



***Parameristomerinx copelandi*—a new genus and species of Afrotropical Pachygastrinae and a new generic synonym of *Dolichodema* Kertész (Diptera: Stratiomyidae)**

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Abstract

A new genus and species, *Parameristomerinx copelandi* **gen. et sp. n.** (Diptera: Stratiomyidae: Pachygastrinae) is described from material from Kenya. This genus is similar to the Afrotropical genera *Meristomerinx* Enderlein, 1914 and *Meristomerina* James, 1952. A new generic synonym is also proposed, *Nemodema* Lindner, 1958 = *Dolichodema* Kertész, 1916, **syn. n.** A key is included for the six genera related to *Meristomerinx*.

Key words: Diptera, Stratiomyidae, Pachygastrinae, *Parameristomerinx*, *Dolichodema*, Afrotropical

Introduction

The Afrotropical genera of pachygastrine Stratiomyidae that have previously been placed in the tribe Meristomerini (Enderlein 1914; James 1952) are generally similar in appearance and likely form a monophyletic group, although this has not been studied in an analytical fashion. The two Oriental genera included in the tribe by James (1952), *Stratiosphecomyia* Brunetti and *Parastratiosphecomyia* Brunetti, are less similar in appearance and may not be related. In subsequent publications James and other authors have not formally recognized the tribe Meristomerini (e.g., James 1980; Woodley 1987, 1997). This is reasonable since Pachygastrinae contain more than 175 genera (Woodley 2001), of which some are poorly defined, and others have not been critically studied on a worldwide basis since the early part of the 20th Century (Kertész 1916).

Pachygastrinae are separated from other stratiomyids primarily based on the absence of vein M_3 . Within the Afrotropical pachygastrines, the *Meristomerinx* group of genera can be separated from other genera in the subfamily based on two wing venational characters. First, vein R_{2+3} originates well beyond crossvein r-m such that the segment of Rs between r-m and the origin of R_{2+3} is longer to much longer than r-m itself. R_{2+3} thus arises well beyond the middle, and sometimes beyond the apex, of the discal cell in these genera. (In *Ashantina* Kertész, R_{2+3} originates near the middle of the discal cell, and the section of Rs between r-m and R_{2+3} is about as long as r-m). Second, the section of vein CuA_1 that forms the posterior edge of the discal cell is shorter to much shorter than the section of the vein between the anteroapical edge of cell cup and the discal cell. (In *Ashantina*, the section of CuA_1 forming the posterior edge of the discal cell is slightly longer than the other section). The following key will separate the genera placed near *Meristomerinx*. Even though it conflicts slightly with the venational characters as noted above, *Ashantina* is included in this key as it has traditionally been placed in this group of genera and probably forms a monophyletic group with them.

Key to *Meristomerinx* and related genera of Afrotropical Pachygastrinae

- 1 Scutellum with two spines *Meristomerina* James
- Scutellum without spines 2
- 2 At least part of eighth antennal flagellomere forming a bare, arista-like style, the basal portion of which can be thickened and heavily, uniformly setose 3
- Eighth antennal flagellomere without any part slender or arista-like 5
- 3 Eighth antennal flagellomere entirely slender and arista-like, basal portion without any obvious stiff, dense setae (Woodley 1997: figs. 1–3) *Meristomerinx* Enderlein
- Eighth antennal flagellomere with basal part thickened, with obvious stiff, dense setae, only apical portion arista-like 4
- 4 Basal one-third or less of eighth flagellomere thickened and with stiff, dense setae (Woodley 1987: fig. 1); thoracic pleura and at least part of abdominal tergites yellowish-orange; male with eyes widely separated.. *Ashantina* Kertész
- Basal one-half or more of eighth flagellomere thickened and with stiff, dense setae; thoracic pleura and abdominal tergites largely black, except for translucent spot on basal two tergites; male with eyes contiguous *Hermetiomima* Grünberg
- 5 Antenna distinctly longer than head; flagellomeres 7 and 8 of antenna slightly to moderately thickened and completely covered with obvious stiff, dense setae; eighth flagellomere at least twice as long as seventh *Dolichodema* Kertész
- Antenna distinctly shorter than head (Figs. 1, 2); flagellomeres 7 and 8 of antenna short, conically tapered, their diameter less than preceding flagellomeres and without obvious stiff, dense setae (Figs. 5, 6); eighth flagellomere minute, shorter than seventh in male, subequal to seventh in female *Parameristomerinx* **gen. n.**

Parameristomerinx gen. n.

