



***Kerteszmia*, a new genus of Pachygastrinae from the Neotropical Region (Diptera: Stratiomyidae)**

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Abstract

A new genus and species, *Kerteszmia ecuadora* **gen. nov., sp. nov.**, (Diptera: Stratiomyidae, Pachygastrinae) is described from material from Ecuador (type locality), Venezuela, and Costa Rica. A key to the known Neotropical genera of Pachygastrinae with two or more scutellar spines is presented.

Key words: *Kerteszmia ecuadora*, new species, Ecuador, Venezuela, Costa Rica, taxonomy

Introduction

The stratiomyid subfamily Pachygastrinae is the most diverse in the family, with 176 genera and 561 species (Woodley 2001), known primarily but not exclusively from tropical regions. Fifty-four genera in the subfamily have been recorded from the Neotropical Region, the majority of which have three or fewer species. The subfamily has never been monographed in the region, and the generic limits, particularly of the taxa without scutellar spines, are poorly known. Lindner (1964) published a key to Neotropical genera, but some characters he used are vague and not all genera were included. A subsequent regional treatment for Mexico and Central America (James *et al.* 1980) was based on limited material obtained before large scale Malaise trapping was common. The genus described here is being named so that it can be included in a forthcoming manual of Central American Diptera.

Materials and methods

Morphological terminology follows McAlpine (1981). Specimens examined in this study are from the Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica (INBio), the Canadian National Collection, Agriculture Canada, Ottawa, Canada (CNC) and the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

***Kerteszmia* gen. nov.**

Type species, *Kerteszmia ecuadora* **sp. nov.**, by present designation.

Diagnosis. This distinctive genus can be easily separated from other Neotropical pachygastrines that have four scutellar spines by the characteristic antennal flagellum that is kidney-shaped, distinctly higher than long,

with a subapical arista-like style that is inserted on the dorsal one-third of the flagellar complex (Figs. 1–2). All other genera with scutellar spines have the antennal flagellar complex as long as high or much longer. Other characters useful in recognition are the densely hairy eyes (Figs. 1–4), the head distinctly higher than long (Figs. 1–2), and the short abdomen that is wider than long.

Description. *Male.* Head (Figs. 1, 3) with eye very large, occupying most of anterior and lateral head surface, eyes narrowly separated; upper frons reduced to a very narrow strip that is 0.06 width of head at narrowest point (Fig. 3); lower frons gradually diverging toward oral margin; face reduced to an extremely narrow strip below antennae, antennae thus inserted very close to oral margin. Ocellar tubercle slightly prominent. Gena only slightly visible in lateral view, very narrow, about width of two ommatidia; occiput not visible in lateral view. Eye very densely haired, ommatidia uniform in size. Antenna short, scape slightly longer than pedicel, the latter very slightly produced on inner side; flagellum bilaterally flattened, kidney-shaped, about 2.5 times higher than long, last flagellomere an arista-form style that is inserted on the upper third of flagellar complex. Palpus two-segmented, first segment shorter than second, second segment ovoid.

Thorax with scutum convex; scutellum forming angle with scutum (not in same plane), rounded posteriorly with distinct margin, armed with 4 marginal spines, the lateral spines about two-thirds length of medial spines and more slender; subscutellum slightly developed, largely bare, with only very sparse scattered tomentum. Legs unremarkable, without significant modifications. Wing (Fig. 7) with microtrichia present on darkened areas, and scattered on posterior portion; R_{2+3} originating well beyond crossvein r-m; R_4 present.

Abdomen short and convex, wider than thorax, approximately 1.7 times wider than long, posterior half of tergite 4 and all of 5 nearly vertical in lateral view.

Female. Differs from male as follows: Head with eye slightly smaller than in male, upper frons wider, gradually diverging ventrally, 0.14–0.18 width of head.

Abdomen with cercus two-segmented, segments subequal in length and diameter, second segment elongate-ovoid.

