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A NEW SUBGENUS AND THREE NEW SPECIES OF *GEOMYDOECUS* (MALLOPHAGA: TRICHODECTIDAE) FROM *THOMOMYS* (RODENTIA: GEOMYIDAE)[1]

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Abstract: Two subgenera of *Geomydoecus* are recognized—the nominate subgenus for 42 previously recognized taxa and *Thomomydoecus*, n. subgen., for 6 taxa, including 3 new species herein described. The new species and their type-hosts are *G.* (*T.*) *jamesbeeri* from *Thomomys umbrinus supernus*, *G.* (*T.*) *genowaysi* from *T. u. madrensis*, and *G.* (*T.*) *dickermani* from *T. u. tolucae*.

In a recent revision of *Geomydoecus* Ewing, 1929, Price & Emerson (1971) increased the number of recognized species and subspecies from 11 to 45 and found that a number of pocket gopher hosts harbored 2 species of these lice. Some of these sympatric associates were morphologically close to each other, being separable only by detailed microscopic study, whereas others were easily separated by gross anatomical features. Subsequent extensive collecting of lice from a large number of subspecies of *Thomomys umbrinus* (Richardson) and *T. bottae* (Eydoux & Gervais) has convinced us that the occurrence of 2 morphologically-divergent species of *Geomydoecus* on the same individual is much more widespread than previously recognized and that these species fall into what should now be

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considered to be separate subgenera of *Geomydoecus*. It is our intent here to describe 3 new species of *Geomydoecus* from *T. umbrinus* and to place them with 3 previously recognized species in a new subgenus.

The format for the following descriptions will essentially follow that of Price & Emerson (1971) and we will not repeat the details of this here. The reader is referred to the earlier work for orientation in this as well as for a discussion of the characters used.

Subgenus **THOMOMYDOECUS** Price & Emerson, **n. subgen.**

Type-species: *Geomydoecus* (*Thomomydoecus*) *jamesbeeri* Price & Emerson, n. sp.

Description: Both sexes having lateroposterior temple corner with single stout marginal seta and finer shorter adjacent setae (FIG. 6); small dimensions, with head width not over 0.42, ♂ usually smaller than this.

♂: With tapered abdomen (FIG. 3); scape of antenna with posterior margin essentially straight; tergites II–III each with paired grouping of setae varying from short widely-spaced (FIG. 9) to long compactly-spaced (FIG. 3, 7); genitalia small, with apically undivided endomeral plate varying from slender and pointed (FIG. 15) to irregularly broadened and blunt (FIG. 18), with parameral arch sharply attenuate, and with genital sac lacking large spines.

♀: Subgenital plate broad and U-shaped, without medioposterior or medioanterior setae, and with irregular row of lateral marginal to submarginal setae (FIG. 4, 17), most setae terminating far from end of abdomen; last tergite with 1 seta each side displaced toward midline (FIG. 1); genital chamber sac and particles weak to inconspicuous.

Virtually all known specimens of this subgenus have been taken from individuals of *Thomomys bottae*, *T. umbrinus*, or *T. talpoides* (Richardson) which have also been infested with the larger lice of the more widespread nominate subgenus. Separation of unmounted specimens of the 2 subgenera may be easily done on the basis of size and body shape, especially of the male. Slide-mounted specimens of *Thomomydoecus* are readily recognized from all other *Geomydoecus* by the features cited above.

In addition to the 3 new species described here, the other 3 species to be included in *Thomomydoecus* are *G. neocopei* Price & Emerson (type-host: *T. u. tolucae* Nelson & Goldman), *G. wardi* Price & Emerson (type-host: *T. t. macrotis* F. W. Miller), and *G. minor* Werneck (type-host: *T. b. tularosae* Hall). These were placed in species-group 8 by Price & Emerson (1971) along with a 4th member, *G. copei* Werneck (probable type-host: *Orthogeomys hispidus torridus* (Merriam)), which for now, at least, has been left in *Geomydoecus* sensu stricto as its type-host is questionable and both sexes, but especially the female, are morphologically divergent from *Thomomydoecus* and much larger.

Geomydoecus (**Thomomydoecus**) **jamesbeeri** Price & Emerson, **n. sp.** FIG. 1–6

Type-host: *Thomomys umbrinus supernus* Nelson & Goldman.

