

New Data on the Genus *Morphna* Shelford (Dictyoptera, Blattida, Blaberidae) of Indochina

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Received August 10, 1998

Abstract—A new species, *Morphna clypeata* sp. n., is described from South Vietnam. A key to Indo-Chinese species is given.

In this paper, a new species of the genus *Morphna* Shelford, *M. clypeata* sp. n., is described from South Vietnam, with data on the first instar nymph and process of nymph hatching. The male genitalia of a representative of the genus (*M. dotata* Walker) are illustrated for the first time. A key to Indo-Chinese species is given.

All material considered (including types) is deposited at the Zoological Institute, Russian Academy of Sciences, St. Petersburg.

FAMILY BLABERIDAE

SUBFAMILY EPILAMPRINAE

Genus *MORPHNA* Shelford, 1910

Type species *Epilampra maculata* Brunner v. W., 1865 (Java?).

The genus *Morphna* was erected for large cockroaches with well-developed wings and flattened body. The following characters were suggested as diagnostic: metatarsus of hind leg as long as the remaining tarsal segments combined; all tarsal segments not spined beneath; pulvilli large (Shelford, 1910, pp. 2, 6–7). In the examined species, minute spinules are developed on the pulvillus of hind metatarsus. In representatives of many other genera of the subfamily Epilamprinae, the ventral side of hind metatarsus bears well-visible spinules proximal to pulvillus; apparently, the absence of these spinules in *Morphna* has been indicated by Shelford.

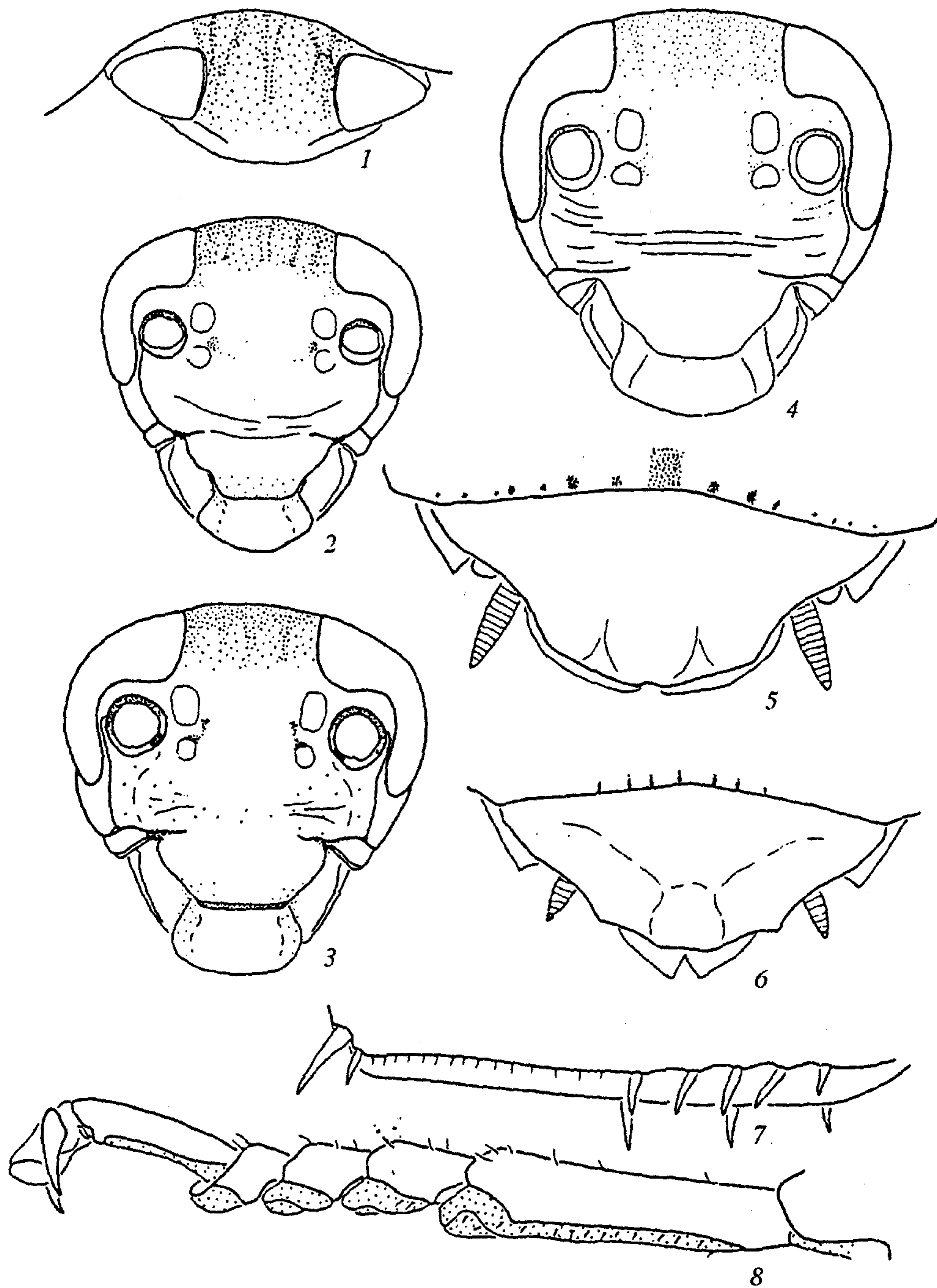
In the original description, 4 species were included in the genus: *Epilampra amplipennis* Walker, 1868; *E. plana* Brunner v. W., 1865; *E. maculata* Brunner v. W., 1865 and *E. badia* Brunner v. W., 1865; the type species was not designated; *Morphna dotata* Walker, 1869 was listed as a synonym of *M. badia* (Shelford,