Etymology. This genus is named after Kalman Kertész (1867–1922), a Hungarian dipterist who was an excellent taxonomist working on Stratiomyidae among other families. He published several comprehensive and important papers on Pachygastrinae, including a key to world genera.

Remarks. *Kerteszmia* has a general appearance that is different from most other Neotropical genera of pachygastrines with scutellar spines due to its smaller size; less elongate thorax; and short, wide abdomen with strongly declivitous apical segments. To the naked eye it is similar to genera such as *Popanomyia* Kertész and similar medium-sized black taxa, but these lack scutellar spines and do not have darkened wings.

No phylogenetic work has been done on the large, species-rich subfamily Pachygastrinae on a global scale. The character state that unites the genera discussed here, having two or more scutellar spines, is plesiomorphic relative to many genera in the subfamily that have no scutellar spines (see Woodley 2001: 5–6 for a general discussion of this character for the family). Thus, it is possible that the species with scutellar spines form a paraphyletic or polyphyletic assemblage within the pachygastrines depending on how those without spines evolved and how many times loss of scutellar spines occurred.

Due to lack of phylogenetic work, it is not possible to discuss the relationship of *Kerteszmia* to other genera with scutellar spines. However, some features that the genus exhibits, such as the short, tall head and small compact body form are similar to those found in some genera that lack scutellar spines. This possibly indicates that *Kerteszmia* is more derived among the taxa with scutellar spines, but only a more rigorous study can verify this.

***Kerteszmia ecuadora* Woodley, sp. nov.**

(Figs. 1–11)

Diagnosis. This species can be distinguished from other Neotropical pachygastrines by the combination of the

presence of scutellar spines and the distinctive morphology of the antenna that is described above in the generic description. At present there is only one known species of *Kerteszmia*.

Description. *Male.* Head (Figs. 1, 3) brownish black to black, narrow margins of upper frons yellowish, median occipital sclerite more brownish. Lower frons and face with grayish tomentum covering surface, sparser medially, other areas of head without noticeable tomentum. Upper frons with dense silvery pilosity, slightly recumbent and dense on very narrow margins, sparser and more erect medially; face with a few scattered pale setulae; erect blackish setulae present on ocellar tubercle and vertex; upper and lateral parts of occiput with silvery semi-erect setulae. Eyes with dense brownish-black setulae. Antenna entirely yellow to dark yellow, scape and pedicel with short erect whitish setulae. Palpus with erect dark setulae on first segment and a few dark setulae at apex of second segment.

Thorax black, postpronotal lobes and postalar calli more brownish to yellowish, scutellum with posterior margin yellowish, spines yellowish white; pleura with a few vague brownish areas. Scutum with vestiture of semi-appressed silvery setulae intermixed with longer, sparser, and erect black setulae, but anteromedial area bare and shiny, and an irregular transverse band between wing bases without silvery setulae that is widest laterally and slightly expanded medially, and vague presutural black sublateral areas. Scutellum with black setulae on disc and silvery setulae marginally. Pleura with mostly silvery setulae but some black setulae present on medial portion of anepisternum and anterior part of katepisternum. Foreleg brownish but distal two-thirds of femur yellowish, tarsus blackish; midleg mostly dark yellowish with coxa, trochanter and basal two-fifths of femur brownish, tibia with vague brownish infuscation, and tarsus whitish-yellow with fourth and fifth tarsomere slightly darker; hindleg similar to midleg but tibia more brownish and distal three tarsomeres more distinctly darkened. Wing (Fig. 7) hyaline but with entire distal portion beyond level of origin of R_{2+3} infuscated and densely set with microtrichia as is most of cell br, remainder of wing mostly bare of microtrichia. Halter whitish, stem vaguely darker.