Description: ♂: As in FIG. 3. Head width 0.36–0.37. Abdomen with median tergal setae on II–III tightly clustered and long, those on II considerably overlapping alveoli of those on III, and those on III extending partially across tergite V; no dorsal pleural setae either side of III much more than 1/2 length longest median tergal setae. Terminalia (FIG. 5) with 4 subequal setae each side of medioposterior indentation; very narrow posterior portion, with gently curved single subterminal row of short setae. Total body length 1.20–1.22. Genitalia (FIG. 2) 0.05–0.06 wide, with broadened blade-like endomeral plate.

♀: As in FIG. 1. Head width 0.40–0.42. Subgenital plate as in FIG. 4, without medial seta each side being at least 2 × length adjacent seta. Total body length 1.26–1.36. Genital chamber sac without evident lines.

The male, with the long tergal setae on II–III, is closest to *G. wardi* and *G. neocopei*. However, the genitalia of the former (FIG. 12) are much larger, with a very large genital sac and distinctive endomeral plate and parameral arch; those of the latter possess a much broader asymmetrical endomeral plate (FIG. 18); the terminalia of both are much wider (FIG. 13, 16), with each side of medioposterior indentation having 3 subequal setae, 1 minute seta, and 2 sensilla, and with the posterior portion having a different chaetotaxy. The female of *G. jamesbeeri* differs from most specimens of others of the subgenus by lacking the relatively longer seta each side of the subgenital plate.

This species is named for the late Professor James R. Beer in recognition of his collaboration with the senior author in numerous Mallophaga studies and for his deep interest in the field of ectoparasitic insects.

Material examined: Holotype ♂, allotype ♀, *Thomomys umbrinus supernus*, Santa Rosa, Guanajuato, Mexico, 12.XI.1896, E. W. Nelson & E. A. Goldman, USNM-81684; in collection of the United States National Museum. Paratypes: 4 ♀♀, same data as holotype; 1 ♀, same, except 11.XI.1896, USNM-81680; 1 ♂, same, except USNM-81681; 3 ♂♂, 1 ♀, same, except USNM-81682; 1 ♂, 1 ♀, same, except USNM-81683.

Geomydoecus (**Thomomydoecus**) **genowaysi** Price & Emerson, **n. sp.** FIG. 7, 8

Type-host: *Thomomys umbrinus madrensis* Nelson & Goldman.

Description: ♂: Much as for *G. jamesbeeri*, except as follows. Head width 0.35–0.37. Tergal setae on II–III somewhat shorter (FIG. 7), with at least 1, often 2 or 3, dorsal pleural setae each side of III as long as longest tergal setae. Dorsal terminalia (FIG. 8) with each side of medioposterior indentation having 3 subequal setae, 1 minute seta, and 2 sensilla positioned posterior to line through longer paired lateral setae; anterior margin of terminal portion with prominent V-shape and