1910, p. 7). *E. maculata* was designated as the type species of the genus by Hebard (1929, p. 93).

Epilampra moloch Rehn, 1904, provisionally included in *Morphna* by Princis (1967, p. 650), must be excluded from this genus on the basis of the hind leg structure: "metatarsi exceeding the remaining joints in length, lower surface bearing two longitudinal, subcontiguous rows of minute teeth; pulvilli triangular and apical" (Rehn, 1904, p. 551).

Key to Indo-Chinese Species of the Genus *Morphna*

1. Pronotum bicolorous, with large black spot occupying its middle and, partly, posterior portion and almost reaching its anterior margin; remainder of pronotum and tegmina with large black spots. Malacca, Sumatra, Java, Borneo *M. maculata* Brunner v. W.
- Pronotum unicolorous, dark; spots on pronotum and tegmina, if any, small and indistinct (Fig. 21) 2
2. Antennae bicolorous: either black with distinctly paler scape or yellow (light brown) with darkened pedicel and base of flagellum. At least hind tibia bicolorous: dark (almost black) dorsally and yellow (light brown) ventrally 3
- Antennae unicolorous: light brown or yellowish. Hind tibia unicolorous, castaneous. Thailand, Malacca, Sumatra, Java, Borneo *M. badia* Brunner v. W.
3. Body (especially pronotum) gray-brown with greenish tinge. Pronotum with distinct, although weakly developed, pattern. Scape yellow-brown; the rest of antenna black, becoming somewhat lighter (to dark brown) apically. South Vietnam *M. clypeata* Anisyutkin et Gorochoy, sp. n.



Figs. 1–8. *Morphna* Shelford: (1, 2, 4, 6–8) *M. clypeata* sp. n., holotype (4) and paratype (1, 2, 6–8); (3, 5) *M. dotata* (Walker), female. Head (1) dorsally and (2–4) anteriorly; (5, 6) apex of abdomen ventrally; (7) ventral margin of fore femur anteriorly and somewhat ventrally; (8) hind tarsus laterally.

—Body red-brown. Pronotum unicolorous, without any pattern. Antenna yellow (light brown) with darkened pedicel and base of flagellum; infusate area nearly twice as long as scape. Thailand, Malacca, Borneo *M. dotata* Walker.

