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New and little known katydids of the genera *Hemielimaea*, *Deflorita*, and *Hueikaeana* (Orthoptera: Tettigoniidae: Phaneropterinae) from South-East Asia

Новые и малоизвестные кузнечики родов *Hemielimaea*, *Deflorita* и *Hueikaeana* (Orthoptera: Tettigoniidae: Phaneropterinae) из Юго-Восточной Азии

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КЛЮЧЕВЫЕ СЛОВА: систематика, новые таксоны, переописания, Orthoptera, Phaneropterinae, Юго-Восточная Азия.

ABSTRACT. 1 new subgenus and 4 new species of the genus *Hemielimaea* Brunner-Wattenwyl, 1878, 4 new species of the genus *Deflorita* Bolivar, 1906, and 2 new species of the genus *Hueikaeana* Ingrish, 1998 are described. Neotypes for *H. chinensis* Brunner-Wattenwyl, 1878, *Elimaea mannhardti* Krausze, 1903, *E. nigerrima*, Krausze, 1903 as well as a lectotype for *H. tonkinensis* Dohrn, 1906 are designated. Some insufficiently studied species of these genera are briefly redescribed; their status and distribution are clarified.

РЕЗЮМЕ. Описываются 1 новый подрод и 4 новых вида рода *Hemielimaea* Brunner-Wattenwyl, 1878, 4 новых вида рода *Deflorita* Bolivar, 1906, и 2 новых вида рода *Hueikaeana* Ingrish, 1998. Обозначаются неотипы для *H. chinensis* Brunner-Wattenwyl, 1878 и *Elimaea mannhardti* Krausze, 1903, *E. nigerrima*, Krausze, 1903, а также лектотип для *H. tonkinensis* Dohrn, 1906. Кратко переописываются некоторые недостаточно изученные виды этих родов; уточняются их статус и распространение.

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Genus *Hemielimaea* Brunner-Wattenwyl, 1878

Type species *Hemielimaea chinensis* Brunner-Wattenwyl, 1878 (China).

REMARKS. Recently, this genus was included in the genus *Elimaea* Stål as one of its subgenera [Ingrisch, 1998a]. I agree with this author that *Hemielimaea* is close related to *Elimaea*, and we may put it in the tribe Elimaeini. But, it is necessary to indicate also that *Elimaea* is probably close related to *Paraducetia* Gor. from the tribe Ducetiini. Moreover, the representatives of Elimaeini and Ducetiini may be included in the same tribe, as their males have the dorsal tegminal part (more distal than mirror) not very narrow and forming an additional stridulatory area separated from the rest of the dorsal part by a more or less distinct oblique secondary vein probably originated from the irregular transverse veinlets (these area and vein are most developed on the lower tegmen, but they are usually distinct on the upper tegmen too) [Gorochov, Kang, 2002]. This area is also present in *Hemielimaea*. The main differences between these tribes and the latter genus are following: the tympana are slit-like in Elimaeini, open in Ducetiini, and intermediate (inner tympanum slit-like and outer one open) in *Hemielimaea*. It is impossible to exclude that the origin of almost identical slit-like tympana in Elimaeini (and in *Elimaea*) is a result of convergence, and that some of the *Elimaea* subgenera are different genera. In this connection, *Hemielimaea* is considered a separate genus until decision of this problem.

This genus includes 7 species (and subspecies) known up to now and 4 new species. 5 of them were insufficiently described (practically without species characters), and the types of 3 of them, including type species, were lost [Ingrisch, 1998a]. It is a reason that the determination of species in this genus was practically impossible. Therefore, it is necessary to designate the neotypes for some of these species and subspecies most difficult for distinguishing.

Subgenus *Hemielimaea* s.str.

DIAGNOSIS. Male genital plate with curved apical parts of distal lateral lobes (Figs 1, 3, 4, 6, 8); male genitalia with unpaired longitudinal sclerite strongly or slightly bifurcated in distal part (Figs 23, 27, 31, 35, 36, 41, 42) and usually provided with keel-like median apodeme (sometimes without apodemes). Female genital plate distinctly bifurcated (deeply notched) in distal part and with spine-like apex of each lateral lobe (Figs 2, 5, 7).

SPECIES INCLUDED. Type species; *H. formosana* Shiraki, 1930 (Taiwan); *H. (H.) proxima* sp.n.; *H. (H.) vietnamensis* sp.n.; *H. (H.) reducta* sp.n.