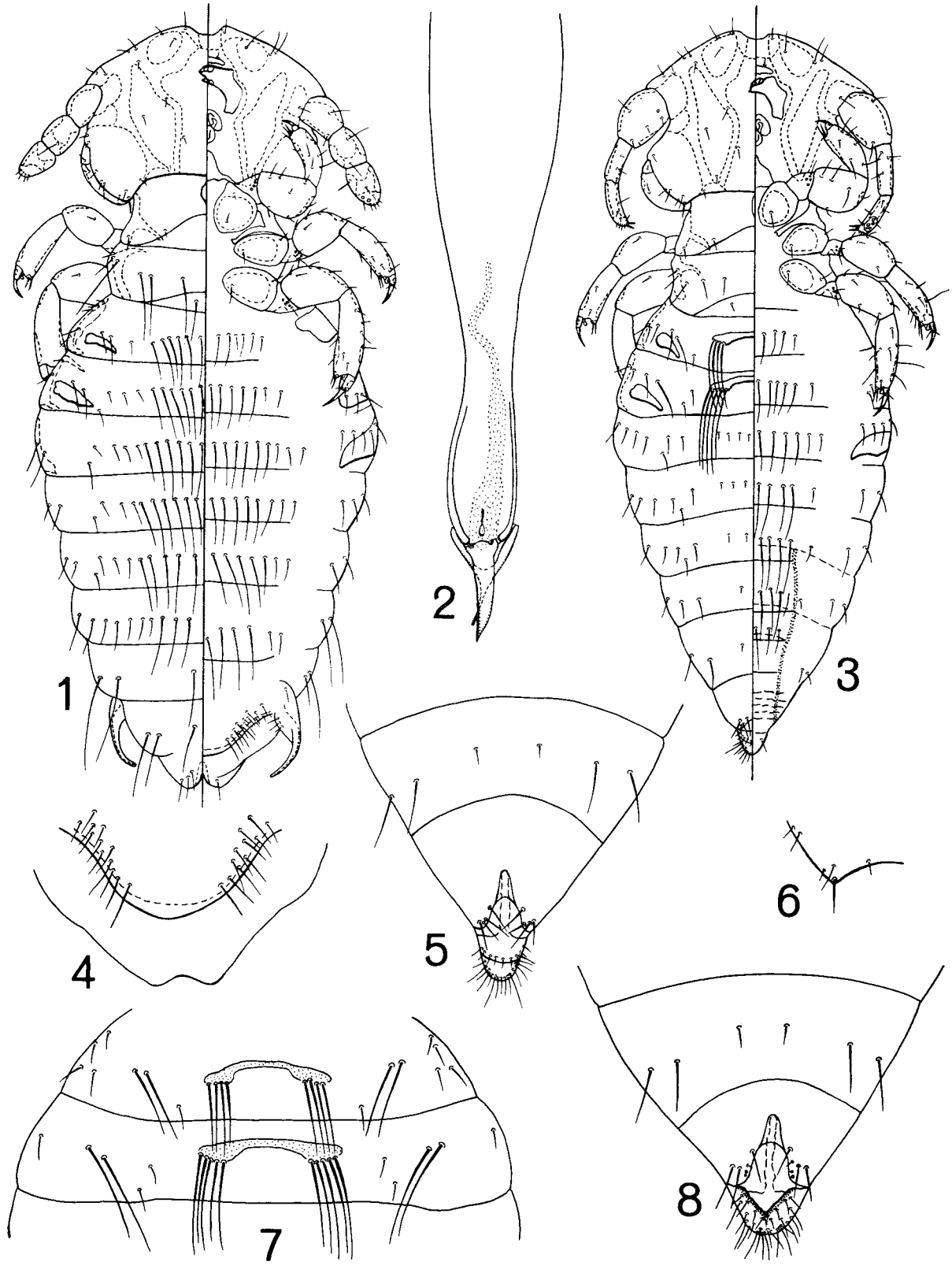

FIG. 1–8. *Geomydoecus jamesbeeri:* (1) ♀; (2) ♂ genitalia; (3) ♂; (4) ♀ subgenital plate; (5) ♂ dorsal terminalia; (6) lateroposterior temple. *G. genowaysi:* (7) ♂ tergites II–III; (8) ♂ dorsal terminalia.