Type species, *Parameristomerinx copelandi* **sp. n.**, by present designation.

Diagnosis. The combination of the elongate antennal flagellum with the apical flagellomere short and bluntly, conically tapered; the unarmed scutellum; and the abdomen longer than wide will separate *Parameristomerinx* from all other Afrotropical Pachygastrinae. I regard the structure of the apex of the antennal flagellum as autapomorphic for the genus.

In Lindner's (1966) key to Afrotropical genera of Pachygastrinae, *Parameristomerinx* keys to *Chelonomima* Enderlein (paragraph 12); however *Chelonomima* has the antenna longer than the head, and the flagellum is composed of eight similar flagellomeres that do not taper noticeably toward the apex. Also, these flies are typically conspicuously marked with yellow coloration, sometimes being almost entirely yellow. If you make the alternative choice at paragraph 13, that the antennae are not moniliform, then you end up at paragraph 22 from which it is difficult to continue. This section of Lindner's key contains genera that are included in the above key.

Within the group of genera related to *Meristomerinx* the shortened antennal flagellum found in *Parameristomerinx* is similar to that found in *Meristomerina*, although it is relatively shorter. Also, in *Meristomerina* the eighth flagellomere is longer than the seventh (Woodley 1987: figs. 7–8). *Meristomerina* is easily separated from *Parameristomerinx* because it has a pair of scutellar spines.

Description. *Male.* Head moderately large, about as wide as thorax (Fig. 1). Upper frons reduced to tiny triangle below the moderately prominent ocellar tubercle; lower frons with margins diverging toward face; face with margins evenly, widely diverging toward oral margin, face rounded and receding in profile (Fig. 3). Gena visible in lateral view, evenly rounded, contiguous with wider postgena, which in profile evenly merges with postoccipt and becomes invisible toward vertex. Eye large, contiguous on upper frons (Fig. 1), upper ommatidia slightly larger than lower ones, without distinct demarcation of change in size, virtually bare, with only, very short, sparsely scattered setae only visible at high magnification. Antenna (Fig. 5) shorter than length of head, scape and pedicel subequal in length, the latter slightly expanded apically; flagellum elongate conical, basal flagellomere about 1.5 times length of second, second through seventh about equal in length; first two flagellomeres about equal in diameter, subsequent flagellomeres gradually decreasing in diameter;

eighth flagellomere minute, about half diameter of and slightly shorter than seventh, with small, hair-like seta at apex. Palpus two-segmented, segments subequal in length, second slightly expanded at rounded apex.

Thorax with scutum convex; scutellum trapezoidal with rounded apex, subapical region with slight depression giving scutellum slightly margined appearance, without spines; subscutellum with tomentum on dorsal half. Legs unremarkable, without significant modifications. Wing evenly set with dense microtrichia; R_{2+3} originating distal to apex of discal cell; R_4 present; alula of usual form, rounded apically, completely set with microtrichia.

Abdomen 1.2 times longer than wide, slightly wider than thorax, tergites flat, more or less in same plane.

Female. Differs from male as follows: Head with eyes smaller than in male, dichoptic (Fig. 2), upper frons parallel-sided, 0.36 width of head, slightly, evenly convex but slightly depressed just anterior and lateral of anterior ocellus. Postgena and occiput visible in lateral view. Eye with ommatidia small, uniform in size

Abdomen with two-segmented cerci, segments about equal in length, second elongate-ovoid.

Etymology. *Parameristomerinx* is a modification of the name of the related genus *Meristomerinx*, to which a Greek prefix has been added. *Meristomerinx* is considered here to be a Greek noun, third declension. The grammatical gender of the latter genus-group name is not obvious from the original description or its subsequent usage. Greek nouns with comparable consonant-ending stems are either masculine or feminine, often depending on how the word was used historically. The gender of *Meristomerinx* and *Parameristomerinx* is determined here to be feminine.