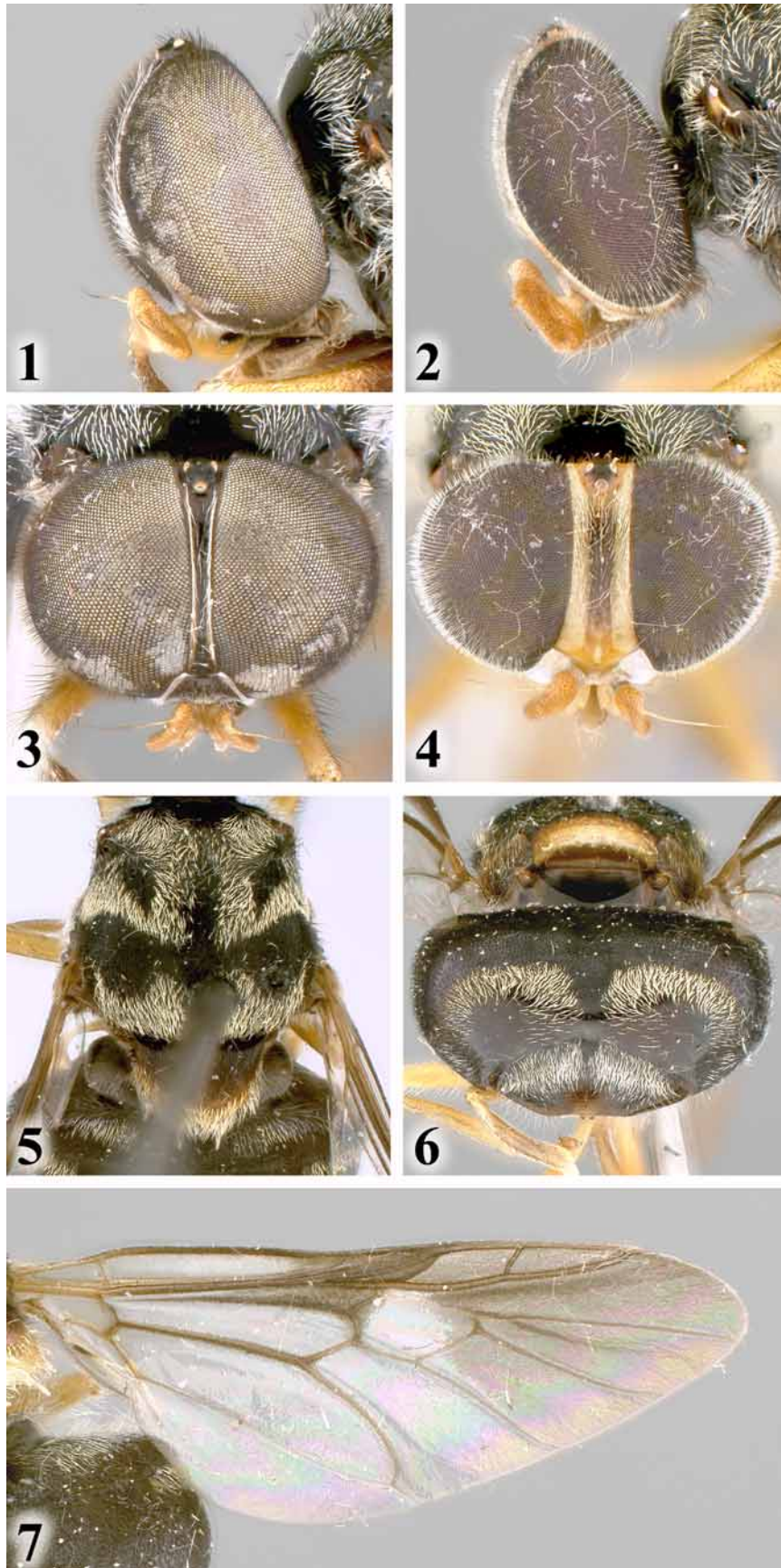
Abdomen brownish to black, tergites 1–3 and anteromedial region of tergite 4 punctate and appearing to have somewhat granular surface, lateral areas of tergite 4 shiny, very sparsely punctate, tergite 5 somewhat granular on basal half, shinier apically. Vestiture of tergites 1–3 composed of short black, semi-appressed setulae, with some silvery setulae present laterally; shiny sublateral areas on tergite 4 with silvery setulae anteriorly and laterally forming arcuate spots (as in Fig. 6); tergite 5 with anterior two-thirds with semi-appressed silvery setulae rather evenly distributed. Sternite 1 with moderate, fine grayish tomentum; sternites 2–5 evenly set with semi-appressed silvery setulae.