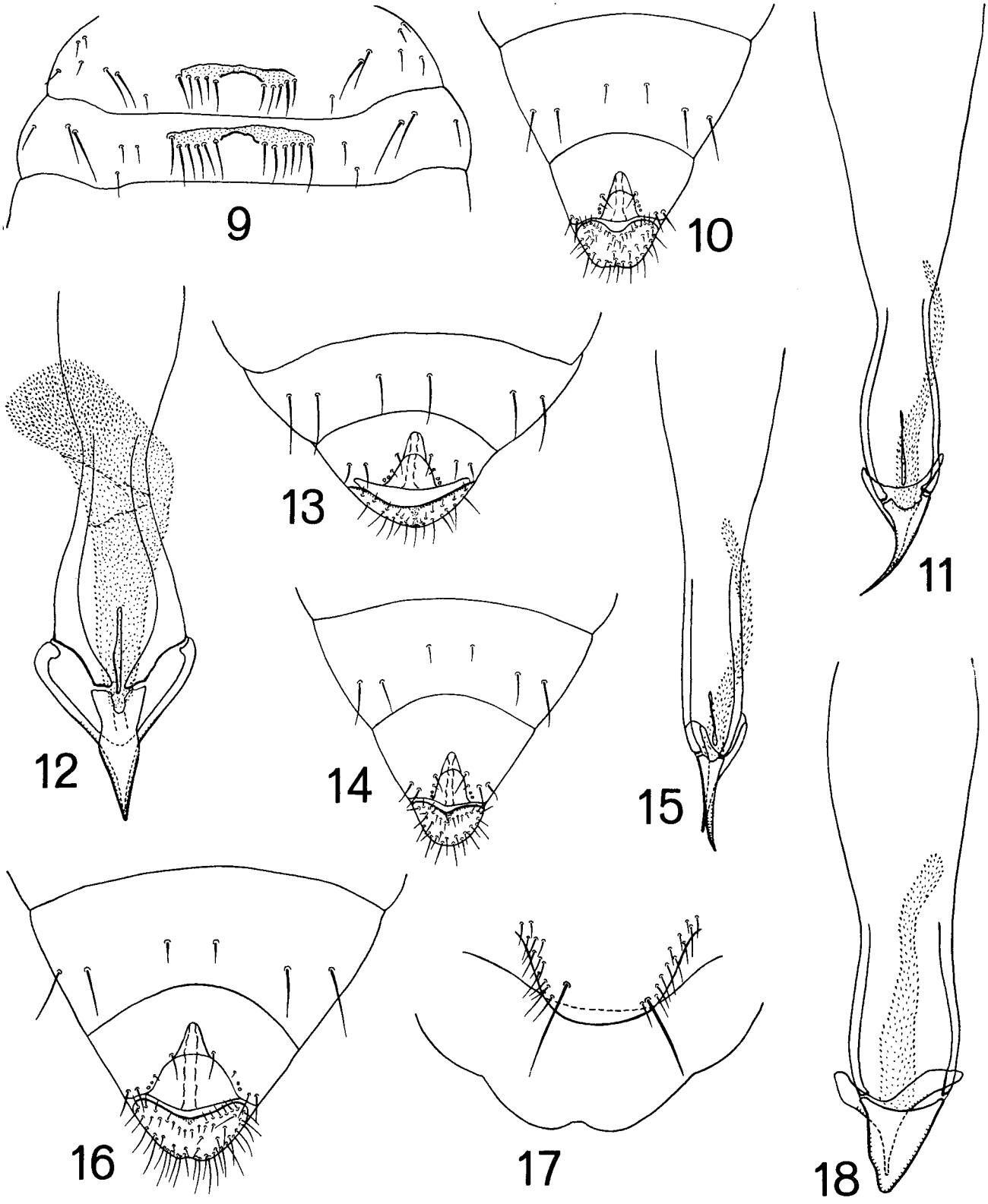

FIG. 9–18. *Geomydoecus dickermani:* (9) ♂ tergites II–III; (10) ♂ dorsal terminalia; (11) ♂ genitalia. *G. wardi:* (12) ♂ genitalia; (13) ♂ dorsal terminalia. *G. minor:* (14) ♂ dorsal terminalia; (15) ♂ genitalia. *G. neocopei:* (16) ♂ dorsal terminalia; (17) ♀ subgenital plate; (18) ♂ genitalia.

chaetotaxy as shown. Total body length 1.15–1.18. Genitalia width 0.06–0.07.

♀: Much as for *G. jamesbeeri*, but with long seta each side of subgenital plate (FIG. 17). Total body length 1.17–1.33.

The male genitalia of *G. genowaysi* are similar to those of *G. jamesbeeri*, thereby being quite different from those of both *G. neocopei* and *G. wardi* even though the dorsal terminalia are superficially more similar to these than to *G. jamesbeeri*. The shorter tergal and comparatively longer pleural setae on II–III, along with the markedly different structure and chaetotaxy of the dorsal terminalia, separate the male of *G. genowaysi* from that of *G. jamesbeeri*. The female is apparently separable only from that of *G. jamesbeeri* on subgenital plate chaetotaxy and that of *G. wardi* on lines of the genital chamber sac.

Material examined: Holotype ♂, allotype ♀, *Thomomys umbrinus madrensis*, Chihuahua, Mexico, 2.XI.1954, J. R. Alcorn, KU-63975; in collection of the University of Kansas. Paratypes: 5 ♂♂, 4 ♀♀, same data as holotype. Other material: 1 ♂, 1 ♀, *T. u. nelsoni* Merriam, Chihuahua, Mexico.

