

A NEW GENUS AND SPECIES OF BITING MIDGE (DIPTERA: CERATOPOGONIDAE) AND A NEW SPECIES OF *CULICOIDES* FROM MALAYSIA

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Abstract. A new genus and 2 new Malaysian species of biting midges, *Chelohelea*, n. gen., with type-species *Chelohelea comata*, n. sp., and *Culicoides* (*Haemophoructus*) *boormani*, n. sp., are described and figured.

For many years the junior author and (more recently) the senior author have been cataloging the biting midges of SE Asia (Wirth 1973). We take this opportunity to describe an interesting new genus and 2 new species of midges that were discovered recently while working on a collection from Malaysia.

For explanations of terms and ratios and the methods of measurement used, see Wirth (1962), Das Gupta & Wirth (1968), and Giles et al. (1981). *NMNH* indicates the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Chelohelea Giles & Wirth, new genus

Type-species: *Chelohelea comata*, n. sp.

Diagnosis. Moderately large, dark brown, shaggy setose midges, wing 1.95 mm long. Eyes bare, contiguous. Antennae missing, thus characters unknown. Palpus short; segment 3 short and slender (palpal ratio 1.7), a few sensilla on mesal margin, pit absent. Proboscis short; mandible with 6-7 coarse teeth. Thorax convex, rounded in front, anterior tubercle lacking; integument pubescent, with many long, fine hairs. Legs long, moderately slender, clothed with many long, erect, bristly hairs; femora not swollen distally, unarmed ventrally, hind femur with ventral series of long, extremely fine, somewhat wavy hairs arising perpendicularly; proximal tarsomeres without strong ventral spines; 4th tarsomeres short but not cordiform; 5th tarsomeres each with 6 long batonnets in a proximal group and 4 short batonnets in a distal group. Claws equal, long, slender, and pointed; strongly curved at base and slightly curved distally; each with small, internal basal tooth. Wing moderately slender, anal lobe somewhat reduced; costa moderately long, costal ratio 0.82; 1 narrow radial cell present; media forking just proximad of r-m crossvein; wing surface with dense coarse microtrichia, macrotrichia absent. Abdomen moderately slender but not petiolate; integument with many long erect hairs; gland rods absent; 8th sternite with distinct caudal notch flanking gonopore, no prominent sclerotized plates or hair tufts; 9th sternite reduced to a pair of transverse sclerites with truncated mesal ends moderately separated. Spermathecae 2, ovoid, with short sclerotized necks. Male unknown.

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Distribution. Malaysia.

Etymology. The name is from the Greek *chelo*, "claw," + *heleios*, "marsh dweller," and it pertains to the distinctive long claws of the female.

Discussion. *Chelohelea* is closely related to *Lanehelea* Wirth & Blanton (1972) and will key out to that genus in the key by Wirth et al. (1974). *Chelohelea* can be readily distinguished from *Lanehelea* by several morphological characters, the most important of which are the lack, in *Chelohelea*, of a bare sclerotized plate and the pair of setose lateral lobes flanking the gonopore (both of which are found in *Lanehelea*), and the arrangement of the unequal length batonnets in 2 groups on the 5th tarsomere of *Chelohelea*. *Lanehelea* further differs from *Chelohelea* in its possession of broadly separated eyes, a distinct antereomedian tubercle on the mesonotum, more slender palpus (PR 3.0–3.5), and shorter tarsal claws (0.76–0.83 as long as tarsomere 5 in *Chelohelea*, 0.50–0.67 in *Lanehelea*).

***Chelohelea comata* Giles & Wirth, new species**

Fig. 1

♀ *holotype*. Wing length 1.95 mm, breadth 0.65 mm.

Head. Brownish; clypeus with long hairs. Eyes bare, contiguous for a distance equal to diameter of 4.5 ommatidial facets (Fig. 1d). Antennae missing, characters unknown. Palpus (Fig. 1b) brown, with long hairs; lengths of segments in proportion of 11-11-17-12-17; 3rd segment slightly tapered distally, with a few scattered mesal sensilla; palpal ratio 1.7. Proboscis brown, P/H ratio 0.36; mandible (Fig. 1c) with 6–7 coarse teeth. *Thorax.* Brownish; integument finely pubescent with many long erect hairs. Legs (Fig. 1h) brown, fore femur pale proximally, mid and hind legs uniformly light brown and dark brown respectively; hind tibial comb with 6–8 spines, the 2 equivalent spines nearest the plumose spur longest. Tarsi light brown; palisade setae in 2 rows on mid and hind basitarsi, in 1 row on mid and hind 2nd tarsomeres; 5th tarsomeres with 6 long batonnets basally and 4 short batonnets distally (Fig. 1e, f); hind tarsal ratio 2.18. Ratio of claw length to 5th tarsomere length 0.76 on fore leg, 0.83 on mid leg, and 0.81 on hind leg. *Wing* (Fig. 1a). Light brown, veins darker brown; surface covered with dense, coarse microtrichia; fringe setae stout and in 2 rows on anterior margin, slender and of alternate lengths on posterior margin; costal ratio 0.82. *Abdomen.* Brown, with fine pubescence and many long erect hairs. Genital sclerotization as in Fig. 1i. Spermathecae (Fig. 1g) ovoid with short sclerotized necks; slightly unequal, measuring 0.074 by 0.062 mm and 0.065 by 0.050 mm including necks.