***Parameristomerinx copelandi* sp. n.**

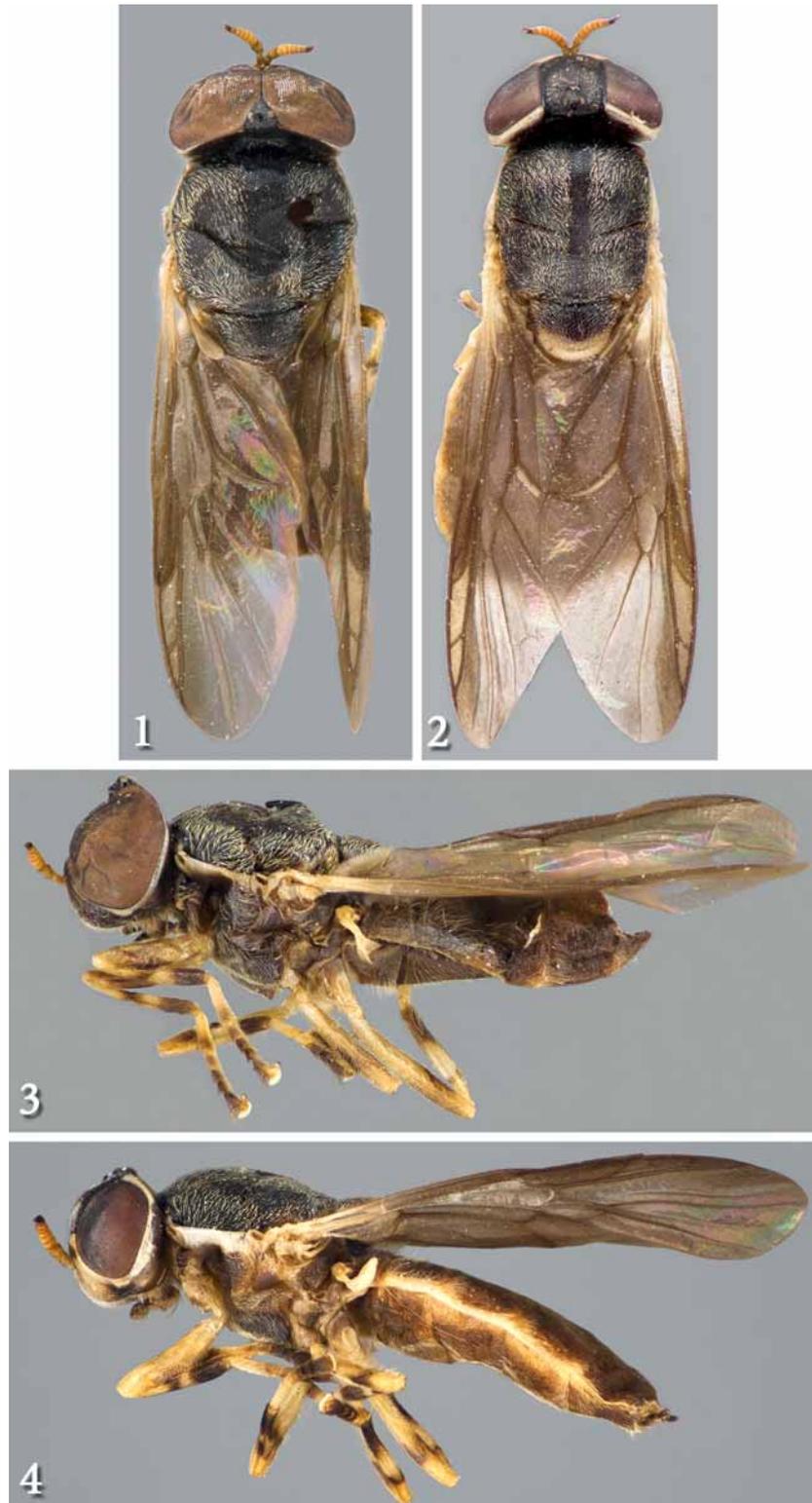
(Figs. 1–9)

Diagnosis. *Parameristomerinx copelandi* is the only known species in the genus. It may be separated from other Afrotropical Pachygastrinae by the characters noted in the generic diagnosis.

