Revision of the cricket species of the subfamily Itarinae (Orthoptera: Gryllidae) from China

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Abstract—Genus of *Itara* Walker, 1869 (Orthoptera: Gryllidae) includes 10 subgenera and 54 species worldwide. These species are mainly distributed in the Asia-tropical region (*e.g.*, Malay Archipelago, India, Vietnam, and Thailand). In China, one species (*Itara minor* Chopard, 1925) has long been identified from tropical regions. In this study, three subgenera and eight species of *Itara* have been identified. Three new species are described (*Itara* (*Itara*) *basidentata* **new species**, *Itara* (*Itara*) *dicrana* **new species**, and *Itara* (*Gryllitara*) *denudata* **new species**, and four new distribution records are reported. Descriptions and illustrations for eight species are provided.

Introduction

The genus *Itara* Walker, 1869 (Orthoptera: Gryllidae) was established with *Itara sericea* as the type species. The species *Gryllus* (*Phalangopsis*) *microcephala* Haan, 1842 was added to this genus by Kirby (1906). This species was the type species of the genus *Phormincter* Saussure, 1878, which was then moved to the genus *Itara* as a subgenus by Gorochov (1997). Chopard (1925, 1930, 1931, 1940) reported seven species of *Itara* mainly from the Malay Archipelago. Gorochov made a series of important studies of this taxon. Gorochov (1985, 1988) initially reported four new species in this genus. In 1996, he summarised and redescribed many *Itara* species and added three new species. More importantly, Gorochov (1997) revised this genus worldwide and divided them into seven subgenera, *Itara*, *Phormincter*, *Singitara* Gorochov, 1997, *Noctitara* Gorochov, 1997, *Gryllitara* Chopard, 1931, *Micritara* Gorochov, 1997 and *Bornitara* Gorochov, 1997, with descriptions of 36 species (including 20 new species). Successively, he reported three more new subgenera, *Maxitara* Gorochov, 2001, *Tinnitara* Gorochov, 2007, and *Inditara* Gorochov, 2009, and 18 new *Itara* species (Gorochov 2001a, 2001b, 2004, 2007, 2008, 2009, 2012, 2013). Up to now, 10 subgenera and 54 species of *Itara* have been recorded worldwide (Eades *et al.* 2014) and they are all distributed in Asia-tropical areas. Except for three species located on the Indian subcontinent and eight species from Thailand and Vietnam, all other species of *Itara* are located in the Malay Archipelago.

In China, species of *Itara* are distributed in the Chinese tropical regions adjacent to Burma, Laos, and Vietnam, which are the northern areas of Southeast Asia (Fig. 1). All Chinese species in this genus were identified as *Itara minor* Chopard, 1925 in past studies. We collected many *Itara* specimens from China and could distinguish them as different species, including three new species and four new distribution records, which belong to three subgenera, *Itara*, *Gryllitara*, and *Noctitara*. They are primarily located in Hainan and Yunnan Provinces. We provide descriptions and illustrations for the Chinese species of *Itara*.

Materials and methods

Identification of *Itara* is mainly based on male features. Genitalia were prepared by placing the

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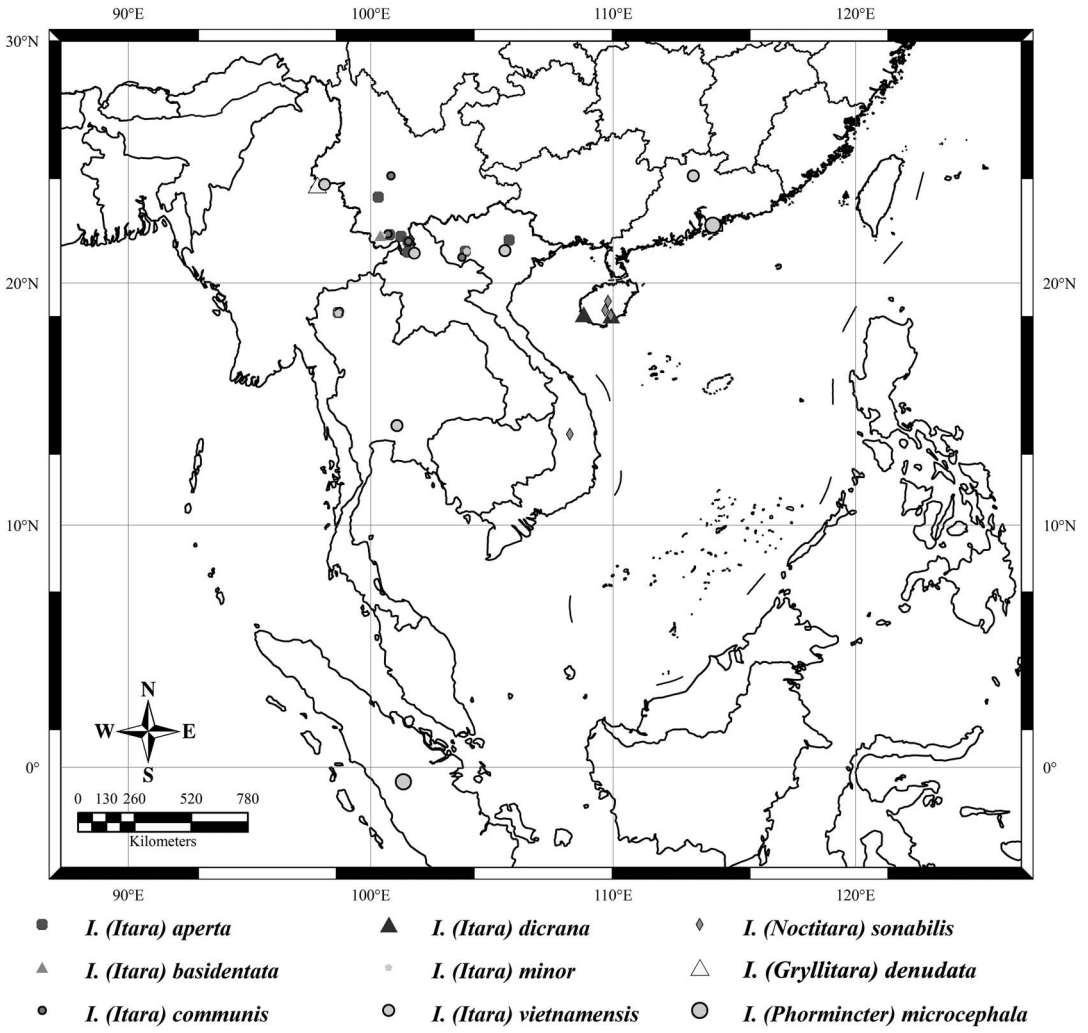
Fig. 1. Known distributions of Chinese species of *Itara*.



dissected genitalia complex into a concentrated solution of NaOH for about 10 hours. Figures of genitalia and body morphology were produced using a highly sensitive QIMAGING Retiga 2000R digital camera (CCD) (Surrey, British Columbia, Canada) and Automontage imaging software (Cambridge, United Kingdom). Whole bodies were photographed with a Nikon D100 (Tokyo, Japan) using a Micro-Nikkor 105 mm macro lens (Tokyo, Japan). The terminology of the forewing venation follows Robillard and Desutter-Grandcolas (2004). Specimens were dry preserved. Dissecting of genitalia was done after softening them. The dissecting needle was then used to pull out the male genitalia from the gonopore. Most specimens are housed in the collection of the Entomological Museum, Northwest A & F University, Yangling, Shaanxi, China (NWAFU), and recently collected specimens (after 2009) were attracted to a high-pressure mercury lamp (500-watt) in the field. All measurements are in millimetres (mm).