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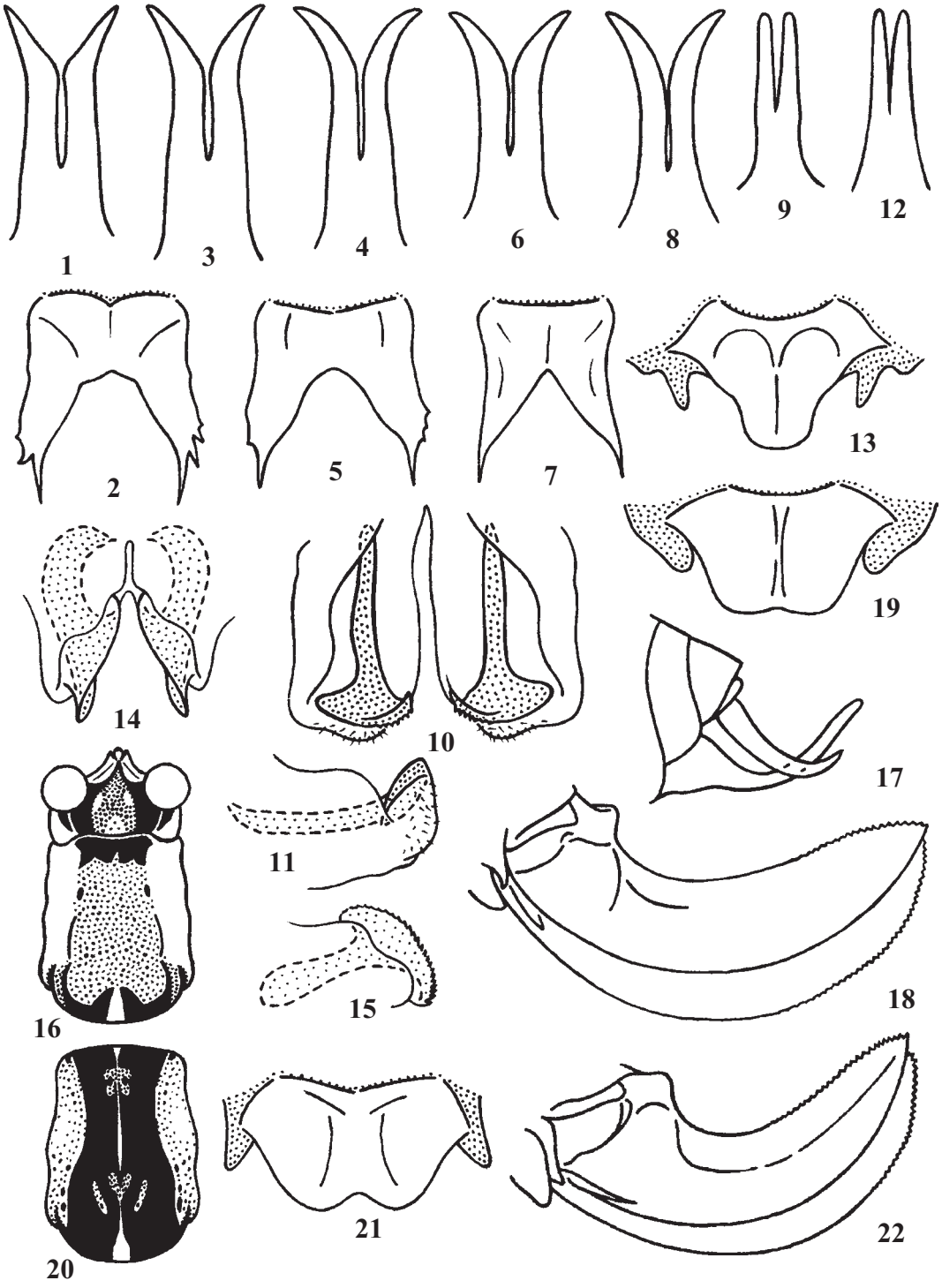
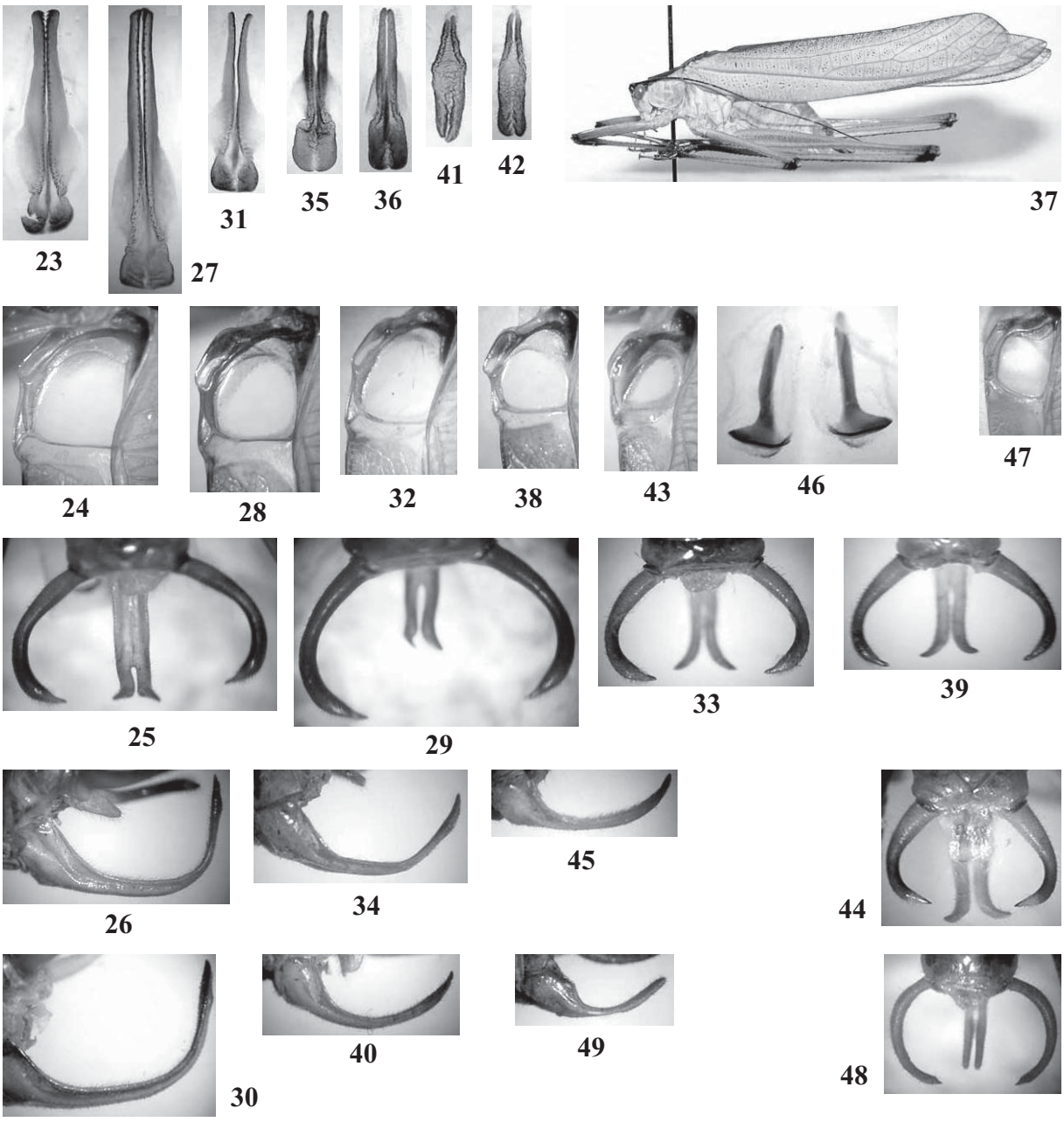


Figs 1–22. *Hemielimaea* spp.: 1, 2 — *H. chinensis chinensis* (Br.-W.); 3 — *H. chinensis mannhardti* (Krausze); 4, 5 — *H. proxima* sp.n.; 6, 7 — *H. vietnamensis* sp.n.; 8 — *H. reducta* sp.n.; 9–11 — *H. cucullata* Ingr.; 12–18 — *H. tonkinensis* Dohrn; 19 — *H. nigerrima* (Krausze); 20–22 — *H. sergeii* sp.n. Distal part of male genital plate from behind (1, 3), partly from behind and partly from below (4, 6, 8), and from below (9, 12); female genital plate from below (2, 5, 7, 13, 19, 21); male genitalia from above (10, 14) and from side (11, 15); head with pronotum (16) and only pronotum (20) from above; male abdominal apex from side (17); ovipositor from side (18, 22).

Рис. 1–22. *Hemielimaea* spp.: 1, 2 — *H. chinensis chinensis* (Br.-W.); 3 — *H. chinensis mannhardti* (Krausze); 4, 5 — *H. proxima* sp.n.; 6, 7 — *H. vietnamensis* sp.n.; 8 — *H. reducta* sp.n.; 9–11 — *H. cucullata* Ingr.; 12–18 — *H. tonkinensis* Dohrn; 19 — *H. nigerrima* (Krausze); 20–22 — *H. sergeii* sp.n. Дистальная часть генитальной пластинки самца сзади (1, 3), частично сзади и частично снизу (4, 6, 8), снизу (9, 12); генитальная пластинка самки снизу (2, 5, 7, 13, 19, 21); гениталии самца сверху (10, 14) и сбоку (11, 15); голова с переднеспинкой (16) и одна переднеспинка (20) сверху; вершина брюшка самца сбоку (17); яйцеклад сбоку (18, 22).



Figs 23–49. *Hemielimaea* spp., male: 23–26 — *H. chinensis chinensis* (Br.-W.); 27–30 — *H. chinensis mannhardti* (Krausze); 31–34 — *H. proxima* sp.n.; 35–40 — *H. vietnamensis* sp.n.; 41–45 — *H. reducta* sp.n.; 46–49 — *H. cucullata* Ingr. Genital sclerites from above (23, 27, 31, 35, 36, 41, 42, 46); base of dorsal part of lower tegmen with stridulatory apparatus (24, 28, 32, 38, 43, 47); abdominal apex from above (25, 29, 33, 39, 44, 48); genital plate from side (26, 30, 34, 40, 45, 49).

Рис. 23–49. *Hemielimaea* spp., самец: 23–26 — *H. chinensis chinensis* (Br.-W.); 27–30 — *H. chinensis mannhardti* (Krausze); 31–34 — *H. proxima* sp.n.; 35–40 — *H. vietnamensis* sp.n.; 41–45 — *H. reducta* sp.n.; 46–49 — *H. cucullata* Ingr. Генитальные склериты сверху (23, 27, 31, 35, 36, 41, 42, 46); основание дорсальной части нижнего надкрылья со стридуляционным аппаратом (24, 28, 32, 38, 43, 47); вершина брюшка сверху (25, 29, 33, 39, 44, 48); генитальная пластинка сбоку (26, 30, 34, 40, 45, 49).

