

A New Neotropical Predaceous Midge, *Downshelea deanei*, and Redescription of *Downshelea guianae* (Wirth) (Diptera: Ceratopogonidae)

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A new species of Downshelea Wirth & Grogan, D. deanei Felipe-Bauer & Quintelas, is described and illustrated from a male specimen from Trinidad, and a redescription of D. guianae (Wirth) is given.

Key words: neotropical predaceous midges - *Downshelea deanei* sp.n. - *Downshelea guianae* (Wirth) - British Guiana - Trinidad - Brazil

Wirth and Grogan (1988) in their important revision of the predaceous midges of the world, placed the species of the *Monohalea multilineata* group in a new genus, *Downshelea*, which includes 30 neotropical species.

During a taxonomic study of this genus, we examined specimens in the collection of the Faculdade de Saúde Pública da Universidade de São Paulo determined as *Monohalea guianae* Wirth, concluding that one male from Trinidad does not present specific characters of *guianae* or other known species of the genus.

Furthermore, we had the opportunity to examine the male holotype of *D. guianae*, from British Guiana (now Guyana), deposited in the British Museum, Natural History (BMNH). Its aedeagus does not present the pair of submedian processes described and illustrated by Wirth (1953). Probably, the two delicate membranous expansions present in this region of the aedeagus were confounded with the processes.

Finally, we also examined a collection of midges of the same genus from the State of Pará, Brazil, finding one male and one female which we identified as *D. guianae*.

These observations prompted us to describe in this paper a new species of *Downshelea*, as well as to redescribe *D. guianae*.

The terminology used is that adopted by Wirth and Williams (1964) for North American species of *Monohalea*, Lane and Wirth (1964) for

Neotropical species, and Ratanaworabhan and Wirth (1972) for Oriental species.

Downshelea deanei Felipe-Bauer & Quintelas,
new species
(Figs 1-9)

Monohalea guianae Lane & Wirth, not Wirth 1953 (misidentification) *Studia Ent.* 7 (1-4), 1964: 224 (male, Port of Spain).

Type locality: Port of Spain, Trinidad and Tobago.

Male Holotype: wing length 0.99 mm; breadth 0.32 mm.

Head: eyes (Fig. 1) black, widely separated, bare. Pedicel brown, flagellum missing. Palpus (Fig. 2) uniformly brown; lengths of segments I-IV in proportion of 6-11-17-12, V missing; 3rd segment swollen, with a small, shallow, rounded sensory organ in the mid portion; palpal ratio 1.8.

Thorax: mesonotum (Fig. 3) brown with grayish and dark brown rounded areas; scutellum yellowish with median brown band; postscutellum and pleura brown. Legs (Fig. 6) brown, the hind slightly darker; knees yellowish; fore tibia with a slender spur and a patch of subapical bristles; lengths of trochanters, femora and tibiae of fore, mid and hind legs in proportion of 16-72-69; damaged-83-77; 17-92-damaged. Fore tarsus (Fig. 5) pale, pilose; mid and hind tarsi missing; fore basitarsus with one basal and one apical spine, apical spines of tarsomeres 2-4 as follows: 1-1-2; lengths of fore tarsomeres in proportion of 37-18-14-10-11; fore tarsal ratio 2.06. Fore claws paired, equal-sized, about 0.4 times as long as 5th tarsomere, each with external basal tooth. Wing (Fig. 9) hyaline with a few scattered marginal macrotrichia, dark bristles on costa; two irregular dark spots, one on the r-m cross vein reaching medial fork, the other in cell R5, extending from