Abbreviations. **Measurement terminology**: BL – body length (from head to tip of abdomen), HW – head width, EW – eye width, PL – pronotum length, PW – pronotum width (maximum width of pronotum), FWL – forewing length, HWL – hindwing length (length of visible part), DVL – length of diagonal vein, ML – mirror length (from apex to base), CL – cercus length, FTL – protibiae

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length, TTL – length of tibiae tympanum (inner), MTL – mesotibiae length, HLL – metafemur length. **Genitalia terminology** (Figs. 3A, 4A, 4I): DBE – dorsal lobe of basal epiphallus, LpDBE – lateral process of dorsal lobe of basal epiphallus, MpDBE – median process of dorsal lobe of basal epiphallus, LE – lateral edges of epiphallus, EA – epiphallic apex, EcP – ectoparamere, MEcP – median lobes of ectoparamere, EcPI – ectoparamere inner part.

Genus *Itara* Walker, 1869

Itara Walker, 1869: 64; Shiraki 1930: 236; Yin and Liu 1995: 100; Gorochov 1996: 84, 1997: 49.

Type species. *Itara sericea* Walker, 1869

Distribution. Indonesia, Malaysia, Philippines, India, Bangladesh, Vietnam, Thailand, China.

Diagnosis. Body boat shaped. Head very small for its body size. Tegmina broad and often arc shaped laterally; apical field never longer than the width of forewings. First metatarsomere long and about half of length of metatibiae. Metatibiae with both spines and spurs.

Description. Body usually yellowish brown (sometimes dark brown), head dorsum, forewings apical field, hindwings, and lower part of leg apex dark brown. Body boat shaped. Head small and round. Occiput widened or narrowed, always pubescent. Vertex more or less pubescent. Rostrum forming spherical surface with vertex. Ocelli small, median ocellus sometimes larger. Median ocellus half-moon shaped or laterally widened ovoid and lateral ocelli usually rounded. Antennal scape shield shaped and wider than half width of rostrum. Epistomal suture upwardly convex. Labrum straight distally and sometimes narrowly convex. Terminal maxillary palpomere truncate, longer than or equal to 3rd palpomere. Terminal labial palpomere rod shaped and longer than or equal to total length of remaining palpomeres. Pronotum always trapezoid shaped with straight or curved anterior and posterior margins. Pronotal disc flattened, pubescent and margined laterally. Forewing possessing rather fine and short cilia. Mirror ovoid and laterally widened; dividing vein sinuate. Apical field long, equal to or obviously longer than width of mirror, with 6–8 branches. False veins distributed in harp field and mirror, sometimes in chordal area. A2 and A3 veins separated from each other at chord field. Harp veins from 4–6. C1 cross vein linked to mirror. Cell d2 knife shaped. Hindwing pubescent and caudiform in shape. Subgenital plate cucullate shaped. Protibia swollen, external tympanum open and oval shaped; inner tympanum covered by sclerotised fold and slit shaped. Protarsus ridged ventrally and membranous. Apical spurs of mesotibiae numbered 2:2. Inner margin of metaclaw convex basically and with a long cilium. Metafemur wide, almost equal to quarter of its length. Metatibia always smooth dorsally and sometimes wrinkled. Basal portion of metatibia with dorsal spines; apical part with dorsal spurs (in number 4:4); spur curved distally. Metatarsus with two rows of small spines, variable in number. Metatarsal apical spurs numbered 3:3, inner spurs longer than outer spurs; median inner spur longest, bottom spur shortest.

Key to world subgenera of *Itara* and species from China (adult males)

1. Ectoparamere simple and swollen, rod shaped in lateral view (Figs. 4G, 4H, 5G, 5H). 2
— Ectoparamere varied; very short or with apex always obviously thinner than the proximal part. 5

2. Epiphallic apex complicated and overlapping transversely and longitudinally in lateral view . . . . . **Subgenus *Singitara* Gorochov, 1997**
— Epiphallic apex more-or-less boot shaped in lateral view (Figs. 4G, 4H). 3

3. Epiphallic dorsum with paired, large, laterally convex margins at median. . . . . **Subgenus *Micritara* Gorochov, 1997**
— Epiphallic dorsum with almost parallel lateral margins at median. 4

4. Epiphallic dorsum with a longitudinal row of denticles at median (Figs. 3G, 3H). . . . . **Subgenus *Noctitara* Gorochov, 1997.** . . . . . ***Itara* (*Noctitara*) *sonabilis* Gorochov, 1996**

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— Epiphallic dorsum possessed with two longitudinal rows of denticles and with a transverse ridge apically. . . . . **Subgenus *Maxitara* Gorochov, 2001**

5. Epiphallus with three distal processes, a median large process and paired, lateral, lower processes. 6
— Epiphallus without lateral processes. 8

6. Ectoparamere slightly oval shaped in lateral view. . . . . **Subgenus *Inditara* Gorochov, 2009**
— Ectoparamere long and thin apically. 7

7. Ectoparamere strongly protruding behind epiphallic apex, with large median lobes. . . . . **Subgenus *Itara* Walker, 1869**. 10
— Ectoparamere not extending to epiphallic apex, median lobes of ectoparamere extremely small and not covering its inner part (Fig. 4I). . . . . **Subgenus *Gryllitara* Chopard, 1931**. . . . . ***Itara* (*Gryllitara*) *denudata* new species**

8. Ectoparamere short, not reaching epiphallic apex. 9
— Ectoparamere very long and strongly protruding behind epiphallic apex. . . . . **Subgenus *Phormincter* Saussure, 1878**

9. Epiphallus not contract at its basal part; ectoparamere always rather short and not reaching the median part of epiphallus. . . . . **Subgenus *Bornitara* Gorochov, 1997**
— Epiphallus with a narrow, sclerotised neck proximally; ectoparamere shorter than epiphallus, but extending to middle of epiphallus. . . . . **Subgenus *Tinnitara* Gorochov, 2007**

10. Pronotal disc almost uniform coloured but ornamented with conspicuously light coloured, blade-shaped patterns. 11
—- Pronotal disc always dark coloured medially and light laterally. 12

11. Epiphallus with obvious large denticles basally (Fig. 4B). . . . . ***Itara* (*Itara*) *basidentata* new species**
—- Epiphallus with small denticles basally (Fig. 4E). . . . . ***Itara* (*Itara*) *minor* Chopard, 1925**

12. Dorsal lobe of basal epiphallus with median process conspicuously longer than wide and usually possessing distal deep concavity (Fig. 3A). . . . . ***Itara* (*Itara*) *aperta* Gorochov, 1996**
— Dorsal lobe of basal epiphallus with short median process. 13

13. In lateral view, the epiphallic apex with two large denticles and without small denticles (Fig. 4D). . . . . ***Itara* (*Itara*) *dicrana* new species**
— In lateral view, the epiphallic apex angle shaped or rounded distally and with many small denticles at bottom. 14

14. Dorsal lobe of basal epiphallus with an evenly thin lateral process (Fig. 3C) and its epiphallic apex somewhat square in lateral view (Fig. 4C). . . . . ***Itara* (*Itara*) *communis* Gorochov, 1997**
— Dorsal lobe of basal epiphallus with lateral process that is thick and expanded apically (Fig. 3F); epiphallic apex slightly angle shaped in lateral view (Fig. 4F). . . . . ***Itara* (*Itara*) *vietnamensis* Gorochov, 1985**

Itara (*Itara*) *aperta* Gorochov, 1996
(Figs. 2A, 3A, 4A, 5A)

Itara aperta Gorochov 1996: 82, 83, 84
Itara (*Itara*) *aperta*: Gorochov, 1997: 60, 61, 62

Holotype information. Type locality: **Vietnam**, Sonla Province, Song Ma. Deposited at Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (not examined).