Hemielimaea (Hemielimaea) chinensis chinensis Brunner-Wattenwyl, 1878

Figs 1, 2, 23–26.

MATERIAL. Neotype (here designated): ♂, China, Sichuan Prov., Omeishan, 580 m, 26.VI.1955 (ZIAS). Additional material: ♀, same data as for neotype (ZIAS).

DESCRIPTION. MALE (neotype). Large. Yellowish (probably greenish during lifetime) with brown: upper part of head (from base of rostrum to areas behind eyes) crossed by 4 light longitudinal lines, antennae (with light large spots on scape and narrow rings on flagellum), disc of pronotum (hind edge of this disc distinctly dark brown), small anterodorsal areas of lateral pronotal lobes separated from disc by light

longitudinal lines, dorsal tegminal parts excepting transparent and semitransparent stridulatory areas of lower tegmen, sparse and very small spots on all main areas of tegminal lateral parts, costal tegminal edge, distal parts of fore femora and fore tibiae, proximal parts of fore tibiae including tympanal regions, apici of middle and hind femora and tibiae, bases of middle and hind tibiae, tarsi, cerci excepting wide basal and narrow apical rings, and apici of hind lobes of genital plate. Stridulatory vein of upper tegmen long, slightly longer than maximal width of pronotal disc (4.4 mm and 4.2 mm respectively); mirror of lower tegmen very large (its width 3 mm; its length 3.3 mm; distance between proximal heavily sclerotized vein and apex of mirror 3.9 mm); dorsal tegminal part more distal than mirror wide (its maximal width 3.5 mm) (Fig. 24). Cerci long (their length 5 mm), with straight basal part and arched rest of cerci (Fig. 25); genital plate long, with narrow and deeply notched distal part (Fig. 1) strongly curved upwards (Fig. 26); median genital sclerite long, with pincers-like distal half having denticles along medial edges, wider proximal half (divided into short denticulated basal plate and larger semimembranous lobes situated near middle of sclerite) (Fig. 23), and keel-like median apodeme.

FEMALE. Similar to male in general appearance, but with light and almost unicolour legs (except tarsi), costal tegminal area, cerci, and genital plate. Genital plate with 1 or 2 additional spine-like tubercles near longer spine-like apical process of each lateral lobe (Fig. 2); ovipositor short, strongly curved upwards, with denticles along upper edge of upper valves and lower edge of apical part of lower valves.

LENGTH (mm). Body: male 24, female 25; body with wings: male 50, female 57; pronotum: male 5.7, female 5.8; tegmina: male 38, female 43; hind femora: male 25, female 28; ovipositor 7.

REMARKS. Only this subspecies (among all other *Hemielimaea* representatives studied by me) has the distinct dark edge of pronotal disc indicated in the original description [Brunner-Wattenwyl, 1878]. According to this description, the type locality of *H. chinensis* is "China".

Hemielimaea (Hemielimaea) chinensis mannhardti (Krausze, 1903) **stat.n.**

Figs 3, 27–30.

Elimaea mannhardti Krausze, 1903 (Northern Vietnam).

MATERIAL. Neotype (here designated): ♂, Vietnam, Vinh Phu Prov., Tamdao, 800–900 m, edge of primary forest (at light), 1–11.VI.1995, A. Gorochov (ZIAS). Additional material: 5 ♂♂, 4 ♀♀, same locality as for neotype, but 17.V–11.VI.1995 (ZIAS).

DESCRIPTION. MALE (neotype). Similar to nominotypical subspecies, but coloration distinctly darker (light parts greenish with reddish lateral pronotal lobes and hind part of abdomen; brown parts of head and pronotum as well as brown dorsal tegminal part very dark, but with slightly lighter middle area of hind part of pronotal disc and dorsal part of lower tegmen; distal half of fore femora and distal part of middle and hind femora as well as tibiae and tarsi dark brown; lateral tegminal part with dark grey stripe along costal edge and numerous small brownish grey spots on almost all areas; cerci dark brown with yellowish ventroproximal parts; genital plate with lateral edges and apici of its hind lobes dark brown), stridulatory vein of upper tegmen somewhat shorter than maximal width of pronotal disc (3.8 mm and 4.5 mm respectively), mirror of lower tegmen slightly smaller (its width 2.9 mm; its length 2.9 mm; distance between proximal heavily sclerotized vein and apex of mirror 3.6 mm); dorsal tegminal part more distal than mirror hardly narrower (its maximal width 3.4 mm) (Fig. 28). Shape of cerci, genital plate, and median genital sclerite almost as in nominotypical subspecies (Figs 3, 27, 29, 30).

VARIABILITY. Sometimes, dark parts hardly larger and almost black, but sometimes they slightly smaller and coloration of legs and/or abdomen almost as in nominotypical subspecies.

FEMALE. Similar to male in general appearance. Distinguished from nominotypical subspecies only by coloration.

LENGTH (mm). Body: male 23–29, female 30–35; body with wings: male 52–58, female 54–58; pronotum: male 6–6.6, female 5.5–6.2; tegmina: male 41–45, female 41–44; hind femora: male 26–28, female 27–30; ovipositor 7–7.5.

COMPARISON. The differences between this subspecies and *H. chinensis chinensis* are listed above. From *H. formosana*, which may be a third subspecies of this species as its male genital plate is "strongly curved upwards" [Shiraki, 1930], the new subspecies differs in the characteristic coloration (coloration of *H. formosana* is very similar to that of the nominotypical subspecies) and the female genital plate as in *H. chinensis chinensis* (in *H. formosana*, judging by the original description of this species, the lateral lobes of this plate are with "a single spine-like apical process" only).

REMARKS. Only this subspecies has the coloration identical to that from the original description [Krausze, 1903]. According to this description, the type locality of this subspecies is in the limits of Northern Vietnam.

Hemielimaea (Hemielimaea) proxima **sp.n.**

Figs 4, 5, 31–34.

MATERIAL. Holotype: ♂, China, Sichuan Prov., Omeishan, 580 m, 24.VI.1955 (ZIAS). Paratypes: 2 ♀♀, same locality as for holotype, but 22–27.VI.1955 (ZIAS).

DESCRIPTION. MALE (holotype). Similar to *H. chinensis*, but coloration almost as in its nominotypical subspecies excepting uniformly brown pronotal disc (without dark hind edge), almost unicolour legs (with darkened lower halves of tarsi only), completely light brown cerci and genital plate. Stridulatory vein of upper tegmen similar to that of *H. chinensis mannhardti*, somewhat shorter than maximal width of pronotal disc (3.2 mm and 3.9 mm respectively); mirror of lower tegmen (its width 2.7 mm; its length 2.9 mm; distance between proximal heavily sclerotized vein and apex of mirror 3.3 mm) and dorsal tegminal part more distal than mirror (its maximal width 3 mm) somewhat smaller than in both mentioned subspecies (Fig. 32). Cerci, genital plate, and genitalia rather similar to *H. chinensis*, but cerci distinctly shorter (their length 4 mm) (Fig. 33), genital plate with distal part moderately (not strongly) curved upwards (Fig. 34) and hind lateral lobes hardly narrower (Fig. 4), and genital sclerite clearly shorter (Fig. 31).

FEMALE. Similar to male in general appearance. Distinguished from *H. chinensis* by the genital plate with only short (not spine-like) tibercles near long spine-like apical process of each lateral lobe (Fig. 5).

LENGTH (mm). Body: male 23, female 21–24; body with wings: male 50, female 50–54; pronotum: male 5.8, female 5–5.7; tegmina: male 3.8, female 39–41; hind femora: male 25, female 24–27; ovipositor 6.5–7.