Morphna clypeata Anisyutkin et Gorochov, sp. n.
(Figs. 1, 2, 4, 6–8, 20–23)

Material. Vietnam, Gia Lai Prov.: 50–60 km N of Kannack, Kon Cha Mt. Range, 1000–1200 m; 14–15.IV.1995, A.V. Gorochov, 1 ♀ (holotype),

1 nymph (paratype); Buon Luoi (20 km N of Kan-nack), 15–19.XI.1993, A.V. Gorochoy, 1 ♀ (paratype).

Description. Female (holotype). Body large, flattened, dorsally brown-gray with greenish tinge. Pronotum with dense, small, black dots and diffuse pattern consisting of pale spots; near posterior margin, with weakly marked black stripes; entire margination rufescent. Tegmina densely covered with small black dots; their distal half with pale spots; costal vein rufescent, brighter in proximal part. Thorax and abdomen dark brown (almost black) dorsally. Head pale yellow; vertex greenish, with small black spots; eyes brown; scape pale yellow; flagellum black, shining proximally, matte in the rest part; antennal sockets slightly infusate in dorsal part. Thorax ventrally and legs light yellow; anterior surface of coxae infusate; tibiae black dorsally and yellowish brown ventrally; tibial spines infusate apically; tarsi dark brown, with 1st segment slightly paler, pretarsus proximally yellow; spines infusate apically. Abdomen ventrally unicolorous, light brown. Integument weakly shining; pronotum, vertex, and frons (to a lesser extent) sparsely and finely punctate; tegmina finely and densely punctate in proximal third, with punctation weakening distad and virtually absent at apex; the rest of integument smooth.

Head of subequal length and width; eyes large; eye length nearly 1.4 times the interocular distance (Figs. 1, 2, 4); distance between antennal sockets about 1.9 times length of scape. Pronotum widely rounded anteriorly, angulate posteriorly (Fig. 21). Tegmina and wings well developed, truncate at apices, with shallowly emarginate posterior margin; tegmina somewhat shortened, only slightly longer than abdomen. Venation of tegmina inconspicuous because of their strong sclerotization; costal field wide; *Sc* nearly half as long as tegmen, with posterior branch unramified; *R*, *M*, and *Cu* with numerous branches; anal area indistinctly separated. Preanal area of wing moderately sclerotized; anal area membranous; venation distinct; *Sc* simple, more than half as long as wing; anterior branches of *RS* reaching wing margin; *M* bifurcate distally. Armament of fore femur as in Fig. 7; its anteroventral (anterior) margin with 4–5 spines; middle and hind femora with distinct longitudinal carina ventrally. First segment of hind tarsus slightly shorter than other segments combined, with pulvillus running almost along entire length of segment and bearing 2 rows of spinules visible only at high magnification; arolium large (Fig. 8). Posterolateral angles

of abdominal tergites protruding, those of sternites, beveled; cerci short; posterior margin of ultimate tergite markedly projecting caudad, notched at apex; ultimate abdominal sternite wide, trilobate (Fig. 6).