Material examined. China: Yunnan. Three males, Mengla, Longmen, 930 m, collector: Ma Libin, 18-v-2009 (NWAFU); one male, Xishuangbanna, Jinghong, 545 m, collectors: Zhou Yao and Yuan Feng, 14–16-v-1974 and 22–25-v-1974 (NWAFU); one male, Menglun, collectors: Liu Guangchun and Cai Wanzhi, 21-v-1991 (NWAFU); one male, Xishuangbanna, Menglong, 526 m, collectors: Zhou Yao and Yuan Feng, 11–13-v-1974 (NWAFU); one male, Mengla, Yaoqu, collector: Ma Libin, 1-vi-2009 (NWAFU).

Distribution (Fig. 1). Vietnam (Son La, Phu Luong), Thailand (Chiang Mai), China (Yunnan).

Diagnosis. Pronotal disc dark coloured with light-coloured, blade-shaped patterns; lateral lobes light coloured basally. The epiphallic apex expanded and round at distal margin in lateral view (Fig. 4A).

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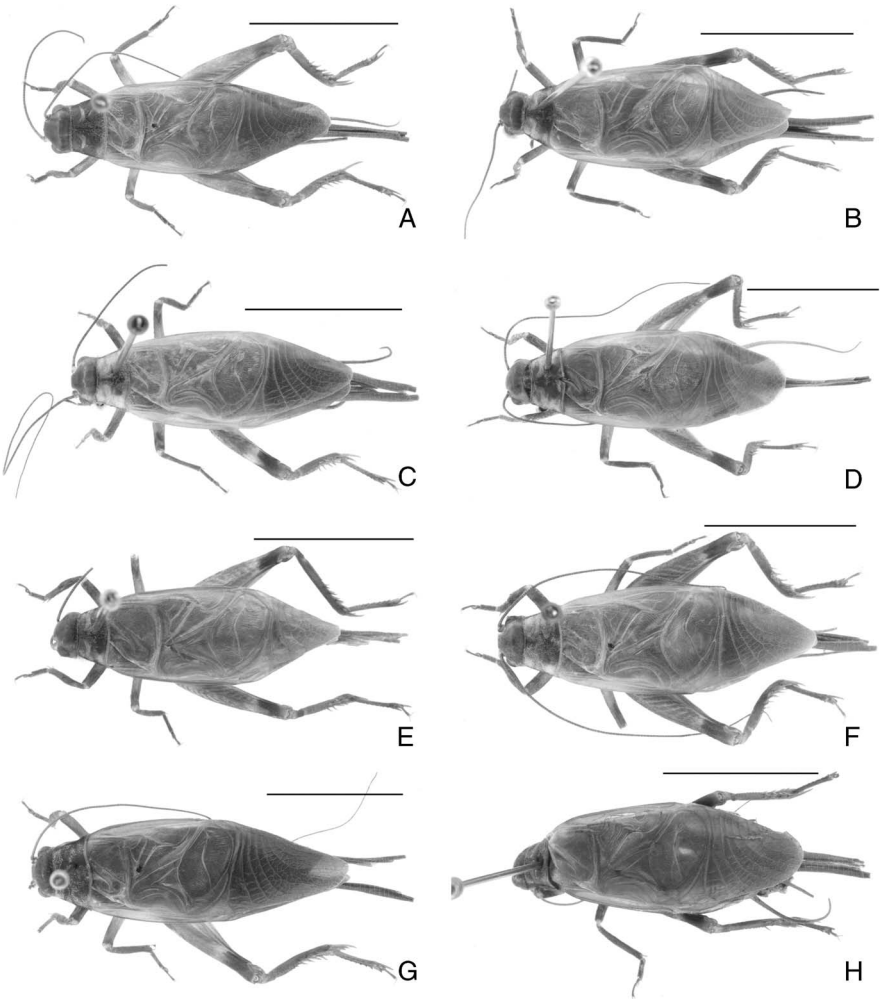
Fig. 2. Habitus photographs of species (A–H). A. *Itara* (*Itara*) *aperta*; B. *Itara* (*Itara*) *basidentata*; C. *Itara* (*Itara*) *communis*; D. *Itara* (*Itara*) *dicrana*; E. *Itara* (*Itara*) *minor*; F. *Itara* (*Itara*) *vietnamensis*; G. *Itara* (*Noctitara*) *sonabilis*; H. *Itara* (*Gryllitara*) *denudata*. Scale bar: 10 mm.



Colouration. Head dorsum dark coloured and face light coloured. Pronotum as diagnosed above (Fig. 2A). Subgenital plate with yellow, triangular spot ventrally.

Measurements. BL 14.78 ± 0.90, HW 2.78 ± 0.18, EW 0.65 ± 0.07, PL 2.37 ± 0.19, PW 3.86 ± 0.22, FWL 14.94 ± 0.57, HWL 4.98 ± 0.46, DVL 3.77 ± 0.21, ML 3.18 ± 0.26, CL 8.90 ± 1.21, FTL 2.91 ± 0.16, TTL 0.71 ± 0.09, MTL 3.46 ± 0.25, HLL 8.98 ± 0.09.

Description. Body small to medium for genus. Head small. Occiput pubescent and somewhat broad. Ocelli small and median ocellus semilunar shaped. Antennal scape round and shield shaped. Epistomal suture slightly upwardly convex. Labrum straight apically. Terminal maxillary palpomere long and rounded distally, longer than 3rd palpomere. Terminal labial palpomere rod shaped, conspicuously longer than total length of remaining palpomeres. Pronotal disc flattened and almost trapezoid shaped, but width of apical and basal margins nearly equal. Anterior margin of pronotum straight or slightly concave, posterior margin convex. Forewing somewhat narrowed at dorsum. Apical field short, nearly equal to wing width; possessing 6 branches, sometimes 7 (Fig. 2A). With 4–5 harp

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Fig. 3. Genitalia in dorsal view (A–I). A. *Itara* (*Itara*) *aperta*; B. *Itara* (*Itara*) *basidentata*; C. *Itara* (*Itara*) *communis*; D. *Itara* (*Itara*) *dicrana*; E. *Itara* (*Itara*) *minor*; F. *Itara* (*Itara*) *vietnamensis*; G–H. *Itara* (*Noctitara*) *sonabilis*, G from Limushan, Hainan, China; I. *Itara* (*Gryllitara*) *denudata*. DBE. dorsal lobe of basal epiphallus, LpDBE. lateral process of dorsal lobe of basal epiphallus, MpDBE. median process of dorsal lobe of basal epiphallus, LE. lateral edges of epiphallus, EA. epiphallic apex, MEcP. median lobes of ectoparamere.