Geomydoecus (Thomomydoecus) dickermani Price & Emerson, **n. sp.** FIG. 9–11

Type-host: *Thomomys umbrinus tolucae* Nelson & Goldman.

Description: ♂: Much as for *G. jamesbeeri* (FIG. 3), except as follows. Head width 0.33–0.35. Median tergal setae on II–III short and widely-spaced (FIG. 9). Dorsal terminalia (FIG. 10) with each side of medioposterior indentation having 3 subequal setae, 1 minute seta, and 2 sensilla placed generally anterior to line through lateral paired setae; terminal portion broader and with more setae. Total body length 1.03–1.13. Genitalia (FIG. 11) 0.06 wide, sharply-pointed endomeral plate always distinctly curved as shown.

♀: Essentially as in FIG. 1, but with head width 0.38–0.40, subgenital plate as in FIG. 17, and total body length 1.17–1.29.

The male of *G. dickermani*, with the short tergal setae on II–III, is closest to *G. minor*, and thereby differs from the other 4 members of the subgenus. *G. dickermani* is separable from *G. minor* in details of the male dorsal terminalia, principally in the placement of the sensilla in relation to the paired lateral setae (FIG. 10 vs FIG. 14), and in having the posterior elements of the genitalia consistently curved to the side instead of being relatively straight (FIG. 11 vs FIG. 15). The female is probably inseparable from those of all but *G. jamesbeeri* and *G. wardi*, differing from them in the same ways as *G. genowaysi*.

Material examined: Holotype ♂, allotype ♀, *Thomomys umbrinus tolucae*, Nevada de Toluca, Mexico, 1.VIII.1954, R. W. Dickerman, KU-62458; in collection of the University of Kansas. Paratypes: 6 ♂♂, 11 ♀♀, same data as holotype. Other material: 4 ♂♂, 3 ♀♀, *T. u. peregrinus* Merriam, Valle de Bravo, Mexico.

In the keys given by Price & Emerson (1971), the 3 previously-described species now placed in *Thomomydoecus* key out in couplets 12 and 13 of the male key and in couplet 6 of the female key. The new species described here may be identified by altering these keys in the following manner. It should be borne in mind that recognition of these species is based primarily on excellent male characteristics, with the females being at most tenuously separable.

♂♂

12. Setae of tergites II–III short and widely-spaced (FIG. 9); genitalia as in FIG. 11 or 15.....12a
Setae of tergites II–III long and clustered (FIG. 3 or 7); genitalia as in FIG. 2, 12, or 18.....13

12a. Posterior elements of genitalia essentially straight (FIG. 15); dorsal terminalia with sensilla each side generally posterior to line through paired lateral setae (FIG. 14).....**minor**
Posterior elements of genitalia curved (FIG. 11); dorsal terminalia with sensilla each side generally anterior to line through paired lateral setae (FIG. 10).....**dickermani**

13. Genitalia (FIG. 12) with endomeral plate, parameral arch, and large sac as shown.....**wardi**
Genitalia (FIG. 2 or 18) with endomeral plate, parameral arch, and small sac as shown.....13a

13a. Genitalia (FIG. 18) with broad asymmetrical endomeral plate; dorsal terminalia with sensilla each side generally anterior to line through paired lateral setae (FIG. 16).....**neocopei**
Genitalia (FIG. 2) with narrower blade-like endomeral plate; dorsal terminalia either with sensilla each side generally posterior to line through paired lateral setae (FIG. 8) or sensilla absent (FIG. 5).....13b

13b. Dorsal terminalia (FIG. 8) with prominent V-shaped anterior margin of terminal portion and with sensilla and minute seta each side anterior to this.....**genowaysi**
Dorsal terminalia (FIG. 5) without V-shaped anterior margin of terminal portion and without sensilla and minute seta each side anterior to this...**jamesbeeri**

♀♀

6. Genital chamber sac apparently with paired parallel lines.....**wardi**
Genital chamber sac without evident lines.....6a

6a. Each side of subgenital plate lacking seta at least 2 × length adjacent setae (FIG. 4).....**jamesbeeri**
Each side of subgenital plate with seta at least 2 × length adjacent setae (FIG. 17).....**dickermani genowaysi minor neocopei**

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