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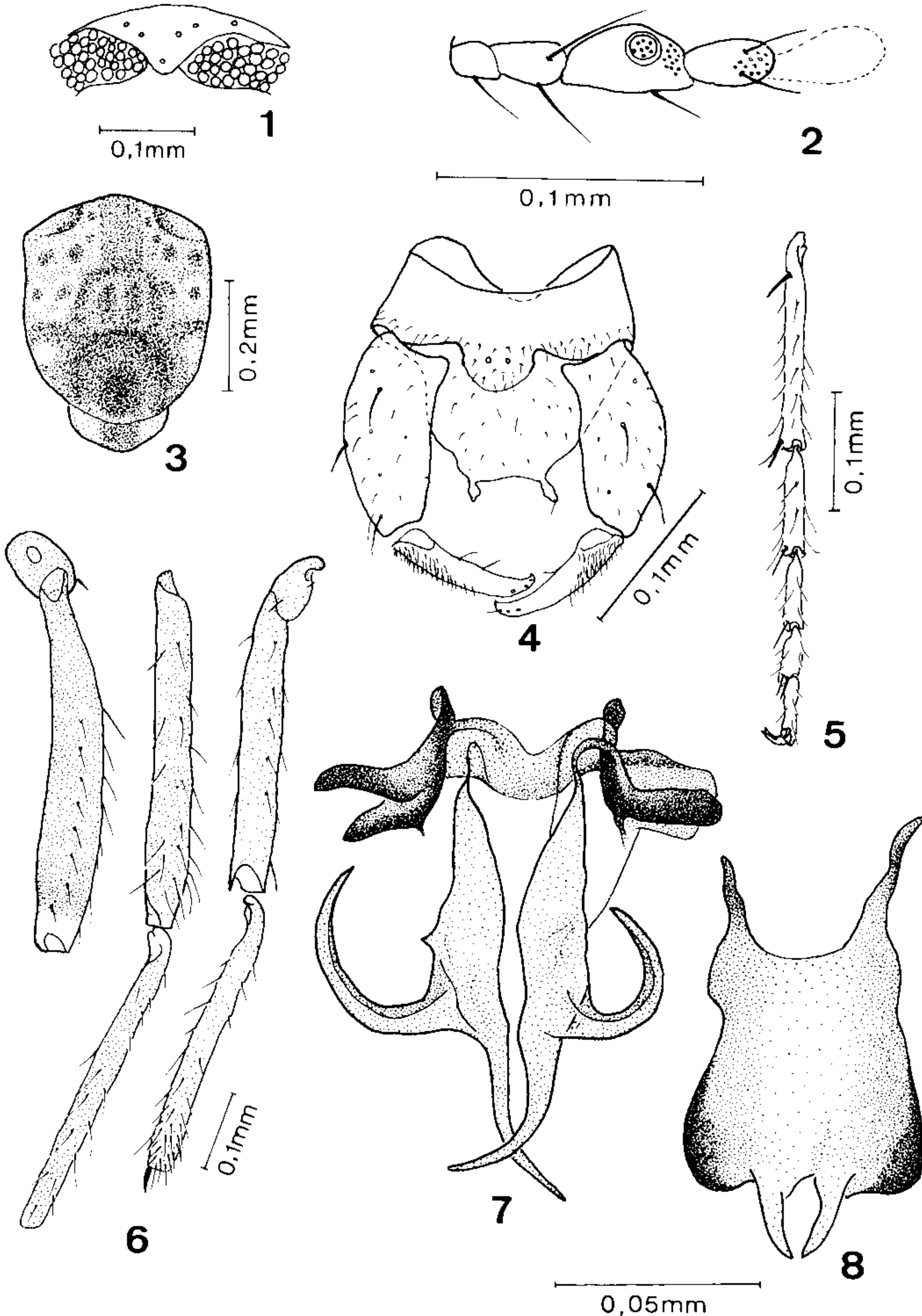
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the end of 2nd radial cell to vein M1; three inconspicuous grayish, diffuse areas, one near apex of vein M1 extending in cell M1, other near apex of vein M2, the remaining on M-Cu fork extending along veins M3+4 and Cu1; 2nd radial cell nearly

2.4 times longer than 1st; costal ratio 0.71. Halter stem pale, knob brown.

Abdomen: genitalia (Fig. 4) brown: 9th sternum spiculate except on basal portion; posterior margin with a narrow, short, convex median lobe,



Downshelea deanei sp. n., male. Fig. 1: separation of eyes. Fig. 2: palpus. Fig. 3: mesonotum. Fig. 4: genitalia, aedeagus and parameres removed. Fig. 5: fore tarsus. Fig. 6: legs (left to right) hind, mid, fore. Fig. 7: parameres. Fig. 8: aedeagus.