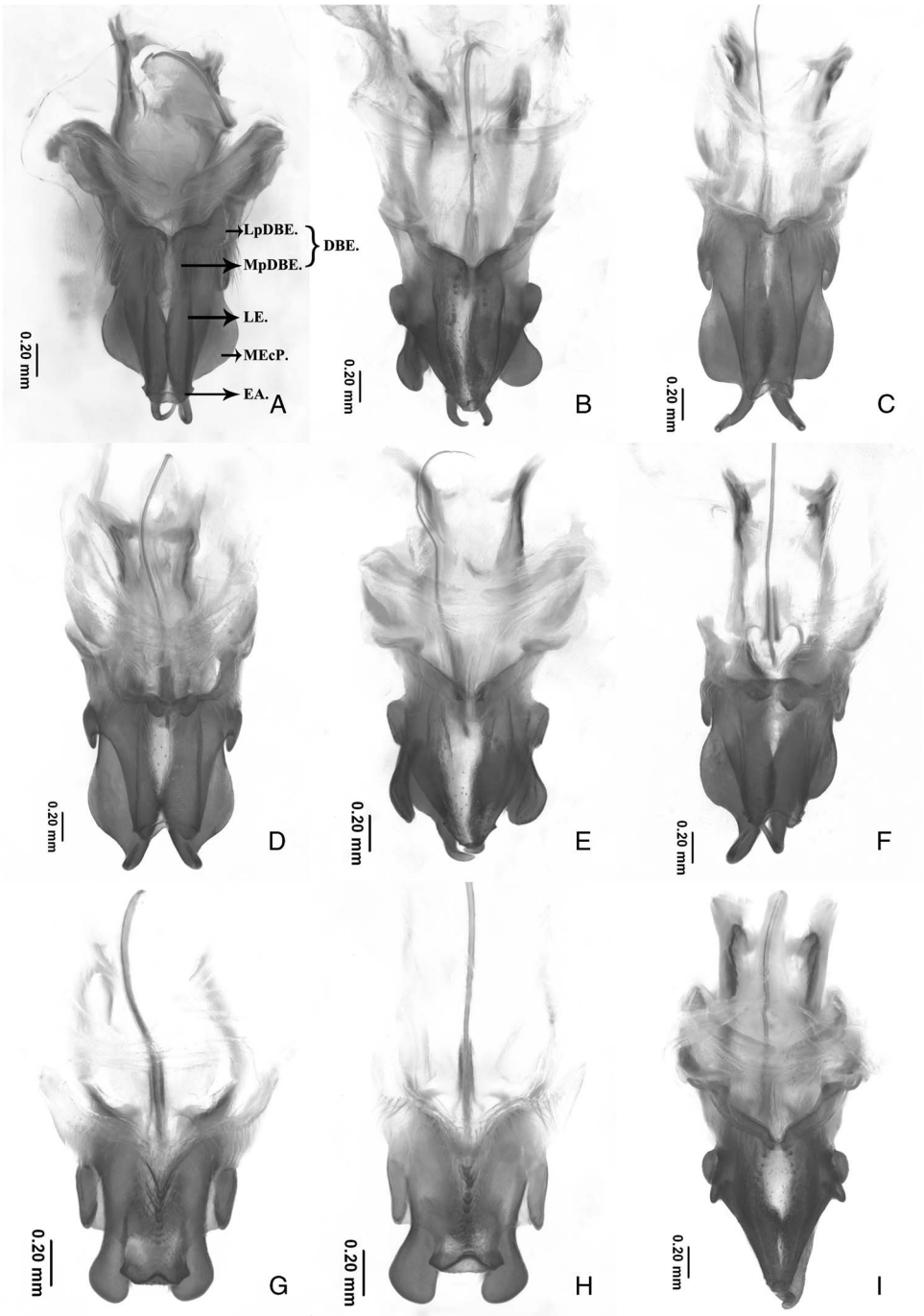

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Fig. 4. Genitalia in lateral view (A–I). A. *Itara* (*Itara*) *aperta*; B. *Itara* (*Itara*) *basidentata*; C. *Itara* (*Itara*) *communis*; D. *Itara* (*Itara*) *dicrana*; E. *Itara* (*Itara*) *minor*; F. *Itara* (*Itara*) *vietnamensis*; G–H. *Itara* (*Noctitara*) *sonabilis*, G from Limushan, Hainan, China; I. *Itara* (*Gryllitara*) *denudata*. LpDBE. lateral process of dorsal lobe of basal epiphallus, MpDBE. median process of dorsal lobe of basal epiphallus, LE. lateral edges of epiphallus, EA. epiphallic apex, EcP. ectoparamere, MEcP. median lobes of ectoparamere, EcPI. ectoparamere inner part.