Male terminalia with gonocoxites (Fig. 8) slightly narrowing anteriorly; posterior margin of hypandrium triangularly produced, minutely bilobed at extreme apex; gonostylus with apex produced posteromedially into a narrow process that has a small, apparently articulated spine at inner margin, lateroventral region of gonostylus produced ventrally into broad, scoop-like lobe; phallic complex (Figs. 10, 11) narrow, bilobed posteriorly, the two narrowed lobes directed somewhat ventrally and slightly expanded at apices; epandrium and postgenital segments as in Fig. 9.

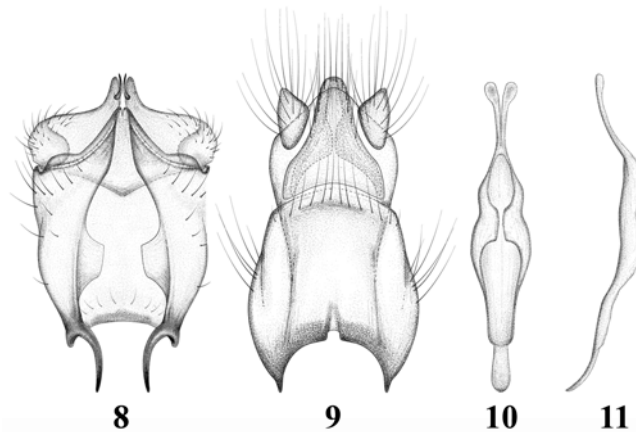
Length, 5.5–5.7 mm.

Female. Differs from male as follows: Head (Figs. 2, 4) with wider frons as noted in generic description; frons, face, and median occipital sclerite usually yellowish with central third of upper frons brownish to blackish, but face and median occipital sclerite ranging to black. Eyes with pilosity mostly yellowish, but some dark setulae present on upper fourth.

Thorax with disc of scutellum tending toward yellowish coloration in some specimens. Scutum and scutellum (Fig. 5) with pale pilosity slightly more golden in color, denser, with the resulting pattern more boldly marked, in some specimens the black pilosity expanded to form a narrow medial vitta, and the presutural, sublateral black markings more prominent. Legs generally paler than in male; foreleg with femur usually entirely yellowish but can be darkened basally; midleg with femur ranging to mostly yellowish; hindleg also with femur ranging to mostly yellowish and tibia less distinctly brownish.



FIGURES 1–7. *Kerteszmia ecuadora*, morphological features. 1, male head, lateral view. 2, female head, lateral view. 3, male head anterodorsal view. 4, female head, anterodorsal view. 5, female scutum, dorsal view. 6, female abdomen, posterior view. 7, female right wing, dorsal view.



FIGURES 8–11. *Kerteszmia ecuadora*, male terminalia. 8, genital capsule, dorsal view. 9, epandrium and post-genital segments, dorsal view. 10, phallic complex, dorsal view. 11, phallic complex, left lateral view.

Abdomen as in male, but with the arcuate pilose spots on tergite 4 more distinctly marked (Fig. 6).

Length, 4.6–5.7 mm.