♂. Unknown.

Distribution. Malaysia.

Type. Holotype ♀ (on slide in phenol-balsam), MALAYSIA: Negri Sembilan, Parci Estate, 24.II.1974, light trap (R. Parsons) (in NMNH).

Discussion. The specific epithet *comata* refers to the abundant vestiture of long bristly setae giving the midge a shaggy appearance.

Genus *Culicoides* Latreille

***Culicoides boormani* Giles & Wirth, new species**

Fig. 2

♀ *holotype*. Wing length 1.26 (1.18–1.31, $n = 9$) mm.

Head. Brownish. Eyes (Fig. 2e) bare, contiguous for a distance equal to diameter of 3

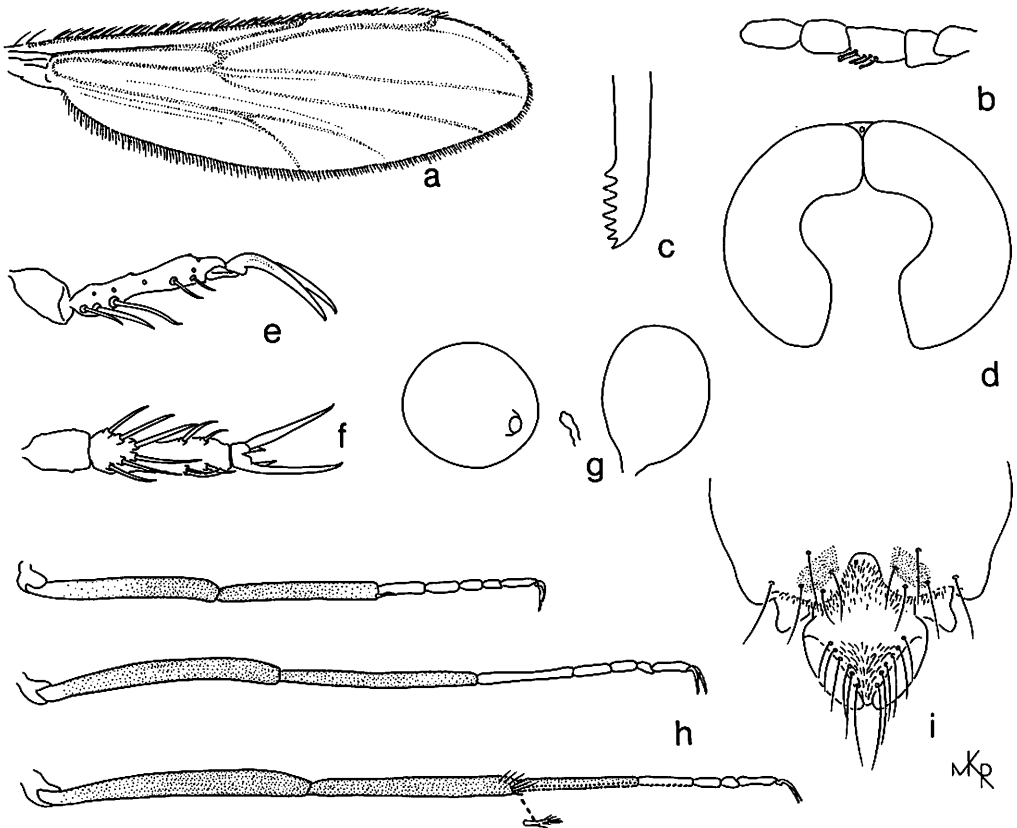


FIG. 1. *Chelohela comata*, ♀: a, wing; b, palpus; c, mandible; d, eye separation; e, f, tarsomeres 4 and 5 of hind leg in side and ventral views; g, spermathecae; h, fore, mid, and hind legs (top to bottom); i, genital sclerotization.