COMPARISON. The differences between this species and *H. chinensis* are listed above. From *H. formosana*, the new species differs in the male genital plate less strongly curved upwards and the female genital plate provided with short tubercles near the spine-like apical process of lateral lobes.

Hemielimaea (Hemielimaea) vietnamensis **sp.n.**
Figs 6, 7, 35–40.

MATERIAL. Holotype: ♂, Northern Vietnam, Vinh Phu Prov., Tamdao, 800–900 m, edge of primary forest (at light), 17–31.V.1995, A. Gorochov (ZIAS). Paratypes: 40 ♂♂, 2 ♀♀, same locality as for holotype, but 17.V–11.VI.1995 and 20–21.VIII.1998 (ZIAS).

DESCRIPTION. MALE (holotype). Similar to both previous species in general appearance (Fig. 37), but coloration as in *H. chinensis chinensis* [excepting coloration of pronotal disc (almost as in *H. proxima*) and legs provided with brown denticles (lower keels of fore and middle femora with very dark denticles and spots around bases of some of them)], stridulatory apparatus distinctly smaller (length of stridulatory vein of upper tegmen 3 mm; maximal width of pronotal disc 3.9 mm; width of mirror of lower tegmen 2.4 mm; length of this mirror 2.2 mm; distance between apex of this mirror and proximal heavily sclerotized vein 2.8 mm), dorsal tegminal part more distal than mirror somewhat narrower (its maximal width 2.7 mm) (Fig. 38), cerci (Fig. 39) slightly shorter than in *H. proxima* and distinctly shorter than in *H. chinensis* (their length 3.8 mm), genital plate (Figs 6, 40) slightly less curved than in *H. proxima* and clearly less curved than in *H. chinensis*, and genital sclerite smaller, with distinctly longer proximal plate, shorter pincers-like part, and semimembranous lobes situated at middle of this sclerite (as in Figs 35, 36).

VARIABILITY. Dark spots around bases of denticles on lower keels of fore and middle femora often fused with each other and forming dark stripes along these keels; sometimes these stripes fused with each other at proximal part of middle femora.

FEMALE. Similar to male in general appearance. Distinguished from *H. chinensis* and *H. proxima* by genital plate without tubercles near long spine-like apical process of each lateral lobe (Fig. 7).

LENGTH (mm). Body: male 22–27, female 25–30; body with wings: male 47–52, female 50–55; pronotum: male 5.3–5.8, female 5.4–5.7; tegmina: male 36–40, female 40–43; hind femora: male 25–28, female 27–29; ovipositor 6.5–7.

COMPARISON. This new species differs from *H. chinensis* and *H. proxima* in the size of mirror in lower male tegmen as well as the shape of male genital sclerite and female genital plate. From *H. formosana*, it is distinguished by the male genital plate not strongly curved upwards.

Hemielimaea (Hemielimaea) reducta **sp.n.**
Figs 8, 41–45.

MATERIAL. Holotype: ♂, Northern Vietnam, Vinh Phu Prov., Tamdao, 800–900 m, edge of primary forest (at light), 1–11.VI.1995, A. Gorochov (ZIAS). Paratypes: 2 ♂♂, same data as for holotype (ZIAS).

DESCRIPTION. MALE (holotype). Similar to *H. vietnamensis*, but lower surface of fore and middle femora (including their lower keels with denticles) completely dark brown, stridulatory apparatus much smaller (length of stridulatory vein of upper tegmen 2.5 mm; maximal width of pronotal disc 4 mm; width of mirror of lower tegmen 2.1 mm; length of this mirror 1.7 mm; distance between apex of this mirror and proximal heavily sclerotized vein 2.2 mm), dorsal tegminal part more distal than mirror much narrower (its maximal width 2 mm) (Fig. 43), cerci (Fig. 44) hardly shorter (their length 3.7 mm), genital plate (Figs 8, 45) slightly curved, and genital sclerite clearly smaller, with reduced pincers-like part, longer proximal widening (without distinct division into basal plate and semimembranous lobes), and rather irregularly situated small denticles (as in Figs 41, 42).

VARIABILITY. Coloration of dorsal part of stridulatory vein of upper tegmen from brown to light brown. Genital sclerite in one of paratypes with wrinkled middle part.

FEMALE unknown.

LENGTH (mm). Body 22–25; body with wings 48–50; pronotum 5.4–5.6; tegmina 37–39; hind femora 25–27.

COMPARISON. The new species is well distinguished from all other species of this subgenus by the much smaller mirror, the less curved male genital plate, and the characteristic male genitalia.

Subgenus *Pseudelimaea* **subgen.n.**

Type species *Hemielimaea tonkinensis* Dohrn, 1906 (Northern Vietnam).

DIAGNOSIS. Male genital plate with straight apical parts of distal lateral lobes (Figs 9, 12); male genitalia with pair of sclerites consisting of 2 parts: disc-like distal and stick-like proximal (Figs 10, 11, 14, 15, 46). Female genital plate rounded, truncated, or slightly emarginate at apex (Figs 13, 19, 21).

SPECIES INCLUDED. Type species; *Elimaea nigerrima* Krausze, 1903; *H. procera* Ingrisch, 1990; *H. cucullata* Ingrisch, 1990; *H. sergeii* sp.n.

Hemielimaea (Pseudelimaea) tonkinensis Dohrn, 1906
Figs 12–18.

MATERIAL. Lectotype (here designated): ♂, Northern Vietnam, "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer", "Type", "*tonkinensis* Dohrn" (MIZP). Paralectotypes: 2 ♂♂, 3 ♀♀, same data as for lectotype, but 1 female with label "Type" (as in lectotype) and all other specimens with label "Co-Typus" (MIZP).

DESCRIPTION. MALE (lectotype). Large. Yellowish green with characteristic brown and dark brown ornament on upper part of head and on fore and hind parts of pronotal disc (Fig. 16), whitish median spot on hind part of this disc (near its hind edge), brownish rest of pronotal disc, blackish antennae except light lower half of scape and sparse rings on flagellum, brown dorsal tegminal part (provided with lighter veins and veinlets and, on lower tegmen, transparent or semitransparent stridulatory areas), reddish numerous dots on pronotal lateral lobes and abdomen, darkish denticles of legs and sparse dots on tegmina and legs. Mirror of lower tegmen rather large, more or less similar to that from Fig. 47. Cerci arched (Fig. 17); genital plate slightly curved (Fig. 17) and with apical part as in Fig. 12; genital sclerites with denticulated disc-like part and distinctly curved stick-like part (Figs 14, 15).

VARIABILITY. Sometimes pronotal disc with pair of dark brown lines along lateral edges.

FEMALE. Similar to male in general appearance. Genital plate with rather narrow, rounded apical part and pair of small lobe-like structures near lateral corners of basal part (Fig. 13); ovipositor as in Fig. 18, with short lobule at base of each ventral valve.

REMARKS. Dohrn [1906] didn't give measurements for this species. Unfortunately I had not possibility to do these measurements during my very short work in MIZP, but my notes inform that size of this species is similar to that of the above-mentioned representatives of the subgenus *Hemielimaea*.

Hemielimaea (Pseudelimaea) nigerrima (Krausze, 1903)
Fig. 19.

MATERIAL. Neotype (here designated): ♀, Northern Vietnam, "Tonkin, Than-Moi", "*Hemielimaea nigerrima* Krausze"

(MIZP). Additional material: female, same data as for neotype (MIZP).