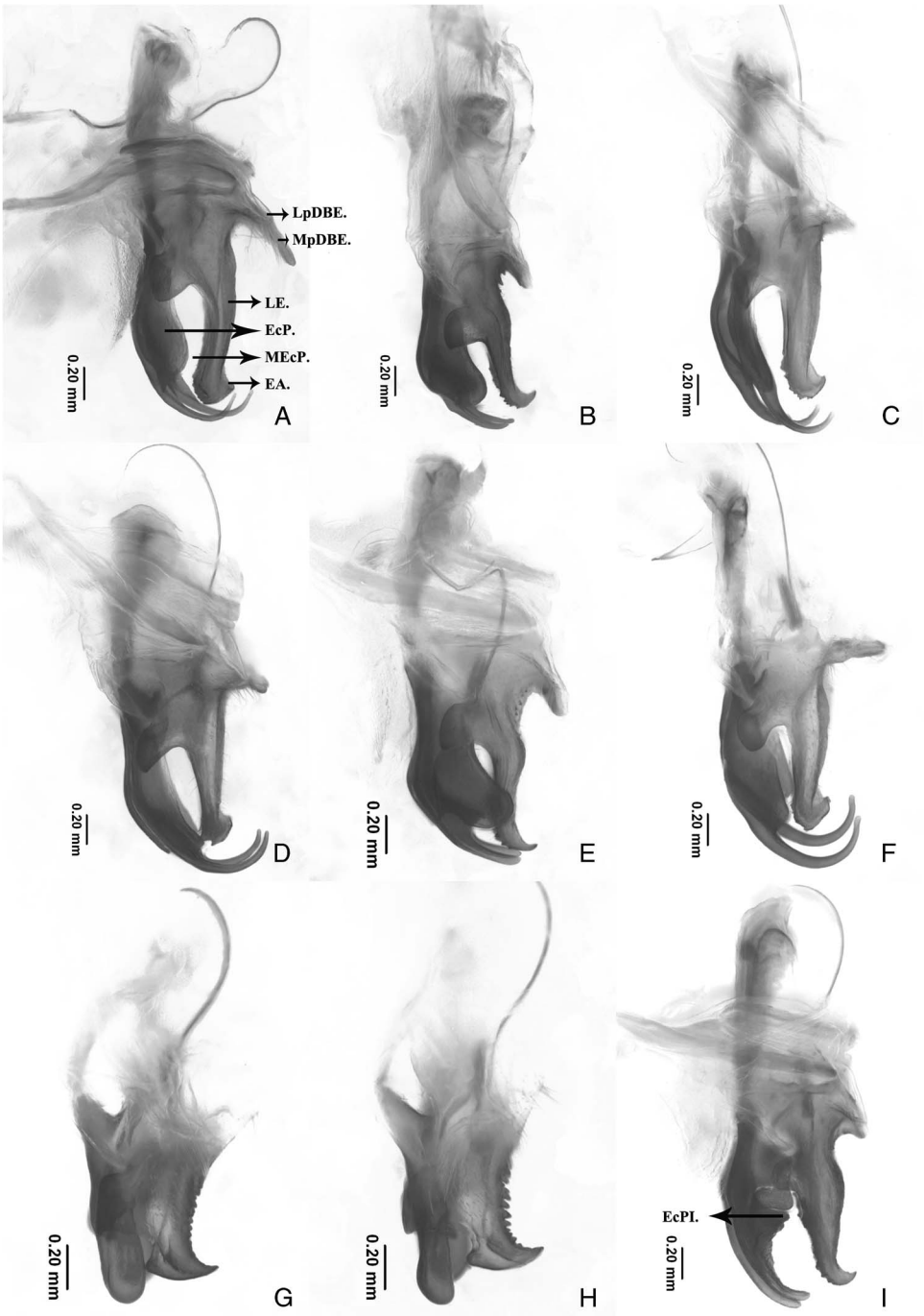

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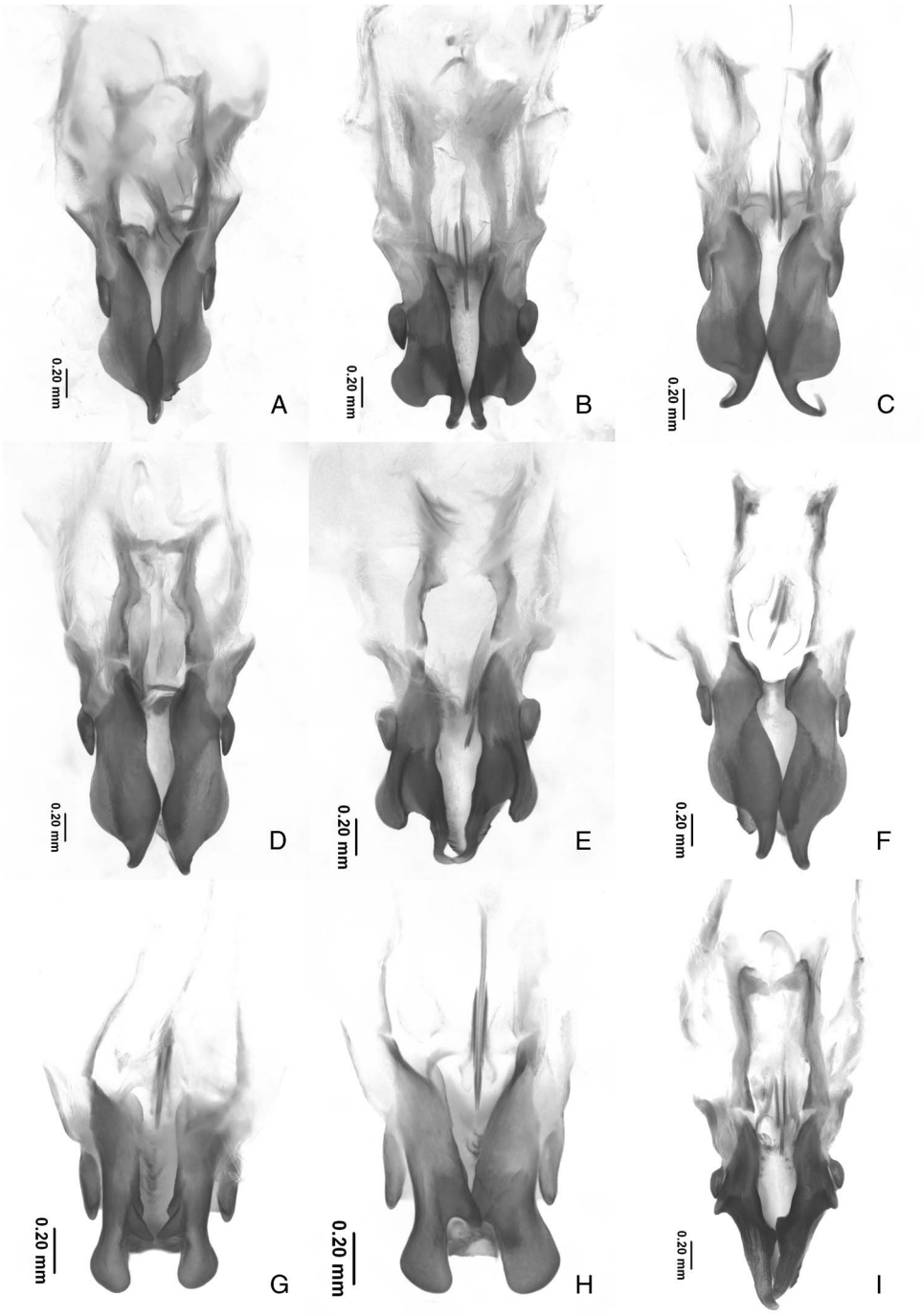
Fig. 5. Genitalia in ventral view (A–I). A. *Itara* (*Itara*) *aperta*; B. *Itara* (*Itara*) *basidentata*; C. *Itara* (*Itara*) *communis*; D. *Itara* (*Itara*) *dicrana*; E. *Itara* (*Itara*) *minor*; F. *Itara* (*Itara*) *vietnamensis*; G–H. *Itara* (*Noctitara*) *sonabilis*, G from Limushan, Hainan, China; I. *Itara* (*Gryllitara*) *denudata*.



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veins. False veins distributed in harp field, chordal field, and mirror. Hindwing short and slightly longer than apical field length. Apical external tympanum shaped as long ovoid. Metatarsus with two rows of small spines dorsally, inner numbering 7–8, outer spines numbering 8–9. Genitalia: Dorsal lobe of basal epiphallus bisinuate, with thick, distally expanded lateral process; median process conspicuously longer than wide, usually possessing distal, deep concavity (Fig. 3A). Lateral edges of epiphallus parallel and narrow between them (Fig. 3A). In lateral view, epiphallic apex expanded, round at distal margin, and with denticles at bottom (Fig. 4A); in dorsal view, epiphallic apex possesses straight inner margin, outside margin somewhat concave (Fig. 3A).

Remarks. This species is similar to *I.* (*I.*) *vietnamensis*, but dorsal lobe of basal epiphallus possesses thicker lateral processes and a conspicuously longer median process.

Itara (*Itara*) *basidentata* Ma and Zhang, new species

(Figs. 2B, 3B, 4B, 5B)

Type material. Holotype. Male, China (Fig. 1): Yunnan, Xishuangbanna, Menghai, 1160 m, collectors: Zhou Yao and Yuan Feng, 27–31.v.1974 (NWAFU).

Diagnosis. Pronotum entirely dark brown, with light coloured, blade shaped patterns. Apical field short and nearly equal to the length of mirror. This species is similar to *I. minor*, but the genitalia conspicuously larger and longer and the epiphallus with large denticles proximally (Fig. 4B).

Colouration. Head brown. Ocelli and face light coloured. Pronotum entirely dark brown with yellowish brown, blade-shaped patterns. Femur apex dorsally and hindwings dark brown. Remainder of body yellowish brown.

Measurements. BL 17.58, HW 2.76, EW 0.50, PL 1.74, PW 3.94, FWL 15.00, HWL 5.80, DVL 4.00, ML 3.50, FTL 2.90, TTL 1.00, MTL 3.44, HLL 8.18

Etymology. The specific epithet "*basidentata*" refers to the basal part of epiphallus with denticles.