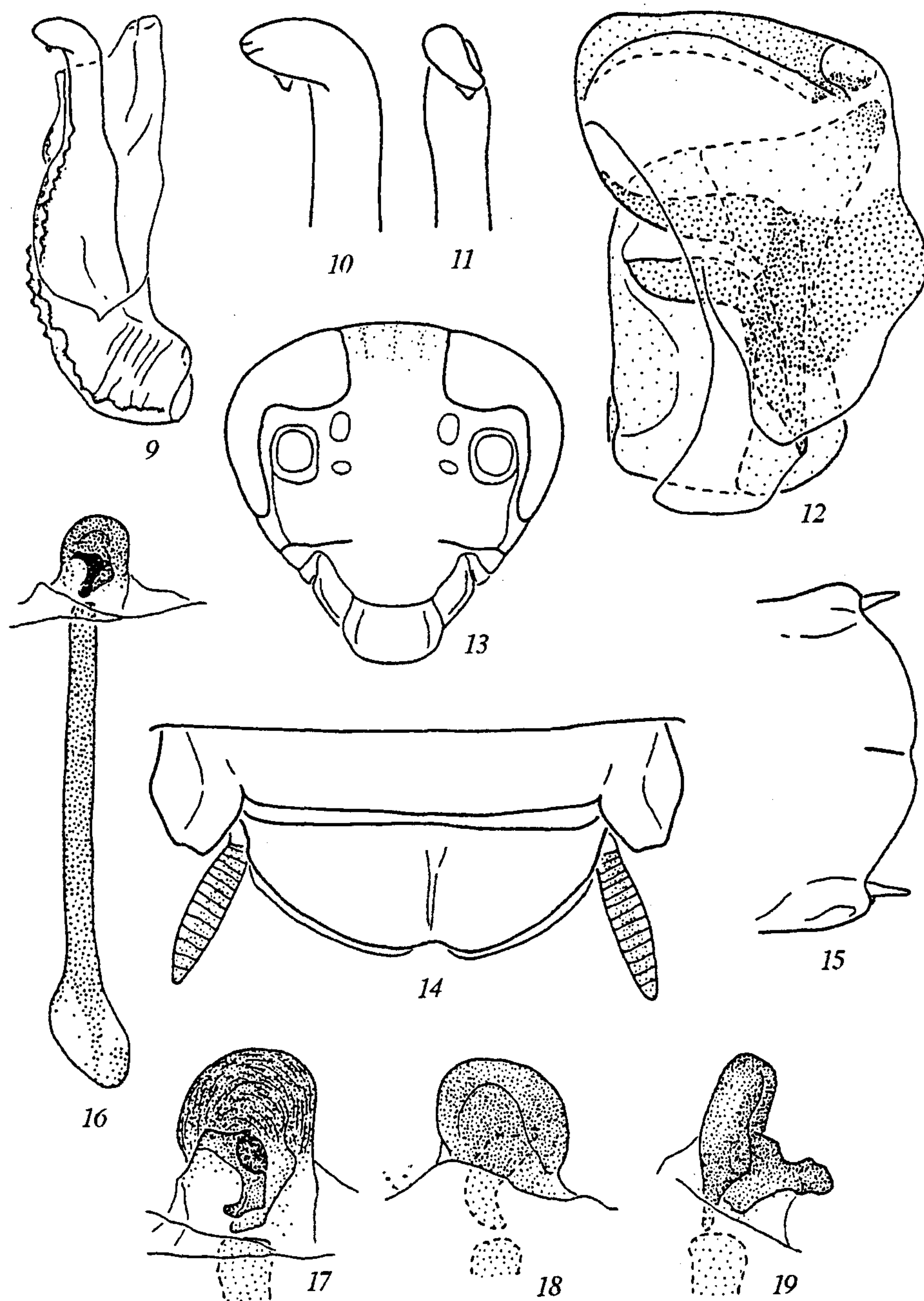
Variability. Paratype smaller and paler, more greenish, its abdomen dark brown ventrally; scape greenish gray, darker than head; black bands on posterior margin of pronotum more contrasting than in holotype (Fig. 21). Distance between antennal sockets nearly 1.8 times length of scape. Venation similar to that in holotype, but in hind wing anterior branches of *RS* running into *R* (Fig. 23).

Male unknown.

First instar nymph (Figs. 20, 22). Coloration light brown with yellowish tinge (possibly, integument decolorized in alcohol). Antennae 30-segmented; 1st (scape) and 3rd segments the longest, the others nearly as long as wide; scape twice as thick as other segments; 21st–27th segments whitish. Pronotum with almost straight posterior margin, tuberculate laterally and on posterior margin; meso- and metanotum tuberculate, with weakly concave posterior margins; pro-, meso-, and metanotum weakly marginate laterally. Abdominal tergites with angularly protruding lateral margins and tuberculate posterior margin; ultimate tergite slightly projecting caudad, without tubercles, notched at apex. Cerci without traces of segmentation. Ultimate sternite notched on posterior margin (Fig. 22), with distinct unsegmented styles. Fore femur with one apical spine; armament of its anteroventral (anterior) margin similar to that of adult, but spines less differentiated. First segment of hind tarsus longer than other segments combined; pulvilli of all segments very small, apical; 1st segment with 2 rows of spinules on ventral margin and one almost complete row on outer-dorsal margin; 2nd–4th segments with spinules on ventral margin; arolium very small.