Downshelea deanei sp. n., male. Fig. 9: wing photograph.

with two long hairs; 9th tergum tapering, with a pair of apicolateral processes. Gonocoxite moderately stout, 2.2 times as long as basal width; gonostylus nearly straight, gradually narrowed to apex, 0.77 times as long as gonocoxite, moderately pilose basally with a few faint lateroventral hairs. Aedeagus (Fig. 8) rectangular, basal arch extending to 0.2 of total length; lateral arms strongly sclerotized, distal portion with a deep mesal excavation forming 2 long, narrow, sharp, membranous lobes, lateral areas rounded and greatly sclerotized. Parameres (Fig. 7) elongated, nearly 1.3 times longer than aedeagus; divided, each with a strongly sclerotized trilobed basal arms, connected each other by a membranous ligament; mid portion swollen with one long, curved, horn-like process (the right longer than the left one); apical portion sharp, curved, internally directed.

Female: unknown.

Distribution: Trinidad (Port of Spain).

Type: holotype male, *Port of Spain*, Trinidad, VI.1953, U.S. Army 25 Med. Det. light trap, deposited in Departamento de Epidemiologia, Faculdade de Saude Pública, Universidade de São Paulo, Brazil.

Etymology: this species is named in honor of Dr Leonidas de Mello Deane, in recognition of his valuable contributions to the study of infectious and parasitic diseases during his 56 years of scientific activity.

Discussion: *D. deanei* most closely resembles *D. bicornis* Felipe-Bauer & Quintelas by the wing pattern and male genitalia. But in *bicornis* the apice of the parameres and the median process are equal in size and shape, like two horn processes. In *deanei*, the apice of the parameres is more delicate and sharp than the median process, and the right median process is longer than the left one. The aedeagus is also stouter in *deanei*.

Downshelea guianae (Wirth)
(Figs 10-22)

Monohelea multilineata Macfie, not Lutz (misidentification), *Proc Roy Ent Soc Lond*, ser. B, vol. 9, 1940: 187 (male, British Guiana).

Monohelea guianae Wirth, 1953. *Proc US Natl Mus* 103: 150 (male; Fig. 19k male genitalia; British Guiana).

Downshelea guianae (Wirth); Wirth & Grogan, 1988. *Flora & Fauna Handbook*, no. 4: 51 (new combination).

Female: wing length 1.10 mm; breadth 0.46 mm.

Head: eyes (Fig. 12) black, narrowly contiguous in lower portion, bare. Antenna (Fig. 13) uniformly pale brown; flagellomeres cylindrical, lengths in proportion of 27-16-17-18-18-20-19-19-29-31-36-32-43; antennal ratio (11-15/3-10) 1.11. Palpus (Fig. 16) uniformly pale brown, smaller than proboscis by the length of segments 3-5; lengths of segments in proportion of 10-15-28-15-24; 3rd segment cylindrical, with a moderately deep, rounded sensory organ in mid portion; palpal ratio 2.3. Mandible with 11 teeth.

Thorax: brown, apparently without a definite pattern in slide mounted specimen. Scutellum with median brown band; postscutellum brown. Legs (Fig. 14) uniformly brown, the hind slightly darker; knees yellowish; fore tibia with slender spur; fore and hind tibiae with a patch of packed subapical bristles; hind tibia with short apical spur; hind tibial comb with six bristles; lengths of trochanters, femora and tibiae of fore, mid and hind legs in proportion of 11-49-51, 10-64-60,