Description. Body sized small for genus. Head small. Occiput glabrous and vertex smooth. Median ocellus small and half-moon shaped; lateral ocelli large. Antennal scape square and shield shaped; wider than half width of rostrum. Epistomal suture upwardly convex. Labrum narrowed and convex apically. Terminal maxillary and labial palpomeres truncate, both almost equal to length of 3rd palpomere of maxillary palpus or remaining 2 labial palpomeres. Pronotal disc flattened and trapezoid shaped; anterior margin concave, posterior margin convex (Fig. 2B). Forewing dorsal field broad. Apical field undeveloped and nearly equal to length of mirror; with 6 branches (Fig. 2B). Harp with 4 veins. False veins distributed in harp field and mirror. Visible parts of hindwing longer than metatarsus. Apical external tympanum large and ovoid shaped. Metatibia with dorsal spurs numbered 3:4 (inner:outer). Top and median inner apical spurs pinniform. Metatarsus with dorsal short spines and numbered 10:10. Genitalia: dorsal lobe of basal epiphallus obtuse angle shaped, lateral process even in thickness, columnar, and median process short and wide (Fig. 3B). Epiphallus with large, basal denticles (Fig. 3B). Lateral edges of epiphallus constricted distally and with apex acute; in lateral view, apex upwardly curved, with denticles at bottom (Fig. 4B). Inner ectoparamere with pair of processes.

Remarks. This species is very similar to *I.* (*I.*) *minor* in both features of the body and genitalia, but it has a distinct epiphallus. The new species possesses a longer and dorsally flattened epiphallus; the basal denticles are larger and arranged in two rows (Figs. 3B, 4B). In contrast, the epiphallus of *I.* (*I.*) *minor* is short and dorsally convex and the basal denticles are small, not sharp, and not arranged in rows.

Itara (*Itara*) *communis* Gorochov, 1997

(Figs. 2C, 3C, 4C, 5C)

Itara (*Itara*) *communis* Gorochov, 1997: 60, 61, 62

Holotype **information.** Type locality: **Vietnam**, Sonla Province, Song Ma. Deposited at Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (not examined).

Material examined. China: Yunnan. Five males, Xishuangbanna, Jinghong, 545 m, collectors: Zhou Yao and Yuan Feng, 14–16-v-1974 and 22–25-v-1974 (NWAFU); one male, Jingdong, 1171 m, collectors: Zhou Yao and Yuan Feng, 5-v-1974 (NWAFU); one male, Mengla, Yaoqu, collectors: Ma Libin, 1-vi-2009 (NWAFU).

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Distribution (Fig. 1). Vietnam (Sonla), Thailand (Chiang Mai), China (Yunnan).

Diagnosis. Pronotal disc light coloured, basally with dark, blade-shaped patterns and dark, fan-shaped spot (Fig. 2C). The epiphallic apex somewhat extending upward and slightly squared at apical margin in lateral view (Fig. 4C).

Colouration. Body light coloured. Head dark colour. Pronotal disc as diagnosed above (Fig. 2C).

Measurements. BL 14.38 ± 0.85, HW 2.78 ± 0.19, EW 0.71 ± 0.05, PL 2.20 ± 0.17, PW 3.78 ± 0.38, FWL 15.30 ± 0.50, HWL 4.94 ± 0.23, DVL 3.56 ± 0.26, ML 3.54 ± 0.24, CL 7.86 ± 0.71, FTL 2.90 ± 0.23, TTL 0.72 ± 0.12, MTL 3.46 ± 0.14, HLL 8.48 ± 0.46.

Description. Body size medium for genus. Head small. Occiput somewhat broad. Ocelli small, median ocellus oval shaped and laterally expanded. Antennal scape round shield shaped, nearly equal to rostrum in width. Epistomal suture slightly convex. Labrum apical margin almost straight. Terminal maxillary palpomere truncate, longer than 3rd palpomere. Terminal labial palpomere rod shaped with truncate apex, almost equal to total length of remaining palpomeres. Pronotal disc trapezoid shaped, depressed around median groove, with apical and basal margins always straight but sometimes weakly convex or concave (Fig. 2C). Harp most often with 5 oblique veins; sometimes with 4. False veins positioned in harp field and mirror. Apical field short, equal to or slightly longer than width of wing; with 7 branches (if 6 branches, 4th vein bifurcate) (Fig. 2C). Hindwing long with visible portion almost as long as length of apical field. apical external tympanum slightly smaller and oval shaped. Metatarsus with short, dorsal spines, inner and outer number 6:7. Genitalia: dorsal lobe of basal epiphallus bisinuate, lateral process somewhat evenly thickened, with short median process (Fig. 3C). Lateral edges of epiphallus expanded at middle towards apex. In lateral view, epiphallic apex somewhat extended upwards, slightly squared at apical margin; with denticles dorsally (Fig. 4C); in dorsal view, epiphallic apex with straight inner margin, outer margin widely concave (Fig. 3C).

Remarks. This species is very similar to *I.* (*I.*) *abdita*, but the dorsal lobe of basal epiphallus is thinner and shorter.

Itara (*Itara*) *dicrana* Ma and Zhang, new species

(Figs. 2D, 3D, 4D, 5D)

Type material. Holotype. male, **China: Hainan** (Fig. 1):, Jianfengling, 980 m, collector: Fu Qiang, 7-v-2008 (NWAFU). **Paratypes. China: Hainan** (Fig. 1): one male, Diaoluoshan, 930 m, collector: Fu Qiang, 10-iv-2008 (NWAFU); one male, Jianfengling, 980 m, collector: Fu Qiang, 5-v-2008 (NWAFU); one male, Jianfengling, 980 m, collector: Fu Qiang, 7-v-2008 (NWAFU); two males, Jianfengling, 980 m, collector: Fu Qiang, 9-v-2008 (NWAFU); one male, Jianfengling, 950 m, collector: Fu Qiang, 11-v-2008 (NWAFU).

Diagnosis. Pronotal disc dark medially, lateral margin with light-coloured, blade-shaped patterns; apical lateral lobes dark, basal lateral lobes light. The apex of epiphallus possessing a double tooth at bottom (Fig. 4D).

Colouration. Head dark coloured dorsally with frons and clypeus lighter colour. Pronotal disc as diagnosed above.

Measurements. BL 16.91 ± 0.71, HW 3.02 ± 0.09, EW 0.72 ± 0.05, PL 2.68 ± 0.22, PW 4.53 ± 0.20, FWL 17.23 ± 0.36, HWL 5.15 ± 0.42, DVL 4.42 ± 0.37, ML 4.36 ± 0.08, CL 10.92 ± 0.74, FTL 3.24 ± 0.22, TTL 0.72 ± 0.11, MTL 3.94 ± 0.16, HLL 10.01 ± 0.43.

Etymology. The specific epithet "*dicrana*" refers to the apex of epiphallus possessing a double tooth.