Measurements (mm; those of adult paratype parenthesized). Length of pronotum: female 13 (10), nymph 2.4; width of pronotum: female 19.5 (16), nymph 4.4; length of tegmen 48 (40); tibia / femur lengths ratio in fore, middle, and hind legs, respectively: female 5.4/7.6 (4/6.6), 10.1/10.6 (8.4/9), 17.8/12.8 (15.2/11.1); nymph 1.3/1.6, 2.1/2.1, 3.5/2.6.

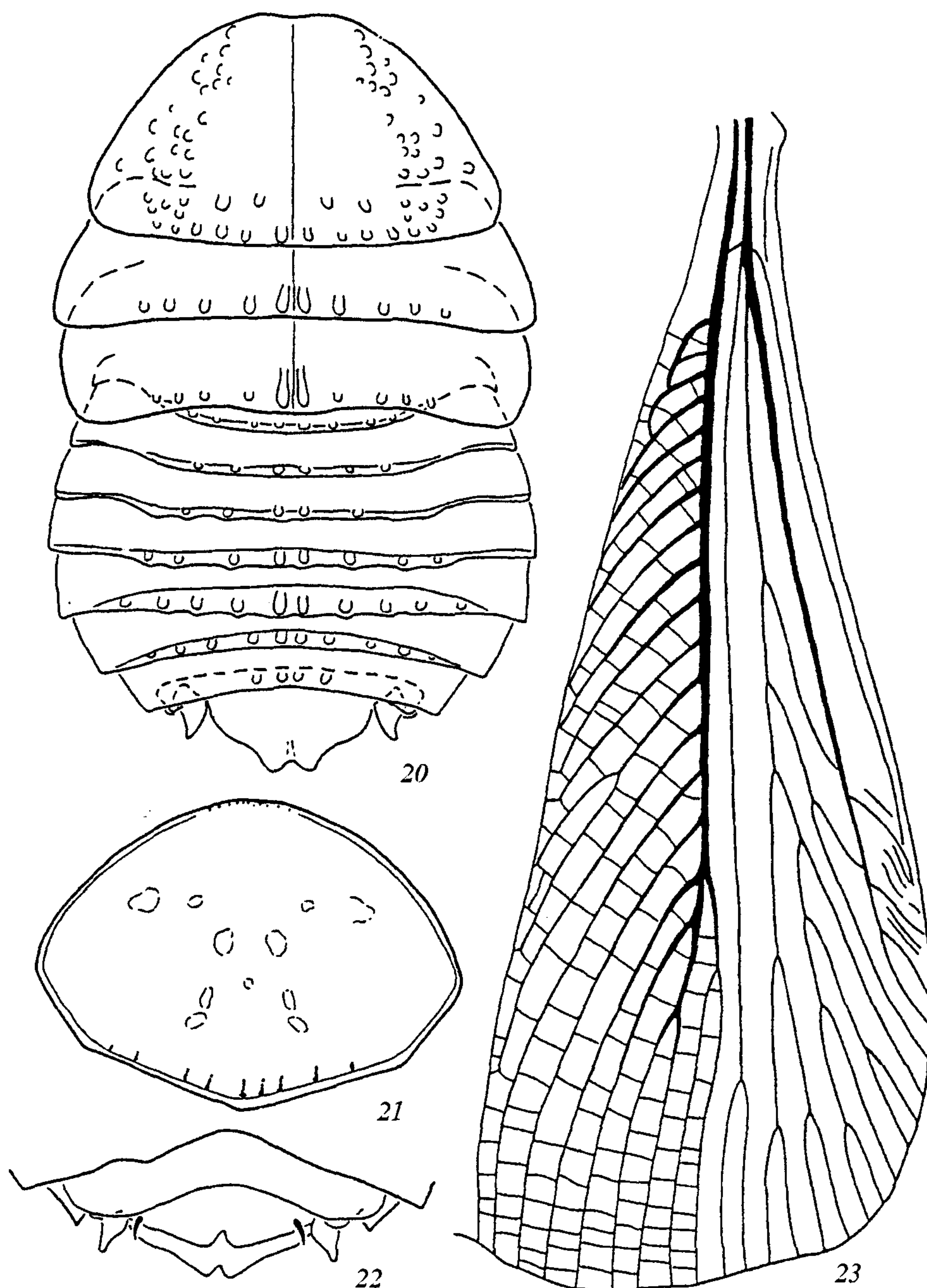
Biology. The female from Kon Cha Rang (the holotype) was found at night sitting on a trunk not far from ground at a forest edge. In the collector's hands, it immediately began to lay an ootheca, which was completely hidden in the abdomen before. The