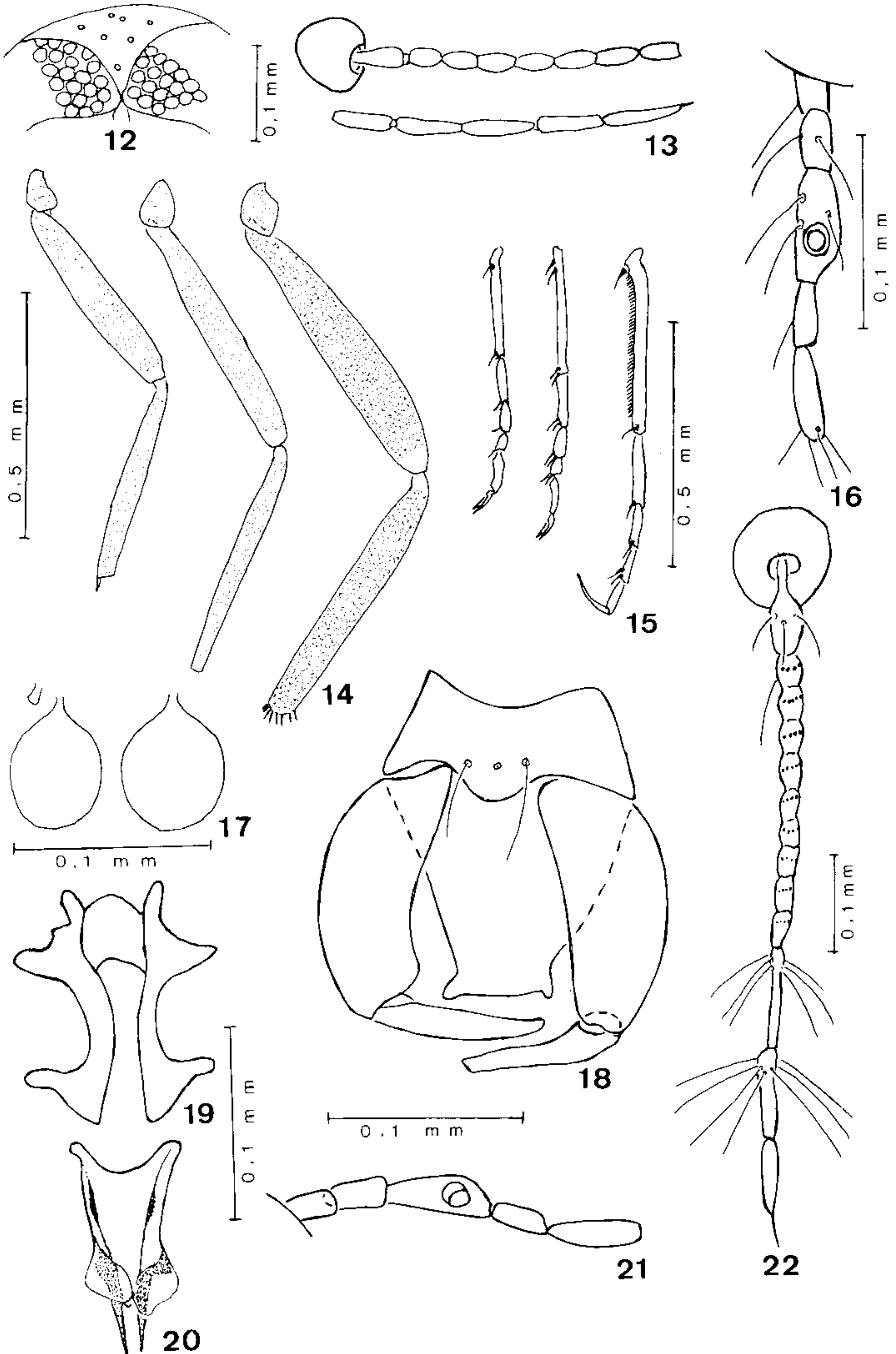


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11

Downshelea guianae (Wirth), wing photographs. Fig. 10: female. Fig. 11: male.



Downshelea guianae (Wirth). Fig. 12: separation of eyes. Fig. 13: female antenna. Fig. 14: legs (left to right) fore, mid, hind. Fig. 15: tarsi (left to right) fore, mid, hind. Fig. 16: female palpus. Fig. 17: spermathecae. Fig. 18: male genitalia, aedeagus and parameres removed. Fig. 19: parameres. Fig. 20: aedeagus. Fig. 21: male palpus. Fig. 22: male antenna.