Description. *Male.* Head brownish black to black, lower frons more yellowish-brown medially and face dark brownish sublaterally; narrow band along posterior eye margin yellowish white. Head without tomentum except for narrow region at lower eye margin that has silvery gray tomentum. Lower frons bare, face evenly pilose with silvery hair-like setae that gradually become longer toward oral margin where they are about as long as scape; gena and postgena similarly pilose, occiput with short, inconspicuous pilosity, a little longer and more visible just posterior to ocellar tubercle. Antenna with scape, pedicel, and first six flagellomeres dull yellow, seventh and eighth flagellomeres brownish black; scape and pedicel with black, erect hair-like setae, seventh flagellomere with a few such setae near apex, eighth with single apical seta. Palpus with first segment pale, second segment black with velvety vestiture and a few longer hairs at apex.

Thorax black, postalar callus indistinctly paler, scutellum with posteromedial margin brownish, parts of pleura brownish, upper margin of anepisternum with dull cream band that gradually narrows from anterior spiracle to wing base. Scutum evenly set with dense, semi-appressed hair-like setae that are mostly silvery gold, but setae dark and less conspicuous along longitudinal median band and small irregular areas sublaterally; setae on pleural areas slightly more erect and entirely pale. Foreleg with coxa brownish; femur light brown, gradually becoming yellowish at either end; tibia yellowish on basal third, beyond which is a narrow, slightly irregular brownish black band, followed by slightly wider yellowish band, and finally apical third of tibia is brownish black; tarsus with basal two-thirds of first tarsomere pale yellowish, remainder of tarsus brownish black. Midleg with coxa yellow; femur and tibia similar to those of foreleg; tarsus with first two tarsomeres yellowish, apical three brownish black. Hindleg with coxa brownish, femur with basal two-thirds yellowish, apical third more distinctly darkened than on anterior legs; tibia with basal three-fifths pale yellowish with narrow dark medial ring in this section, apical two-fifths brownish black; tarsus with coloration similar to that of midleg. Wing pale brownish gray, slightly darkened in cells r_{2+3} , r_4 and anterior portion of r_5 . Halter with stem and base of knob pale yellowish, remainder of knob brownish black.

Abdomen with tergites dark brownish, sternites paler brown. Tergites with short black semi-appressed hair-like setae medially, lateral areas with longer, more erect setae mostly pale with a few darker setae intermixed; sternites with short, pale, mostly appressed hair-like setae.