Figs. 9-19. *Morphna dotata* (Walker), male: (9-11) sclerite R2, general view (9) and apex laterally (10) and anteriorly (11); (12) sclerite L1; (13) head anteriorly; (14) apex of abdomen dorsally; (15) ultimate sternite, ventrally; (16) sclerites L2d and L2vm, general view; (17-19) sclerite L2d, dorsally (17), ventrally (18), and laterally (19).

ootheca was rather long and distinctly arcuate, greenish brown, more or less smooth. Immediately upon ootheca, its sheath split longitudinally and broke into 2 halves, releasing numerous whitish eggs, initially rather narrow (cylindrical, with rounded ends), pressed to each other, and attached to ootheca at one end. Then, the halves of ootheca began to bend in such

a way that their outer surface became concave (being convex initially) and eggs became more widely spaced. A hardly visible (in the lantern light) motion began in the eggs; presumably, the formed prenympths started to saw the egg chorion. After a short time, mass hatching began. Anterior body parts appeared first (dark eyes became well visible on the whitish



Figs. 20–23. *Morphna clypeata* sp. n.: (20, 22) first instar nymph, general view (20) and apex of abdomen ventrally (22); (21) pronotum of imago (paratype) dorsally; (23) female (paratype), preanal area of right hind wing (cross veins costal to *Cu* not shown).

background). Probably, the embryonic cuticle broke down immediately after egg opening, and nymphs got out of both the membranes, as from a stocking, moving wormlike. Simultaneously, the outcoming nymphs were increasing in size, probably, due to air supply into tracheae. At first sight, it appeared as if the eggs, remaining attached to both halves of the ootheca, had begun to grow and intensely move, with two dark dots

(eyes) having appeared at their apices. Shortly after, the first completely hatched nymphs occurred; they continued to grow and turned fast into entirely inflated cockroach-shaped beings much larger than the eggs. At first, these nymphs sat motionless at that place on ootheca where they had hatched, forming a pile of inflated, whitish individuals sitting one on another. Several unhatched eggs, maybe unfertilized, remained

on ootheca. Somewhat later, the nymphs began to move and eat away intensely the remains of ootheca; after having eaten the ootheca completely, the nymphs began to scatter one after another. The whole process, from ootheca laying to dispersion of the first instar nymphs, took about an hour. The thickening of integument with its gradual pigmentation from whitish to grayish brown, was completed only within some hours after hatching.

***Morphna dotata* Walker, 1868 (Figs. 3, 5, 9–19)**

Material. "Nord Borneo, ex coll. Fruhstorfer," "*Morphna badia*, Br.," "R. Shelford det.," 1 ♂; Malaysia, Pahang State, near Kuala Tahan Vill., Tembeling River, near Taman Negara National Park, 12–16.VII.1996, primary tropical forest, A.V. Gorochov, 1 ♀.