12-74-69. Tarsi (Fig. 15) pale, pilose; hind basitarsus darker, with one row of ventral palisade setae; fore and hind basitarsi with one basal and one apical spine; mid basitarsus with two basal and two apical spines, ventral spines absent; apical spines of tarsomeres 2-4 of fore, mid and hind legs as follows: 1-1-1, 2-2-2, 1-1-2, basal spines absent; lengths of fore, mid and hind tarsomeres in proportion of 28-11-7-5-10, 31-12-7-5-10, 45-18-10-8-9; fore, mid and hind tarsal ratios 2.5, 2.6, 2.5; claws of fore and mid legs paired, equal-sized, 0.7 times as long as 5th tarsomere; hind leg with a single claw, 1.3 times as long as 5th tarsomere. Wing (Fig. 10) hyaline, scattered macrotrichia distally in cells R5 and M1, dark bristles on costa, microtrichia absent; two slightly faint dark spots, one on the r-m crossvein reaching medial fork, the other in cell R5 extending from the end of 2nd radial cell to vein M1; three inconspicuous grayish areas, one near apex of vein M1 extending to wing margin in cell M1, one sigmoid-shaped near apex of vein M2, the remaining grayish (less distinct) on M-Cu fork extending along veins M3+4 and Cu1; 2nd radial cell nearly twice as long as 1st; costal ratio 0.77.

Abdomen: brown. Two ovoid spermathecae (Fig. 17), equal-sized, measuring 0.064 by 0.051 mm.

Male: wing length 0.96 mm; breadth 0.31 mm. Similar to female with usual sexual differences; antenna (Fig. 22) uniformly pale brown, flagellomeres 4-11 somewhat barrel-shaped, 12 nearly twice as long as wide, 13-15 elongate; lengths of flagellomeres in proportion of 46-15-15-17-15-15-15-15-21-41-40-40; antennal ratio (12-15/3-11) 0.85. Palpus (Fig. 21) uniformly pale brown; lengths of segments in proportion of 10-20-27-15-24; 3rd segment cylindrical, with a moderately deep, rounded sensory organ in mid portion; palpal ratio 2.7. Legs uniformly brown; lengths of trochanters, femora and tibiae of fore, mid and hind legs in proportion of 10-45-44, 9-53-50, 11-62-55. Tarsi pale, pilose; fore and hind basitarsi with one basal and one apical spine; mid basitarsus with two basal and two apical spines, ventral spines absent; apical spines of tarsomeres 2-4 of fore, mid and hind legs as follows: 1-1-1, 2-2-2, 1-1-1, basal spines absent; lengths of fore, mid and hind tarsomeres in proportion of 25-10-8-5-7, 28-12-8-5-7, 36-16-10-7-7; fore, mid and hind tarsal ratios 2.5, 2.3, 2.2; claws paired,

equal-sized, 0.4 times as long as 5th tarsomeres. Wing (Fig. 11) hyaline, dark spots as in female, costal ratio 0.76. Genitalia (Fig. 18): 9th sternum spiculate except on basal portion, posterior margin with a convex, median lobe bearing 3-4 long hairs; 9th tergum tapering, with a pair of apicolateral processes. Gonocoxite 2.5 times as long as basal width; gonostylus nearly straight, 0.74 times as long as gonocoxite, moderately pilose basally. Aedeagus (Fig. 20) nearly rectangular, basal arch extending to 0.17 of total length; distal portion with two pointed, sclerotized processes bearing two basal, ventral membranous expansions. Parameres (Fig. 19) 1.1 times as long as aedeagus, broadly joined basally; stem curved; apex as a foot-shaped, externally directed lobe.

Distribution: Guyana (Mazaruni); Brazil (Pará).

Specimens examined: 1 male, Holotype, *Mazaruni*, BRITISH GUIANA (now GUYANA), 21.VIII.1937, secondary, growth (low forest), Richards and Smart coll., deposited in BMNH, London; 1 male, 1 female, Projeto Tucumã, Rio Fresco, *Pará*, BRAZIL, J. Grazia coll., no data.

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