DESCRIPTION. FEMALE (neotype). Similar to *H. tonkinensis*, but well distinguished from it and from all other congeners by characteristic coloration: black with yellowish frontal and lateral parts of head, longitudinal lines on upper parts of head and pronotum, stripe along lower edge of each lateral pronotal lobe, several spots on thorax and abdomen, green longitudinal stripes on tegminal costal area near Sc and on outer surface of fore and middle femora, brownish distal part of hind femora and longitudinal stripe on their dorsal surface, and yellowish green rest of these femora (except black ventral part). Genital structures distinguished from those of *H. tonkinensis* by distinctly wider and hardly emarginate apical part of genital plate (Fig. 19), slightly longer and hardly less curved ovipositor, and absence of lobules at base of its ventral valves.

MALE unknown.

MEASUREMENTS (mm). Length: body 25, pronotum 6, tegmina 42.5, fore femora 11.5, hind femora 29, ovipositor 10.5. Width: tegmina 7.

REMARKS. I had possibility for only very short study of these specimens, therefore these measurements are given after Krausze [1903]. This author described this species from the same locality as for the neotype.

Hemielimaea (Pseudelimaea) sergeii **sp.n.**
Figs 20–22.

MATERIAL. Holotype: ♂, Northern Vietnam, Hoa Binh Prov., Yen Thuy Distr., Lac Thinh, Cuc Phuong National Park, 20°23′N, 105°34′E, 300 m", 5–6.V.2002, S. Belokobylskij (ZIAS).

DESCRIPTION. FEMALE (holotype). Similar to *H. tonkinensis*, but with following differences: pronotal disc blackish with some lighter and light lines and small spots (Fig. 20); fore legs with blackish distal parts of femora and proximal parts of tibiae (including tympanal organs), dark brown middle part of femora, distal part of tibiae, and tarsi, brown or brownish rest of tibiae and femora; middle and hind legs with brown distal part of femora and middle part of middle tibiae, dark brown or blackish tarsi, hind tibiae, and proximal and distal part of middle tibiae; tegmina with blackish dorsal part and brown stripes along costal and anal edges; genital plate slightly more emarginate than in *H. nigerrima* (Fig. 21), and ovipositor slightly shorter and more strongly curved, provided with very long lobules at base of ventral valves (Fig. 22).

MALE unknown.

LENGTH (mm). Body 25; body with wings 54; pronotum 5; tegmina 43; hind femora 32; ovipositor 7.5.

COMPARISON. This species distinctly differs from all other representatives of the subgenus *Pseudelimaea* in the characteristic coloration (especially coloration of pronotal disc), the shape of genital plate (from *H. tonkinensis* and *H. cucullata*) and lobules of ovipositor (from *H. tonkinensis* and *H. nigerrima*), and the ovipositor comparatively shorter than in *H. cucullata* and *H. procera*.

ETYMOLOGY. The new species is named in honour of the collector, Russian entomologist Sergei Belokobylskij.

Hemielimaea (Pseudelimaea) cucullata Ingrisch, 1990
Figs 9–11, 46–49.

MATERIAL. ♂, Thailand (Northern Malacca), Phetchaburi Prov., Kaeng Krachan National Park, 400 m, secondary forest near reservoir (at light), 30.VII–1.VIII.1996, A. Gorochov (ZIAS).

REMARKS. This specimen has morphological characters very similar to those indicated in the descriptions of *H. procera* and *H. cucullata* [Ingrisch, 1990, 1998a]. Systematic position of my specimen is determined with help of Dr. S. Ingrisch's consultation. *H. procera* is described from prov. Chanthaburi (to East from Phetchaburi), and *H. cucullata* is described from prov. Kanchanaburi (to North from Phetchaburi). The similar distribution of 2 close related species is known also in the genus *Sonotrella* Gor. (Gryllidae: Podoscirtinae): *S. crumbi* (Chop.) is distributed from Northern Malacca to Rangoon, and *S. mekongica* Gor. is distributed from Bangkok to Mekong river in Southern Vietnam [Gorochov, 2002].

This specimen is well distinguished from *H. tonkinensis* by the shape of genital sclerites (with straight stick-like part), from *H. nigerrima* and *H. sergeii* by the coloration almost as in *H. tonkinensis* (pronotal ornament of both species is especially similar), and from all these species by the distinctly smaller size (length, mm: pronotum 4.3, tegmina 32, hind femora 24).

Genus *Deflorita* Bolivar, 1906

Type species *Exora deflorita* Brunner-Wattenwyl, 1878 (Sri Lanka).

REMARKS. This remarkable genus of the tribe Mirolliini was originally described as *Exora* Brunner-Wattenwyl, 1878 (not *Exora* Chevrolat, 1839) with *E. deflorita* only. The localities of its syntypes are "Ceylon" and "Java" [Brunner-Wattenwyl, 1878]. The male from Sri Lanka was designated as a lectotype by Ingrisch [1998b] because the Javanese specimen may belong to another species.

Now, this genus consists of 8 species: type species; *E. apicalis* Shiraki, 1930 (Taiwan); *D. argentata* Ingrisch, 1998 (Thailand); *D. integra* Ingrisch, 1998 (Borneo); *D. parallela* sp.n.; *D. lyra* sp.n.; *D. hemilyra* sp.n.; *D. forceps* sp.n. The enigmatic *E. dohrni* Brunner-Wattenwyl, 1891 and *D. unicolor* Karny, 1926, included in this genus in the catalogue by Otte [1997], may belong to *Hueikaeana* Ingr. or some other genera (see below).

Deflorita parallela **sp.n.**
Figs 50–54, 77, 78.

MATERIAL. Holotype: ♂, Northern Vietnam, Vinh Phu Prov., Tamdao, 600–900 m, 3.VII.1994, A. Monastyrskij (ZIAS). Paratype: ♀, Northern Vietnam, 50–60 km NW of Hanoi, Ba Vi Mountain, 19.VIII.1993, A. Baranov (ZIAS).

DESCRIPTION. MALE (holotype). Medium-sized. Yellowish (probably greenish during lifetime) with whitish upper part of head from median ocellus to occiput (crossed by 3 longitudinal and 2 transverse narrow reddish lines), 3 spots (very large median and 2 small lateral) along fore edge of pronotal disc, proximal lobe (with stridulatory apparatus) of dorsal part of upper tegmen (base of this lobe light brownish), and several large spots on lower parts of abdominal tergites (as in *D. argentata*), transparent and semitransparent stridulatory areas of lower tegmen, dark brown 2 longitudinal stripes behind each eye, spot on ventral (and partly inner) surface of scapes and pedicelli, stripes around pronotal whitish spots, between them, and along hind edge of pronotal disc, brownish grey distal parts of tegmina and hind wings, stripes along lateral edges of stridulatory apparatus, row of numerous small spots along dorsal tegminal parts behind their proximal lobes, few small spots on fore tibiae near tympana, and apical hook of cerci. Proximal lobe of dorsal part of upper tegmen with distinct transverse vein (homologous to hind mirror edge of lower tegmen) behind stridulatory vein; area between these veins almost as long as area behind it (Fig. 50); stridulatory appara-

tus of lower tegmen as in Fig. 51. Cerci with slightly S-shaped apical part (Fig. 77); genital plate with narrow distal half divided into 2 almost parallel and straight lobes; apical parts of these lobes straight; notch between them very narrow (Figs 52, 53); genitalia completely membranous, with 2 long, narrow, and usually hook-like hind lobes covered with short hairs.

FEMALE. Similar to male in general appearance, but antennal flagellum with sparse brown rings, proximal area of tegminal dorsal part almost completely whitish (only with small light reddish spots and brown stripe along lateral edge), and abdomen almost without whitish spots (only indistinct lightish lateral spots present near metathorax). Ovipositor and genital plate as in Figs 54, 78.