Description. Female. Similar to female of the preceding species. General color brown, with reddish tinge. Pronotum reddish brown, with narrow pale limb. Tegmina with few hardly visible pale spots in distal half; costal vein not differing in coloration from the background. Eyes almost black. Antennae bicolorous: scape and most of flagellum light yellow, flagellum proximally and pedicel dark brown. Abdomen ventrally light yellow, with dark median stripe (except for ultimate sternite) and numerous dark spots scattered over entire surface of sternites and forming regular rows on their posterior margins.

Structure of head, thorax, and wings similar to that in the preceding species; eye length nearly 1.5 times interocular distance (Fig. 3); distance between antennal sockets nearly 1.7 times length of scape. Wings somewhat longer than in *M. clypeata* sp. n. Tegmina with Sc more than half as long as tegmen; anal area of tegmen distinctly separated. Preanal area of wing with venation similar to that in *M. clypeata* sp. n., but RS more ramified and its first branchings shifted to proximal end of the vein. Posterior margin of ultimate tergite rounded, weakly notched; ultimate abdominal sternite wide, weakly notched at apex (Fig. 5).

Male. More slender and somewhat paler than female. Eyes larger; eye length nearly twice the interocular distance (Fig. 13); distance between antennal sockets about 1.9 times length of scape. Wings longer than in female, rounded at apices; posterior branch of Sc in left tegmen bifurcate; hind wing with preanal area markedly less sclerotized than in female and *M* bifurcating 2–3 times. Abdominal tergite VIII large,

with lateral protuberances; tergite IX small, almost entirely covered by tergite VIII; tergite X with small incision, its posterior margin somewhat upturned (Fig. 14). Ultimate sternite (hypandrium) asymmetrical, with concave posterior margin (Fig. 15). Male paraprocts asymmetrical.

Male genitalia. *L1* well sclerotized, with large, subrectangular dorsal lobe, medial incision bent at nearly right angle, and rather short and wide apodeme (Fig. 12). *R2* with somewhat rounded apex, well-developed toothed structures, and auxiliary sclerite (Figs. 9–11). Sclerites *L2d* and *L2vm* not connected (Fig. 16). *L2d* flattened, with thickened margins, its surface densely covered with adpressed bristles; dorsally bearing sclerotized projection of complicate shape (Figs. 17–19). *L2vm* moderately sclerotized, rodlike, with widened basal part (Fig. 16).

Measurements (mm). Length of pronotum: male 10.2, female 11.2; width of pronotum: male 15.3, female 18.7; length of tegmen: male 45, female about 50 (apices of tegmina wanting); tibia/femur length ratio in fore, middle, and hind legs, respectively: male 4.8/7, 9.5/9.4, 16.8/11.6; female 5.5/7.8, 10.8/11.1, 19/12.6.

M. dotata had been synonymized with *M. badia* (Kirby, 1904) and considered a synonym of the latter until Hanitsch (1923, pp. 420–423) separated these species. In the present work, the authors accept the status of these species according to R. Hanitsch.

M. clypeata sp. n. is apparently most closely related to *M. badia* Brunner v. W. and *M. dotata* Walker forming with them an isolated group within the genus *Morphna*. Unfortunately, the group cannot be adequately characterized at the present level of knowledge. It is noteworthy that the pulvillus running along almost the entire length of metatarsus of adult is shared by *M. clypeata* sp. n. and *M. dotata*, distinguishing them from the type species of the genus, *M. maculata*, which has significantly smaller pulvillus (Shelford, 1910, fig. 7a). *M. clypeata* sp. n. and *M. dotata* also share such characteristic feature as ramified vein *M* of the hind wing, which distinguishes them from *M. plana* Brunner v. W., 1865 with usual of the group, not branching *M* (Rehn, 1951).

ACKNOWLEDGMENTS

The work was carried out using the scientific collection of the Zoological Institute, Russian Academy of Sciences, supported by the State Committee for Science and Technology of the Russian Federation, reg. no. 97-03-16.

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