Description. Male. Body size average for genus. Head small. Occiput pubescent and somewhat broad. Median ocellus small, oval shaped, and laterally extended. Antennal scape shield shaped and rounded. Epistomal suture upwardly curved. Labrum straight apically. Terminal maxillary palpomere and labial palpomere rod shaped; terminal maxillary palpus longer than third palpomere; terminal labial palpus longer than total length of remaining palpomeres. Pronotal disc flattened and trapezoid shaped; anterior margin somewhat concave, posterior margin almost straight (Fig. 2D). Harp with 4–5 veins. False veins distributed at harp field and mirror. Forewing broad and rounded apically (Fig. 2D). Apical field slightly short and nearly equal to width of forewing and with 7 branches (sometimes 6 or 8) (Fig. 2D). Hindwing longer than metatarsus. Genitalia: dorsal lobe of basal

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epiphallus bisinuate; lateral process somewhat thickened and expanded apically; median process transversely widened, bisinuate shaped with deeply and widely concave distal margin (Fig. 3D). Lateral margins of epiphallus almost parallel and broadly separated (Fig. 3D). In lateral view, epiphallic apex somewhat expanded, with two large denticles, without small denticles (Fig. 4D); in dorsal view, epiphallic apex with arched, concave margins both inside and outside (Fig. 3D).

Remarks. This species is very similar to *I.* (*I.*) *vietnamensis*, but the epiphallic apex possesses two large teeth at bottom and is lacking other small denticles.

Itara (*Itara*) *minor* Chopard, 1925
(Figs. 2E, 3E, 4E, 5E)

Itara minor Chopard, 1925: 312; Yin and Liu 1995: 100; Gorochov 1996: 82, 83, 84
Itara (*Itara*) *minor*: Gorochov 1997: 60, 62, 63, 64

Lectotype **information.** Type locality: **Vietnam**, Tonkin, Chapra. Deposited at Museum National d'Histoire Naturelle, Paris, France (not examined).

Material examined. China: Yunnan: one male, Xishuangbanna, Menghai, 1160 m, collectors: Zhou Yao and Yuan Feng, 27–31-v-1974 (NWAFU).

Distribution (Fig. 1). Vietnam (Son La), Thailand (Chiang Mai), China (Yunnan).

Diagnosis. Pronotal disc dark, with light-coloured, blade-shaped patterns and light-coloured, basal lateral corner (Fig. 2E); lateral lobes dark. Apical field undeveloped and shorter than the length of mirror (Fig. 2E). Epiphallus similar to that of *I. basidentata*, but shorter and smaller (Fig. 4E). Basal epiphallus with only small denticles (Figs. 3E, 4E).

Colouration. Head dark. Pronotal disc as diagnosed above (Fig. 2E). Prolegs entirely dark. Mesofemora and metafemora dark except at apex.

Measurements. BL 15.48, HW 2.74, EW 0.62, PL 1.90, PW 3.60, FWL 14.58, HWL 4.76, DVL 4.16, ML 3.94, FTL 3.00, TTL 0.94, MTL 3.56, HLL 8.38

Description. Body small for genus. Head small. Occiput narrow, pubescent sparse medially, with slightly longer setae laterally. Median ocellus slightly smaller and half-moon shaped. Antennal scape round, shield shaped. Epistomal suture upwardly convex, labrum apical margin broadly concave at middle. Terminal maxillary palpomere truncate; terminal labial palpomere rod shaped. Pronotal disc glabrous, laterally expanded (Fig. 2E). Apical field undeveloped (shorter than length of mirror), with 5 branches (Fig. 2E). Harp with 4 harp veins. Visible parts of forewing slightly longer than metatarsus (Fig. 2E). Metatarsus possessing 2 rows of small spines, 8–10 inner spines, 8 outer spines. False veins distributed in harp region and mirror. External tympanum of protibiae slightly larger and shaped as elongate ovoid. Genitalia: dorsal lobe of basal epiphallus obtuse angle shaped, lateral process evenly thickened; median process short and almost without notches (Fig. 3E). Epiphallus similar to *I. basidentata*, but shorter and smaller, upward convexity and basal epiphallus with only small denticles (Fig. 4E). Ectoparamere with pair of processes on inner part.

Remarks. Before our study, Chinese species of *Itara* were all identified as this species.

Itara (*Itara*) *vietnamensis* Gorochov, 1985
(Figs. 2F, 3F, 4F, 5F)

Itara vietnamensis Gorochov, 1985: 17
Itara (*Itara*) *vietnamensis*: Gorochov 1997: 50, 52, 59, 60, 62, 74

Holotype **information.** Type locality: **Vietnam**, Vinh Phu Province, Tam Dao. Deposited at Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (not examined).

Material examined. China: Guangdong. One male, Yingde, Shimentai, collector: Tan Jiangli, 7-v-2005 (NWAFU); **Yunnan.** Two males, Mengla, Longmen, 930 m, collector: Ma Libin, 18-v-2009 (NWAFU); two males, Ruili, Zhenxi Botanical Garden, 1200 m, collector: Zhang Xiaochen, 1-vii-2007 (NWAFU).

Distribution (Fig. 1). Vietnam (Vinh Phu), Thailand (Nakhon Nayok), China (Yunnan, Guangdong).

Diagnosis. Body large for genus. Pronotal disc dark brown medially and light yellow laterally (Fig. 2F); lateral lobes dark brown with basal fifth portion yellow. The epiphallic apex is slightly expanded, in lateral view, angled at distal margin (Fig. 4F).

Colouration. Body yellowish brown. Head brown with top margin of eyes, lateral margin of frons, and face light coloured. Pronotal disc as diagnosed above (Fig. 2F). Apical field of

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forewing and hindwing brown (Fig. 2F). Profemur and protibiae and below apical part of mesofemora and metafemora dark brown with remaining part yellowish brown.

Measurements. BL 17.30 ± 2.40, HW 3.20 ± 0.14, EW 0.76 ± 0.06, PL 2.45 ± 0.18, PW 4.39 ± 0.10, FWL 16.55 ± 0.21, HWL 4.58 ± 0.25, DVL 4.29 ± 0.13, ML 3.97 ± 0.04, CL 8.13 ± 0.18, FTL 3.40 ± 0.08, TTL 0.64, MTL 4.09 ± 0.16, HLL 9.91 ± 0.01.

Description. Body large for genus. Head somewhat large (Fig. 2F), occiput broad and pubescent, vertex with finer and short setae. Median ocellus large, lunule shaped. Antennal scape shaped as round shield. Epistomal suture slightly convex, labrum apical margin broadly concave. Terminal maxillary palpomere bevelled apically, almost equal to length of 3rd palpomere; terminal labial palpomere rod shaped, almost equal to total length of remaining palpomeres. Pronotum trapezoid shaped, disc flattened and broad, anterior margin weakly concave, posterior margin slightly convex (Fig. 2F). Harp with 5 harp veins. False veins distributed in harp field and mirror. Forewing dorsum broad and wide (Fig. 2F). Apical field with 7 branches, as long as width of forewing (Fig. 2F). Exposed part of hindwing slightly shorter than length of metatarsus (Fig. 2F). Apical external tympanum large and elongate-ovoid shaped. Metatarsus with dorsal spines, numbered 9:9 for inner and outer. Genitalia: Epiphallus similar to *I. dicrana*, distinguished by shape of epiphallic apex. In lateral view, epiphallic apex slightly expanded, angled at distal margin, with small denticles (Fig. 4F); in dorsal view, epiphallic apex possesses obtuse angle at inner margin, outer margin widely concave (Fig. 3F).

Remarks. The specimens from Hong Kong, China mentioned by Gorochov (1997) is not *I.* (*I.*) *vietnamensis* but appears to be *I.* (*I.*) *microcephala*. Consequently, the above record is the first Chinese distributional report for this species.