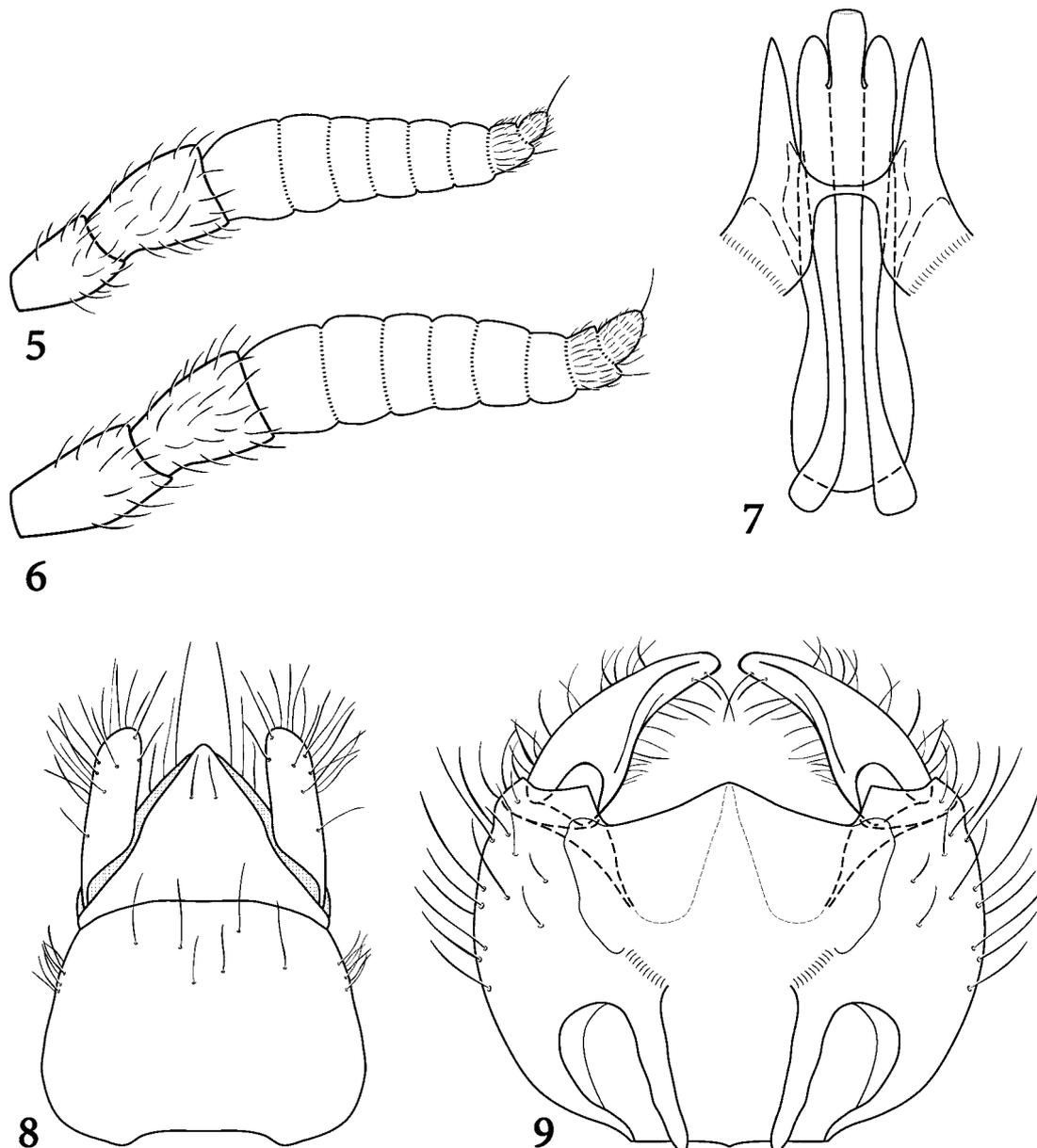
FIGURES 1–4. Habitus images of *Parameristomerinx copelandi* **gen. n., sp. n.** 1, holotype male, dorsal view. 2, allotype female, dorsal view. 3, holotype male, left lateral view. 4, allotype female, left lateral view.

Male terminalia with gonocoxites (Fig. 9) evenly rounded laterally, posterior margin of genital capsule very shallowly triangularly produced, medial portion convex ventrally; gonostylus simple, evenly shallowly arcuate, medial face slightly concave on apical two-thirds; phallic complex trifid (Fig. 7), the lobes evidently mostly fused except apically, median lobe slightly longer than lateral lobes, attachment structure with a pair of

sharp, elongate processes directed posteriorly; epandrium (Fig. 8) subquadrate, slightly tapered posteriorly, posterior margin rounded.

Length, 4.9 mm.

Female. Differs from male as follows: Head with wider frons as noted in generic description, frons 0.36 width of head; upper frons and vertex black, occiput brownish black becoming paler ventrally; lower frons whitish yellow with irregular blackish band extending nearly eye to eye just above antennae; face yellowish but lateral areas slightly more whitish and shiny, small medial area with blackish triangular spot widening from just below antennae to oral margin. Gena and postgena irregularly brownish with a more distinct darker brown spot below eye; post ocular orbit from lower eye margin up to vertex dull cream-colored. Frons and face with short, semi-appressed hair-like setae more or less uniformly covering surface, mostly pale silvery, with a few dark hairs laterally on upper frons.



FIGURES 5–9. Antennae and male terminalia of *Parameristomerinx copelandi*. 5, male antenna, lateral view. 6, female antenna, lateral view. 7, male phallic complex, dorsal view. 8, male epandrium and postgenital segments, dorsal view. 9, genital capsule, dorsal view.

Thorax with scutellum with posterior margin cream-colored (Fig. 2). Creamy-colored band on upper margin of anepisternum wider (Fig. 4) and posterior margin of anepisternum and upper posterodorsal corner of katepisternum yellowish. Foreleg with coxa yellow, femur mostly dark yellow with vague darkening medially. Midleg with femur yellow with darkened area just beyond middle that is most visible posteriorly. Hindleg with femur similar to that of midleg, except dark marking is about 4/5 from base. Halter entirely pale yellowish.