Specimens examined. Holotype ♂, ECUADOR: Napo Province, Limoncocha, 15 June 1977, P.J. Spangler & D.R. Givens, #128 (USNM). Paratypes: 1♂, 1♀, same data as holotype (USNM); 1♀, same data except 10 June 1977, Dave L. Vincent (USNM); 1♀, ECUADOR: Balao Chico, Rio Frio, 26–30 April 1963, L. Peña (CNC); 1♀, ECUADOR: Napo Province, Reserva Ethnica Waorani, 1 km S of Onkone Gare Camp, 00°39'10"S, 76°26'W, 220 meters, 19 July 1995, Terry Erwin et al., insecticidal fogging, Lot 1157 (USNM); 1♀, VENEZUELA: Amazonas, Cerro de la Neblina basecamp, 0°50'N, 66°09'44"W, 140 meters, 21–29 February 1984, D. Davis & T. McCabe (USNM); 1♀, COSTA RICA: Limón Province, Valle del Silencio, R.B. Hitoy Cerere, Sendero Toma de Agua, L.N._184600_643400, 100–140 meters, 17 February–17 March 2000, F. Umaña, Malaise trap (INBio); 1♀, same data except 17 March–17 April 2000 (INBio).

Etymology. The species epithet, considered a noun in apposition, is derived from the name Ecuador, the country from which the first as well as the majority of specimens originated.

Remarks. This species has been taken at low elevation sites ranging from 100 to 220 meters. Most of the known specimens were collected in Malaise traps, even if not labeled as such. The specimen taken by fogging at Reserva Ethnica Waorani in Ecuador has a biological label that reads: Insecticidal fogging of mostly bare green leaves, some with covering of lichenous or bryophytic plants in terre firme forest.

There is slight variation in coloration among the females examined, with the specimens from Costa Rica slightly darker on the head and legs. There is also some variation in the extent of areas of dark pubescence on the scutum. I am confident, however, that all the specimens are conspecific.

As there has been no key published that includes all Neotropical genera of pachygastrines with two or more scutellar spines, I am providing one here.

Key to Neotropical genera of Pachygastrinae with two or more scutellar spines

- 1 Antennal flagellum divided, bifurcate or trifurcate2
- Antennal flagellum simple, variously shaped but not divided3
- 2 Antennal flagellum bifurcate, second flagellomere strongly divided, upper branch of flagellum consisting of six flagellomeres, apical two forming short stylus; general coloration strongly sexually dimorphic, male with shiny black scutum, female with brownish black scutum with two pairs of distinct pale vittae..
..... *Blastocera* Gerstaecker

