, and ectoparameres with more curved apical part (for comparison see Figs 33 and 35).

*Female*. General appearance as in male, but dorsal part of tegmina greyish brown, and all its veins darkish. Ovipositor about 1.1 times as long as hind femur.

Length (mm). Body: ♂ 14, ♀ 11-12; body with wings: ♂ 22, ♀ 20-21; pronotum: ♂ 2, ♀ 1.8-1.9; tegmina: ♂ 14, ♀ 12-12.5; hind femora: ♂ 8.7, ♀ 8-8.5; ovipositor 7.2-7.9.

*Comparison*. The new species differs from *I. (Ph.) raggei* in the above-mentioned (in the description) characters of the male tegmina and male genitalia. Females of these species are virtually indistinguishable. From all other species of *Phormincter* (including insufficiently studied *I.*

*mjobergi* Chop.), *I. finitima* sp. n. is distinguished by the shape of proximal and distal epiphallic parts in profile as well as length of apical part of ectoparameres (see Figs 33 and 34).

Subgenus **Singitara** Gorochov

**Itara (Singitara) singularis** Gor.  
(Figs 36-38)

*Material*. **Malaysia, Sabah**: 11 ♂, 8 ♀, 5°33'N, 116°31' E, Trus Madi Mt, about 1000 m, partly primary / partly secondary forest, at light, 13-25.V.2007, A. Gorochov.

*Note*. This species was described from a single male from Singapore (Gorochov, 1997). I did not find any important differences of this male from the specimens collected in North Borneo and listed here.

#### Acknowledgements

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