Abdomen with tergites brownish, narrow lateral margins of tergites 1–5 yellowish white. Cercus two-segmented, brownish black, segments subequal in length, second segment ovoid.

Length 5.5 mm.

Specimens examined. Holotype ♂, KENYA: Coast Province, Arabuko-Sokoke Forest, 3°25.21'S, 39°53.81'E, 12–19 May 2000, R. Copeland, Malaise trap (National Museums of Kenya, Nairobi). Allotype ♀, same data as holotype (USNM).

Etymology. It is my pleasure to dedicate this species to Bob Copeland, who has collected many interesting Diptera and other insects in East Africa.

Remarks. The Arabuko-Sokoke Forest is the largest and most intact piece of coastal forest in East Africa and is known to harbor a number of endemic species of birds and mammals. It is a popular birdwatching site known for its diversity. It is not surprising that interesting and probable endemic species of insects occur there as well.

Genus *Dolichodema* Kertész

Dolichodema Kertész 1916: 147. Type species, *Dolichodema africanum* Kertész, by original designation.

Nemodema Lindner 1958: 122. Type species, *Nemodema nudibasis* Lindner, by monotypy. **Syn. n.**

Lindner (1958) described *Nemodema* based on a single specimen from Zimbabwe. He differentiated the genus from *Dolichodema* solely on the basis of its having very little pilosity on the first two antennal segments. I have recently examined the holotype of *N. nudibasis* Lindner, and while the pilosity is short and sparse, it is present on both the scape and pedicel, and is more evident on the latter. On the scape it is somewhat difficult to observe, and it is possible that some of it has been abraded off. I have seen a number of additional specimens that are conspecific, and some of these have more evident pilosity on the scape. In all specimens the pilosity is whitish and mostly appressed to the cuticular surface. Pilosity is more evident on the scape and pedicel of *D. africanum* and although short, it is easier to observe because it is black. I regard this character state as trivial and not warranting recognition of separate taxa.

Other than the slight differences in antennal pilosity discussed above, the three species that I have examined that are referable to *Dolichodema* are very similar in structure. All have similar antennal structure, with flagellomeres 7 and 8 covered with a vestiture of stiff, bristly black hairs that obscures the cuticular surface. The apex of flagellomere 8 is not modified into an arista-like style, and flagellomere 8 is 2.5–3.0 times longer than 7. I regard these character states as autapomorphic for *Dolichodema*.

Dolichodema fenestratum James

Dolichodema fenestrata James 1949a: 5.

Nemodema nudibasis Lindner 1958: 122. **Syn. n.**

The original description of *Dolichodema fenestratum* indicates that it is very similar to Lindner's taxon, *N. nudibasis*. This was confirmed by examining a photograph of the holotype of *D. fenestratum* available on the internet (http://research.amnh.org/invertzoo/types_db/) and comparing it to the holotype of *N. nudibasis*. No significant differences were found, and I regard the two taxa as conspecific. Additional specimens have been examined from other African localities, so the distribution of the species can be summarized as Afrotropical: Kenya, Liberia, Namibia, South Africa, Zimbabwe.

Dolichodema fenestratum is probably a vespid wasp mimic, and is more modified than *D. africanum* and one undescribed species of *Dolichodema* that I have seen. The fourth and fifth sternites are convex and give the end of the abdomen a more wasp-like, convex and rounded appearance compared to the other two species. Both *D. fenestratum* and the undescribed species have a transparent “window” on abdominal segments 2 and 3 which presumably give the abdomen a petiolate appearance in flight, similar to that found in *Hermetia illucens* (Linnaeus).

Acknowledgments

I am grateful to Bob Copeland for providing the specimens on which this new genus is based. I thank Jens Prena (Systematic Entomology Laboratory) for his help with ascertaining the gender of the generic name. Charyn Micheli took the photographs used in Figs. 1–4, and did computer “inking” of the illustrations used in Figs. 5–9, as well as composing the final plates. I also thank Jens Prena, Wayne Mathis (Smithsonian Institution), and Allen Norrbom (Systematic Entomology Laboratory) for reviewing the manuscript.

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