- Antennal flagellum trifurcate or bifurcate, second flagellomere unmodified, third strongly divided or unmodified, upper branch of flagellum having fourth flagellomere with strong ventral process or unmodified, apical flagellomere aristate; general coloration weakly dimorphic, male completely yellowish brown, female with apex of abdomen darkened, scutum not vittate*Neochauna* Williston
- 3 Scutellum with two very different pairs of spines, outer (basal) spines of scutellum very small, directed laterally, inner (apical) spines large, longer than scutellum, directed laterally and slightly posteriorly
.....*Paracanthinomyia* Lindner
- Scutellum with a single pair of spines, or if two pairs present, spines are usually all similar and directed more posteriorly (if spines are dissimilar [two species of *Caenacantha*] then spines are directed posteriorly or dorsally)4
- 4 Scutellum with two marginal spines (occasional aberrant specimen with one or two additional spines); thorax and abdomen uniformly dark bluish to purplish (abdomen occasionally partly reddish in *P. microdonta*), vestiture not forming well-defined pattern5
- Scutellum with four marginal spines; thorax and abdomen variously colored, but usually not uniformly dark bluish to purplish, and frequently with vestiture forming pattern6
- 5 Head with postocular orbit narrow to very narrow, much less than width of eye in lateral view; wings nearly hyaline to moderately infuscated, but not dark brown; antennal flagellum with short, semi-globose complex with elongate apical arista-like stylus; not strongly resembling female *Cyphomyia*.....
.....*Panacris* Gerstaecker
- Head with postocular orbit very wide, nearly as wide as eye in lateral view; wings deeply infuscated, dark brown; antennal flagellum unknown; strongly resembling dark females of *Cyphomyia* with a yellow head
.....*Platylobium* Lindner
- 6 Apical antennal flagellomere forming long, slender stylus or arista-like stylus more than one-half length of remaining flagellar complex, usually as long as or longer than complex.7
- Apical antennal flagellomere forming short, stout, sometimes weakly developed stylus one-third or less length of remaining flagellar complex.....10
- 7 First 6 antennal flagellomeres forming elongate-conical to nearly cylindrical complex, with length at least twice diameter; apical flagellomere forming slender stylus slightly less to slightly more than length of complex.....*Caenacantha* Wulp
- First 6 flagellomeres forming ovoid to kidney-shaped complex, with length much less than twice diameter; apical flagellomere forming slender, arista-like stylus at least twice length of complex.....8
- 8 Flagellar complex short ovoid, about as high as long or slightly longer, with arista-like stylus apical; apex of wing hyaline or wing completely dark brown; male holoptic (but unknown in *Hypselophrum*)9
- Flagellar complex short, more than twice as high as long, with arista-like stylus arising from dorsal third of complex; apex of wing darkened; male narrowly dichoptic*Kerteszmia* **gen. nov.**
- 9 Thorax predominantly yellowish brown, darkened posteriorly in some females; apex of wing hyaline; not resembling *Cyphomyia**Panacridops* James & Woodley
- Thorax metallic violet-blue; wing entirely dark brown; strongly resembling dark females of *Cyphomyia* with a yellow head.....*Hypselophrum* Kertsz
- 10 Wing uniformly dark, without pattern; head yellow, strongly contrasting with dark, blue-black body, strongly resembling dark females of *Cyphomyia* with a yellow head.....*Pseudocyphomyia* Kertsz
- Wing hyaline or with dark infuscation forming pattern or bicolored, never uniformly dark brown; head and body color variable, but not resembling some species of *Cyphomyia* 11
- 11 Dorsum of scutellum nearly in same plane as scutum in lateral view; scutum without a silvery medial pubescent longitudinal vitta12
- Dorsum of scutellum forming a distinct angle with scutum in lateral view (equivocal in *Artemita nana* (Bellardi) in which the scutum has a silvery medial pubescent longitudinal vitta).....13

- 12 Apex of wing distal to discal cell more or less uniformly dark, gradually becoming lighter near posterior margin; body black, without metallic reflections *Acanthinomyia* Hunter
- Apex of wing distal to discal cell hyaline, basal half slightly darkened; body with dark blue metallic reflections on abdomen, slightly more greenish on scutum *Proegmenomyia* Kertész
- 13 R_{2+3} arising above crossvein r-m or at most very slightly distal to it; scutum with four longitudinal silvery vittae in dorsal view, with medial strip black [Note: this genus is very similar to *Artemita*, and perhaps should be considered a synonym].....*Neoacanthina* Kertész
- R_{2+3} arising distinctly distal to r-m (only slightly so in *A. nana*); scutum variously marked with silvery pubescent, but without four longitudinal vittae, occasionally with a medial silvery vitta. *Artemita* Walker

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References

- James, M.T., McFadden, M.W. & Woodley, N.E. (1980) The Pachygastrinae (Diptera, Stratiomyidae) of Middle America. *Melanderia*, 34, [2], 1–36.
- Lindner, E. (1964) Beitrag zur Kenntnis der neotropischen Pachygasterinae (Stratiomyidae, Dipt.). *Stuttgarter Beitrge zur Naturkunde*, 129, 1–22.
- McAlpine, J.F. (1981) Morphology and terminology - adults. In: McAlpine, J.F., Peterson, B.V., Shewell, G.E., Teskey, H.J., Vockeroth, J.R., & Wood, D.M. (coordinators), *Manual of Nearctic Diptera*, Vol. 1. Agriculture Canada Monograph 27, Ottawa, pp. 9–63.
- Woodley, N.E. (2001) A world catalog of Stratiomyidae (Insecta: Diptera). *Myia*, 11, (8) + 1–475.