Itara (*Noctitara*) *sonabilis* Gorochov, 1996
(Figs. 2G, 3G–H, 4G–H, 5G–H)

Itara sonabilis Gorochov, 1996: 82, 83
Itara (*Noctitara*) *sonabilis*: Gorochov 1997: 64, 65, 66, 67; Gorochov 2004: 184

Holotype **information.** Type locality: **Vietnam**, Gia Lai Province, Buon Luoi. Deposited at Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (not examined).

Material examined. China: Hainan. Three males, Wuzhishan, Shuiman Village, 670 m, light trap, collectors: Jia Junfeng and Zheng Jianwu, 7-iv-2008 (NWAFU); Diaoluoshan, 130 m, light trap, collector: Li Tao, 10-iv-2008 (NWAFU); Limushan, 600 m, collectors: Yang Zhaofu and Fu Qiang, 17-iv-2008 (NWAFU).

Distribution (Fig. 1). Vietnam (Gia Lai); China (Hainan).

Diagnosis. Body and head large for this genus (Fig. 2G). Head and pronotal disc almost uniform dark brown (Fig. 2G). Apical field developed and conspicuously longer than width of forewing (Fig. 2G). Epiphallus with row of dorsal denticles medially (Figs. 3G, 3H). The epiphallic apex boot shaped in lateral view (Figs. 4G, 4H). The ectoparamere rodlike, with one to two pairs of ventral inner processes (Figs. 5G, 5H).

Colouration. Body dark. Head and pronotal disc almost uniform dark brown (Fig. 2G). Large parts of pronotal lateral lobes lightly coloured, only top portion with dark colour and connected with dorsum; but this colouration variable, sometimes large part of lateral lobe dark coloured and only bottom portion lightly coloured.

Measurements. BL 16.99 ± 1.72, HW 3.28 ± 0.10, EW 0.76 ± 0.09, PL 2.88 ± 0.31, PW 4.97 ± 0.38, FWL 17.86 ± 0.63, HWL 5.17 ± 0.60, DVL 4.24 ± 0.59, ML 3.84 ± 0.15, CL 10.03 ± 0.04, FTL 3.85 ± 0.11, TTL 0.72 ± 0.14, MTL 4.32 ± 0.32, HLL 10.34 ± 0.08.

Description. Body and head large for genus (Fig. 2G). Occiput pubescent, narrow, and convex. Vertex glabrous and smooth. Median ocellus ovoid and laterally widened. Antennal scape square and shield shaped. Epistomal suture upwardly curved. Labrum straight distally. Terminal maxillary and labial palpomeres bevelled apically; terminal maxillary palpomere equal to length of 3rd palpomere; terminal labial palpomere nearly equal in length to total length of remaining palpomeres. Pronotal disc flattened, trapezoid shaped; anterior margin slightly concave; posterior margin sinuate and convex (Fig. 2G). Harp with 4–5 veins. Harp field and mirror with false veins. Forewing broader and apically rounded (Fig. 2G). Apical field elongate, conspicuously longer than forewing

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width (Fig. 2G), possessing 8 branches (if 7 veins, 6 branch bifurcate). Hindwing short and exposed portion as long as metatarsus (Fig. 2G). External apical tympanum large and elongate-oval shaped. Metatarsus with short and small spines, number 7:7. Genitalia: Dorsal lobe of basal epiphallus bisinuate, lateral process slightly expanded; median process angle shaped (Figs. 3G, 3H). Lateral margin of epiphallus not sharp (Figs. 3G, 3H). Epiphallus with row of denticles medially (Figs. 3G, 3H). In lateral view, epiphallic apex boot shaped, acute at both top and bottom, with distal margin arc shaped (Figs. 4G, 4H). Ectoparamere rod shaped; in ventral view, with one large inner process medially (specimens from Limushan, Hainan possessing additional tooth) (Figs. 5G, 5H).

Remarks. All specimens were collected from Hainan, China, or in three adjacent regions. The specimen from Limushan is a little different from the others in the character of the ectoparamere. The Limushan specimen has a pair of additional small teeth behind the large inner median processes of the ectoparamere, but otherwise is very similar to other specimens of this species.

Itara (*Gryllitara*) *denudata* Ma and Zhang, new species

(Figs. 2H, 3I, 4I, 5I)

Type material. Holotype. Male, **China: Yunnan** (Fig. 1): Ruili, Zhenxi Botanical Garden, 1200 m, light trap, collector: Zhang Xiaochen, 27-vi-2007 (NWAFU).

Diagnosis. Pronotal disc dark medially, with light-coloured, blade-shaped patterns and lateral region. Apical field developed and longer than the width of mirror (Fig. 2H). Epiphallus somewhat rhomboid shaped in dorsal view (Fig. 3I). The median lobes of ectoparamere extremely small and exposing inner process (Figs. 4I, 5I).

Colouration. Head dark. Pronotal disc as diagnosed above. Lateral lobes of pronotum dark. Legs primarily dark.

Measurements. BL 18.00, HW 2.86, EW 0.66, PL 1.88, PW 2.86, FWL 15.56, HWL 4.96, DVL 3.98, ML 3.54, CL 7.30, FTL 2.86, MTL 3.54, HLL 8.58

Etymology. The specific epithet "*denudata*" refers to the median lobes of the ectoparamere being extremely small and exposing its inner part.

Description. Body size small for genus. Head small. Occiput pubescent, narrowed, and convex. Median ocellus small and laterally expanded. Antennal scape somewhat rounded and wider than half width of rostrum. Epistomal suture arc shaped and upwardly convex. Labrum apical margin straight. Terminal maxillary palpomere truncate, longer than 3rd palpomere. Terminal labial palpomere rod shaped, longer than total length of remaining palpomeres. Pronotum not trapezoid shaped, apical and basal margins nearly of same width, both almost straight (Fig. 2H). False veins distributed in harp area and mirror. Apical external tympanum oval shaped. Forewing dorsal field somewhat broad (Fig. 2H). Apical field developed and long, longer than width of mirror, with 8 branches (Fig. 2H). Harp with 5 harp veins. Exposed portion of hindwing nearly equal to length of metatarsus (Fig. 2H). Metatarsus with 2 rows of small spines, inner spines numbering 7–8; outer spines numbering 9–11. Genitalia: Dorsal lobe of basal epiphallus obtuse angle shaped, lateral process slight in thickness and median process with straight apical margin (Fig. 3I). Epiphallus somewhat rhomboid shaped in dorsal view, expanded medially, constricted as acute angle distally (Fig. 3I). Epiphallic apex similar to *I. basidentata* in lateral view, but median lobes of ectoparamere extremely small, exposing inner paired processes (Figs. 4I, 5I).

Remarks. This new species is very similar to *I.* (*I.*) *minor*, but the median lobes of the ectoparamere are very small and expose their inner parts. The new species is also similar to *Itara* (*Gryllitara*) *curupi* Gorochov, 2009, but the epiphallus with proximal denticles and the ectoparamere lacks inner processes. Compared to other species of the subgenus *Gryllitara*, *Itara* (*Gryllitara*) *ampla* Gorochov, 2001, *Itara* (*Gryllitara*) *diligens* Gorochov, 1997, and *Itara* (*Gryllitara*) *pendleburyi* (Chopard, 1931) have long and narrow epiphallic lateral lobes, and the ectoparamere with somewhat large median lobes, which differs from those of this new species.

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