LENGTH (mm). Body: male 17, female 16.5; body with wings: male 34, female 36; pronotum: male 4, female 3.6; tegmina: male 24, female 26; hind femora: male 14.8, female 15.3; ovipositor 6.

COMPARISON. Similar to *D. argentata*, but male with the distinct transverse vein of upper tegmen situated behind stridulatory vein and homologous to hind mirror edge of lower tegmen (this transverse vein is almost indistinct in *D. argentata*) and the straight apical parts of genital plate lobes (these parts are slightly curved in *D. argentata*). The new species differs from *D. deflorita* and *D. integra* in the coloration of pronotal disc (in *D. integra*, its fore part with only dark transverse band), dorsal tegminal parts behind their proximal lobes in male (in *D. deflorita*, these parts with distinctly larger dark spots), and abdomen (in *D. deflorita*, abdomen without whitish spots), as well as the shape of male genital plate (in *D. integra*, this plate with much shorter hind lobes). The differences from *D. apicalis*, described on a single female, are unclear excepting length of ovipositor (in *D. apicalis*, it is slightly longer, 0.5 times as long as hind femora) [Shiraki, 1930].

Deflorita lyra **sp.n.**

Figs 55–58, 79.

MATERIAL. Holotype: ♂, Southern Vietnam, Gia Lai Prov., 40 km N of Kannack, Tram Lap, 800–900 m, primary forest, 20–24.IV.1995, A. Gorochov (ZIAS).

DESCRIPTION. MALE (holotype). Very similar to *D. parallela*, but antennal flagellum spotted as in its female, abdomen with dark brown stripes around whitish spots, proximal lobe of dorsal part of upper tegmen with area between transverse vein homologous to hind mirror edge of lower tegmen and stridulatory vein almost twice as long as area behind it (stridulatory apparatus of lower tegmen almost identical to that of *D. parallela*) (Figs 55, 56), cerci thicker, more strongly curved, and with somewhat different (but also S-shaped) apical part (Fig. 79), genital plate with hind lobes distinctly arched (not parallel to each other) and provided with curved apical parts (these lobes with wide notch between them, forming lyre-shaped structure) (Figs 57, 58).

FEMALE unknown.

LENGTH (mm). Body 20; body with wings 34; pronotum 3.8; tegmina 23; hind femora 13.5.

COMPARISON. The differences from *D. parallela* are listed above. The new species differs from *D. argentata* in the male upper tegmen with distinct transverse vein homologous to hind mirror edge of lower tegmen, the longer area between this and stridulatory veins (in *D. argentata*, this area is almost as long as the area behind it), and the wider notch between genital plate lobes in male, from *D. deflorita* and *D. integra* in the same characters as *D. parallela*. The differences from *D. apicalis* are unclear.

Deflorita hemilyra **sp.n.**

Figs 59–62, 80.

MATERIAL. Holotype: ♂, Southern Vietnam, Gia Lai Prov., 20 km N of Kannack, Buon Luoi, 700–800 m, primary forest, 1–10.IV.1995, A. Gorochov (ZIAS). Paratype: ♂, same data as for holotype (ZIAS).

DESCRIPTION. MALE (holotype). Very similar to *D. parallela*, but antennal flagellum spotted as in its female, pronotum with narrow dark stripes, proximal lobe of tegminal dorsal part distinctly shorter and with characteristically cutted hind edge (Figs 59, 60), cerci thicker and with slightly different apical part (they almost as in *D. lyra*, but hardly less curved) (Fig. 80), genital plate with hind lobes slightly curved (moderately parallel to each other) and provided with curved apical parts (these lobes with narrow notch between them, forming lyre-shaped structure as in *D. lyra*, but clearly narrower) (Figs 61, 62).

VARIABILITY. Sometimes dark stripes on abdomen almost indistinct.

FEMALE unknown.

LENGTH (mm). Body 18–19; body with wings 32–34; pronotum 3.7–3.8; tegmina 23–24; hind femora 14.5–15.

COMPARISON. The differences from *D. parallela* are given above. The new species is well distinguished from *D. lyra* and *D. argentata* by the distinctly shortened proximal lobe of dorsal part of male upper tegmen, from the first of them additionally by the narrower notch between genital plate lobes in male, and from *D. deflorita* and *D. integra* by the same characters as *D. parallela*. The differences from *D. apicalis* are unclear.

Deflorita forceps **sp.n.**

Figs 63–66, 81.

MATERIAL. Holotype: ♂, China, Yunnan Prov., mouth of Nandinhe River, 200 m (at light), 7.VI.1956, Huang Ke-ren et al (ZIAS).

DESCRIPTION. MALE (holotype). Very similar to *D. parallela*, but antennal flagellum spotted as in its female, proximal lobe of tegminal dorsal part with distinctly shorter hind area (almost as in *D. hemilyra*) (Figs 63, 64), cerci slightly narrower, clearly less curved, and with roundly hooked (not S-shaped) apical part (Fig. 81), genital plate with hind lobes moderately curved and their apical parts straight (notch between these lobes intermediate between those of *D. lyra* and *D. hemilyra*) (Figs 65, 66).

FEMALE unknown.

LENGTH (mm). Body 23; body with wings 34; pronotum 3.8; tegmina 21; hind femora 15.

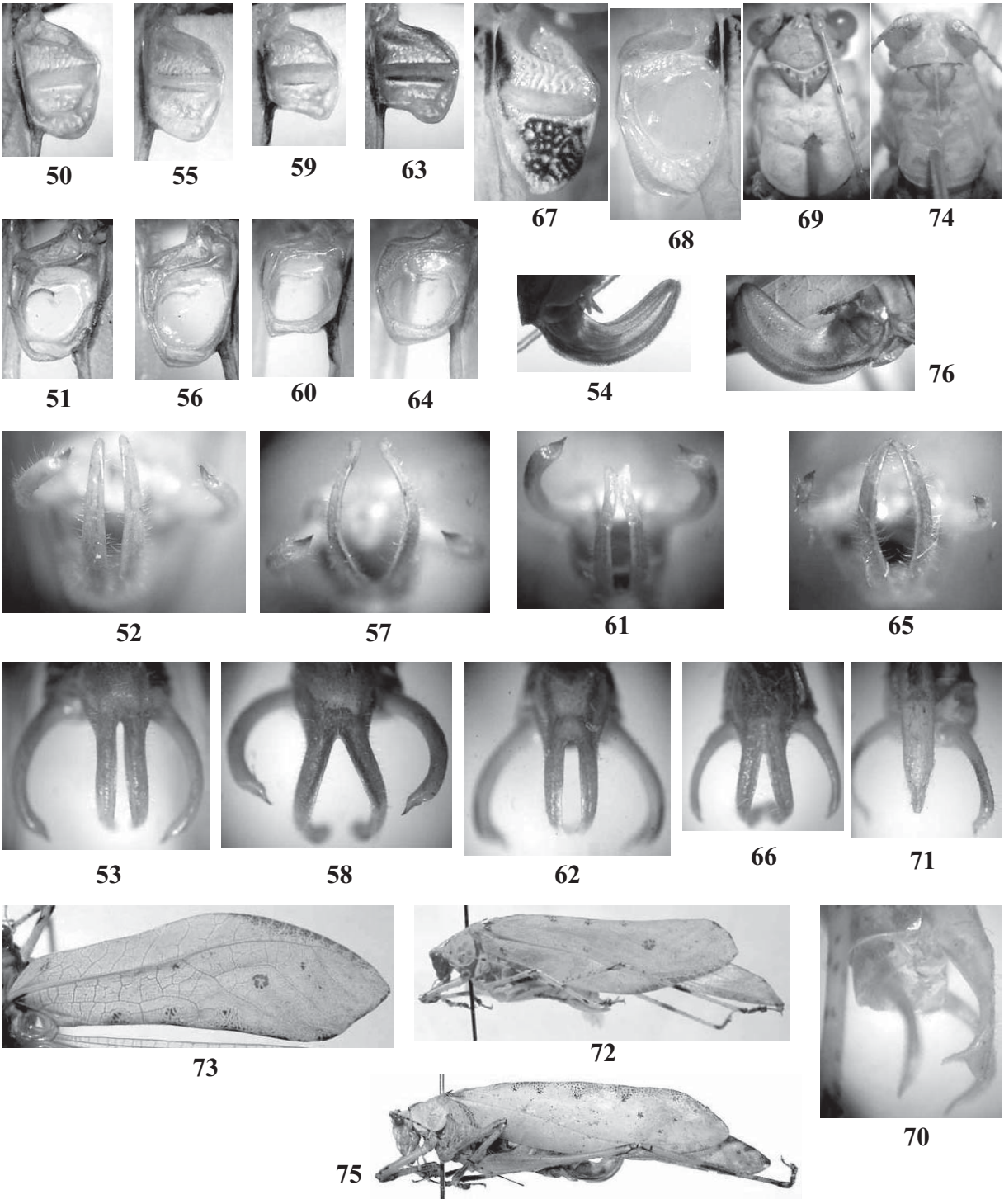
COMPARISON. The differences from *D. parallela* are given above. The new species differs from *D. lyra*, *D. argentata* and *D. hemilyra* in the roundly hooked (not S-shaped) apical parts of male cerci and the straight apical parts of genital plate lobes in male, from *D. lyra* and *D. argentata* additionally in the distinctly shortened proximal lobe of dorsal part of male upper tegmen, and from *D. deflorita* and *D. integra* by the same characters as *D. parallela*. The differences from *D. apicalis* are unclear.