ommatidial facets. Antenna with segments 4–10 pale, their apices darker, 11–15 light brown; verticils well developed on all segments; lengths of flagellar segments (Fig. 2a) in proportion of 24-19-20-21-22-21-21-23-31-32-34-36-55; antenna ratio 1.10; sensilla coeloconica present on segments 3, 11–15. Palpus (Fig. 2b) brown; lengths of segments in proportion of 11-67-86-32-36; 3rd segment narrowed beyond basal $\frac{1}{2}$, with scattered sensilla on distal $\frac{3}{4}$; palpal ratio 4.68 (4.00–4.89, $n = 9$). Proboscis brown; long, P/H ratio 0.99 (0.93–1.00, $n = 6$); mandible (Fig. 2d) with 19 (16–19, $n = 8$) well-developed teeth, the proximal part of the series slightly coarser. *Thorax*. Mesonotum and scutellum light brown; postscutellum and pleuron darker brown. Legs (Fig. 2f) brown; femora each with narrow basal pale band and broad distal pale band; fore and mid tibiae with narrow pale bands basally; hind tibia with pale bands broad basally and narrow distally; hind tibial comb with 6 (5–6, $n = 9$) spines, 2nd from spur longest. *Wing* (Fig. 2c). Yellowish brown with prominent pale spots. One radial cell somewhat broadened distally. Base of wing pale to approximately $\frac{1}{2}$ distance to r-m crossvein; pale spot over r-m crossvein, wider than dark areas on each side, extending posteriorly broadly from costa, crossing vein M narrowly to broadly meet mediocubital stem; large pale spot covering distal $\frac{2}{3}$ of radial cell; large round distal pale spot in cell R5 weakly meeting anterior wing margin; distal pale

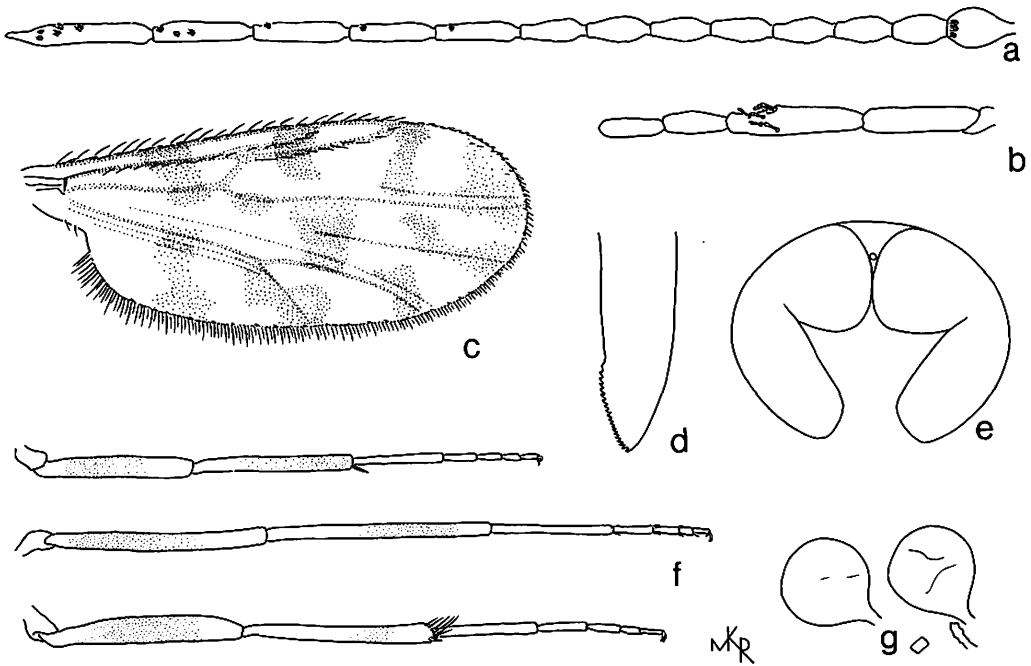


FIG. 2. *Culicoides boormani*, ♀: a, antennal flagellum; b, palpus; c, wing; d, mandible; e, eye separation; f, fore, mid, and hind legs (top to bottom); g, spermathecae.

spots in cells M1 and M2 weakly meeting wing margin; cell M4 with large pale spot meeting wing margin and extending basally along vein M3+4 to junction of mediocubital fork, an intrusion of pigmentation across tip of vein Cul creating a pale C-shaped marking; distal portion of anal cell with a double pale spot extending from posterior wing margin to mediocubital vein. Costal ratio 0.73 (0.69–0.74, $n = 9$). Halter stramineous. *Abdomen*. Brownish. Spermathecae (Fig. 2g) 2, spherical with moderately long sclerotized necks; subequal, each measuring 0.044 by 0.035 mm including necks; vestigial spermatheca and sclerotized ring present.

♂. Unknown.

Distribution. Malaysia.

Types. On slides in phenol-balsam. Holotype ♀, MALAYSIA: Kuala Trengganu, Kuala Brang, 14.VIII.1973, light trap (R. Parsons). Paratypes, 8♀, same data as holotype; 1♀, MALAYSIA: Pahang Kuantan, 16.VIII.1973, light trap (Parsons). Holotype and paratypes in MNH.

Etymology. The species is named for John Boorman of the Animal Virus Research Institute (Great Britain) in recognition of his long-time work and efforts in promoting the research on biting midges through the Ceratopogonidae Information Exchange.

Discussion. *Culicoides boormani* is in the subgenus *Haemophoructus* Macfie. It differs from *Cu. maculipennis* Macfie in having a pale basal wing angle and from *Cu. gemellus*

Macfie, *Cu. gentilis* Macfie, *Cu. gymnopterus* Edwards, *Cu. nitens* Edwards, and *Cu. unicus* Delfinado in having a large pale spot at the base of the mediocubital fork.

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