REMARKS. The indication of *D. deflorita* for Yunnan [Bey-Bienko, 1962] is related to this species.

Genus *Hueikaeana* Ingrisch, 1998

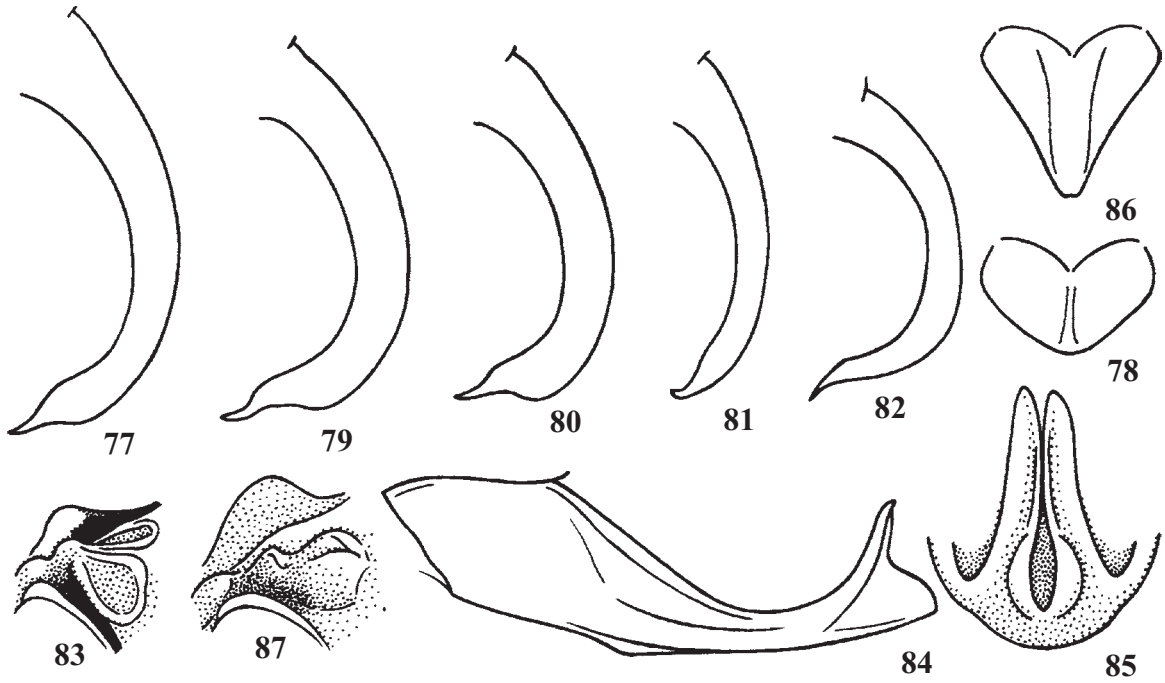
Type species *H. directa* Ingrisch, 1998 (Thailand).

REMARKS. This genus was described on a single female from Northern Thailand [Ingrisch, 1998b]. It is distinguished from 2 other genera of the tribe Mirolliini (*Deflorita* and



Figs 50–76. *Deflorita* spp. and *Hueikaeana* spp.: 50–54 — *D. parallela* sp.n.; 55–58 — *D. lyra* sp.n.; 59–62 — *D. hemilyra* sp.n.; 63–66 — *D. forceps* sp.n.; 67–73 — *H. pulchella* sp.n.; 74–76 — *H. alia* sp.n. Proximal lobe of dorsal part of upper (50, 55, 59, 63, 67) and lower (51, 56, 60, 64, 68) male tegmina with stridulatory apparatus; male abdominal apex from behind (52, 57, 61, 65), from below (53, 58, 62, 66, 71), and from side (70); ovipositor from side (54, 76); head with pronotum from above (69, 74); body from side (72, 75); right male tegmen (73).

Рис. 50–76. *Deflorita* spp. и *Hueikaeana* spp.: 50–54 — *D. parallela* sp.n.; 55–58 — *D. lyra* sp.n.; 59–62 — *D. hemilyra* sp.n.; 63–66 — *D. forceps* sp.n.; 67–73 — *H. pulchella* sp.n.; 74–76 — *H. alia* sp.n. Проксимальная лопасть дорсальной части верхнего (50, 55, 59, 63, 67) и нижнего (51, 56, 60, 64, 68) надкрылий самца со стридуляционным аппаратом; вершина брюшка самца сзади (52, 57, 61, 65), снизу (53, 58, 62, 66, 71) и сбоку (70); яйцеклад сбоку (54, 76); голова с переднеспинкой сверху (69, 74); тело сбоку (72, 75); правое надкрылье самца (73).



Figs 77–87. *Deflorita* spp. and *Hueikaeana* spp.: 77, 78 — *D. parallela* sp.n.; 79 — *D. lyra* sp.n.; 80 — *D. hemilyra* sp.n.; 81 — *D. forceps* sp.n.; 82–85 — *H. pulchella* sp.n.; 86, 87 — *H. alia* sp.n. Right male cercus from above (77, 79, 80, 81, 82); female genital plate from below (78, 86); head rostrum partly from above and partly from side (83, 87); male genital plate from side (84) and its apex from behind (85).

Рис. 77–87. *Deflorita* spp. и *Hueikaeana* spp.: 77, 78 — *D. parallela* sp.n.; 79 — *D. lyra* sp.n.; 80 — *D. hemilyra* sp.n.; 81 — *D. forceps* sp.n.; 82–85 — *H. pulchella* sp.n.; 86, 87 — *H. alia* sp.n. Правый церк сверху (77, 79, 80, 81, 82); генитальная пластинка самки снизу (78, 86); рострум головы частично сверху и частично сбоку (83, 87); генитальная пластинка самца сбоку (84) и ее вершина сзади (85).

Mirollia Stål) by the coloration more spotted than in *Mirollia*, but dissimilar also to that of *Deflorita*. Two specimens (male and female) described here are included in this genus on the base of their similarity to *H. directa* in coloration: all these specimens have the characteristic row of spots along anal edge of tegmina consisting of groups of dark dots, as well as the analogous spots along edges of exposed part of hind wings, darkish stripe or elongated spot along proximal branch of tegminal Sc, and brown spots on lateral parts of abdomen. However, the both new specimens are strongly differ from each other in the structure of head rostrum (Figs 83, 87) and the shape of tegmina (Figs 72, 73, 75). Possibly, they belong to different subgenera (or to close related genera). Therefore, I refrain here from redescription of this genus with usage of male characters until study of additional material.

Hueikaeana pulchella **sp.n.**
Figs 67–73, 82–85.

MATERIAL. Holotype: ♂, Southern Vietnam, Lam Dong Prov., environs of Dalat, "Dalat-Lang Bien", 1500 m, forest, 17.IV.1995, P. Pacholatko (ZIAS).

DESCRIPTION. MALE (holotype). General appearance somewhat similar to that of representatives of *Mirollia*. Coloration yellowish (possibly greenish during lifetime) with blackish stripes along upper edge of antennal cavities, longitudinal line on ventral part of scape, sparse rings on antennal flagellum, several short stripes on distal half of fore femora and on apical parts of middle and hind femora, stripes along upper edges of outer and inner tympana, short longitudinal stripes on distal part of all tibiae and on middle part of hind tibiae, small spots and stripes on all tarsi, and sparse dots on different parts of legs, reddish apex of head rostrum and 3 small spots along tegminal R, brown small spots behind eyes, V-shaped spot on fore part of pronotal disc (separated by light stripe from fore pronotal edge and crossed by light median line), narrow line along hind edge of this disc (with wide median interruption) (Fig. 69), lateral spot on fore coxae, and large spot on lateral parts of abdominal base, dark brown reticulated spot on dorsal part of upper tegmen near stridulatory vein (behind it), group of short stripes at base of tegmina (near proximal lobe of dorsal part) (Fig. 67), several spots (consisting of groups of dots) along anal and apical edges of tegmina and edges of exposed part of hind wings, as well as distinct analogous spot at middle part of distal half of tegmina (Fig. 72), brownish or darkish grey stripe along distal part of tegminal costal edge, elongated spot along proximal branch of tegminal Sc (Fig. 73), and 2 longitudinal stripes on outer surface of cerci. Head rostrum with upper part divided into rounded apical tubercle and rather low hind keel with distinct, large, and triangular lateral ocelli more or less flattened and situated in immediate contact with this keel (Fig. 83). Pronotum with angular notch of fore edge of disc, very distinct transverse concavity along this edge, and rounded hind edge of disc. Fore tibiae with widened proximal part provided with large and oval outer tympana as well as large inner tympanum with rather wide slit-like opening; fore and hind femora as well as fore and middle tibiae with sparse and small spines on lower surfaces; hind tibiae with somewhat more numerous analogous spines on upper surface. Tegmina with compara-

tively narrow proximal half, distinctly wider proximal part of distal half, gradually narrowing to obliquely truncated apex (Figs 72, 73); proximal lobes of both tegminal dorsal parts very similar to those of *Mirollia* (distinctly longer than in *Deflorita*) (Figs 67, 68); stridulatory areas of lower tegmen transparent and semitransparent, with almost round mirror; hind wings much longer than tegmina, with exposed parts as in Fig. 72. Cerci strongly curved, with slightly S-shaped apical parts (Fig. 82); genital plate rather long and narrow, with narrowly rounded apex undivided into hind lateral lobes, but with pair of spine-like processes situated before this apex and directed upwards (Figs 70, 71, 84, 85); genitalia similar to those of *Deflorita*, but with shorter and less curved hind membranous lobes lacking distinct pubescence.

FEMALE unknown.

LENGTH (mm). Body 19; body with wings 35; pronotum 4.2; tegmina 25.5; hind femora 12.3.

COMPARISON. The new species is well distinguished from *H. directa* by the different structure of head rostrum, the shape of tegmina (with costal edge distinctly more convex), and the coloration of head (without dark stripes behind eyes, but with only very small spots), tegmina (with distinct dark and darkish spots at middle part, larger dark spots along anal edge, clearly shorter darkish spot along proximal branch of Sc), and abdomen (with darkenings on basal tergites only).

Hueikaeana alia **sp.n.**

Figs 74–76, 86, 87.

MATERIAL. Holotype: ♀, Northern Vietnam, Ha Tinh Prov., Huong Son near Rao An River, 18°21′N, 105°13′E, primary forest, IV.2000, N. Orlov (ZIAS).

DESCRIPTION. FEMALE (holotype). More or less similar to *H. pulchella* in general appearance, but coloration somewhat different [greenish with light brown ventral side of scape, sparse dark brown spots and rings on rest of antennae, brownish almost triangular spot on fore part of pronotal disc including its fore edge (Fig. 74), short blackish lines along lateral edges of hind pronotal lobe, less distinct brown spots on legs (but outer side of proximal widening of fore tibiae with large dark spot including outer tympanum), brownish grey ornament of wings similar to that of *H. pulchella* (but with larger spots along anal tegminal edge and long stripe along proximal branch of tegminal Sc, as well as without reddish spots) (Fig. 75), and much smaller dark abdominal spots], upper part of head rostrum divided into angular apical tubercle and rather high and rounded (semiglobular) hind convexity with median groove and without distinct lateral ocelli (Fig. 87), pronotum with straight fore edge and without distinct concavity along this edge (Fig. 74), tegmina with more parallel costal and anal edges as well as more or less rounded apical part (Fig. 75). Ovipositor as in Fig. 76, with denticulated upper edge of distal half, directed somewhat upwards, and apical edge of lower valves; genital plate triangular, narrow, with hardly notched (almost rounded) apex (Fig. 86).

MALE unknown.

LENGTH (mm). Body 18; body with wings 34; pronotum 4.6; tegmina 26.5; hind femora 14.7; ovipositor 5.5.

COMPARISON. This species differs from *H. directa* in the absence of spots on head, the spotted pronotal disc, the slightly more parallel costal and anal edges of tegmina, the more numerous and distinct spots on tegmina, and the smaller abdominal spots. The differences from *H. pulchella* are listed in the description of *H. alia*.

Hueikaeana dohrni (Brunner-Wattenwyl, 1891)

Exora dohrni Brunner-Wattenwyl, 1891 (Sumatra).

MATERIAL. Holotype: ♀, Sumatra, "Deli", "Type" (MIZP).

REMARKS. I had possibility for only very short study of this specimen. Its abdominal apex is missing. The general appearance (including size and structure of tympanal organs) is similar to that of *Hueikaeana*, but the coloration is yellowish brown with sparse darkish spots on antennae, dark stripes along lateral edges of pronotal disc, greenish grey tegmina and rather long exposed parts of hind wings (all they are with rather numerous small brownish spots, and tegmina are with darker dorsal parts additionally), the shape of tegmina is clearly different from that of all other possible congeners [distal part is clearly narrower than rest of tegmen, as its costal area is with distinct distal concavity and gradually (and almost roundly) narrowing to base; anal tegminal edge is almost straight (hardly concave); apical tegminal part is more or less rounded], and the ovipositor is slightly longer in respect to hind femur than in *H. directa* and *H. alia* (in these species, hind femora are 2.7 times as long as ovipositor, but in *?H. dohrni*, they are 2.3 times as long as ovipositor).

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