

**COMPARATIVE ANATOMY OF THE FEMALE GENITALIA OF
GENERIC-LEVEL TAXA IN TRIBE AEDINI (DIPTERA: CULICIDAE).
PART XXXIV. GENUS *CATAGEIOMYIA* THEOBALD**

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Abstract. A comparative, morphological analysis of the female genitalia of species included in genus *Catageiomyia* Theobald was conducted. Treatment of the genital morphology of the genus includes a composite description of the genus, a detailed description and illustration of the type species (*Cg. irritans* (Theobald)), a list of the species examined, a list of published illustrations and/or descriptions of included species with their literature citations, and a discussion. The genitalia of *Cg. argenteopunctata* (Theobald) are also illustrated. The discussion section contains a list of the most distinctive female genital features of *Catageiomyia*, a comparison of these with other aedine genera, and other pertinent information.

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INTRODUCTION

This is the thirty-fourth in a series of papers by the author that describe the female genitalia of the generic-level taxa included in tribe Aedini of family Culicidae. Part I of the series (Reinert 2000a) included an introduction to the series, a brief historical background of published papers dealing with the subject, preparation techniques and anatomical terminology, part II (Reinert 2000b) dealt with genus *Psorophora* Robineau-Desvoidy, part III (Reinert 2000c) with genus *Udaya* Thurman, part IV (Reinert 2000d) with genus *Zeugomyia* Leicester, part V (Reinert 2000e) with genus *Aedes* Meigen, part VI (Reinert 2001a) with genus *Ayurakitia* Thurman, part VII (Reinert 2001b) with genus *Opifex* Hutton, part VIII (Reinert 2001c) with genus *Verrallina* Theobald, part IX (Reinert 2001d) with genus *Eretmapodites* Theobald, part X (Reinert 2002a) with genus *Heizmannia* Ludlow, part XI (Reinert 2002b) with genus *Haemagogus* Williston, part XII (Reinert 2002c) with genus *Armigeres* Theobald, part XIII (Reinert 2002d) with genus *Ochlerotatus* Lynch Arribalzaga, part XIV (Reinert 2002e) provided a key to genera recognized at that time, part XV (Reinert 2008a) with genus *Georgecraigius* Reinert, Harbach and Kitching, part XVI (Reinert 2008b) with genus *Phagomyia* Theobald, part XVII (Reinert 2008c) with genus *Dahlia* Reinert, Harbach and Kitching, part XVIII (Reinert 2008d) with genus *Hulecoeteomyia* Theobald, part XIX (Reinert 2008e) with genus *Danielsia* Theobald, part XX (Reinert 2008f) with genus *Rampamyia* Reinert, Harbach and Kitching, part XXI (Reinert 2008g) with genus *Patmarksia* Reinert, Harbach and Kitching, part XXII (Reinert 2008h) with genus *Downsiomyia* Vargas, part XXIII (Reinert 2008i) with genus *Tanakaius* Reinert, Harbach and Kitching, part XXIV (Reinert 2008j) with genus *Vansomerenis* Reinert, Harbach and Kitching, part XXV (Reinert 2008k) with genus *Dobroworskyius* Reinert, Harbach and Kitching, part XXVI (Reinert 2008l) with genus *Collessius* Reinert, Harbach and Kitching, part XXVII (Reinert 2009a) with genus *Hopkinsius* Reinert, Harbach and Kitching, part XXVIII (Reinert 2009b) with genus *Luius* Reinert, Harbach and Kitching, part XXIX (Reinert 2009c) with genus *Jihlienius* Reinert, Harbach and Kitching, part XXX (Reinert 2009d) with genus *Gilesius* Reinert, Harbach and Kitching, part XXXI (Reinert 2010a) with genus *Sallumia* Reinert, Harbach and Kitching, part XXXII (Reinert 2010b) with genus *Jarnellius* Reinert, Harbach and Kitching, and part XXXIII (Reinert 2010c) with genus *Lewnielsenius* Reinert, Harbach and Kitching. Reinert et al. (2004, 2006, 2008 and 2009) conducted phylogenetic analyses of tribe Aedini and revised the classification of generic-level taxa. This paper covers the female genitalia of genus *Catageiomyia* Theobald, which was resurrected from synonymy with *Aedimorphus* Theobald by Reinert et al. (2009).

A comparative, morphological analysis of the female genitalia of *Catageiomyia* was conducted, a characterization is given, and a discussion including a comparison with other aedine taxa is provided. The format used includes a composite description, a description and illustration of the type species, *Cg. irritans* (Theobald), a list of the species examined, a list of published illustrations and/or descriptions of species with their literature citations, and a discussion that includes the most distinctive features of the female genitalia and other pertinent information. The female genitalia of *Cg. argenteopunctata* (Theobald) are also illustrated.

MATERIALS AND METHODS

Female genitalia of genus *Catageiomyia* are considered here to include all structures caudad of abdominal segment VII. Segment VIII is included since its tergum and sternum are often modified in development and shape, and possess specialized setae.

Terminology used in the descriptions and illustrations follows Reinert (2000a, 2008a) and the abbreviations used are found in the “List of Abbreviations Used in the Text and/or Figures” that precedes the figures. The morphological descriptions are based on slide-mounted genitalia that were dissected from dead, dried females. Measurements and descriptions of female genital structures are based on specimens that were cleared, dissected, arranged in a dorsoventrally flattened position, and mounted in Canada balsam under glass cover slips on microscope slides. Ranges are based on the species (listed under “species examined” section) and specimens that I have examined. A phase contrast microscope was used because this was usually necessary to determine some structures, e.g., spermathecal eminence on the roof of the vagina. Measurements of structures (e.g., length and width of terga VIII and IX, sternum VIII, cercus, etc.) include only the pigmented and sclerotized areas and were visible at 400X magnification. Measurements were made using an ocular micrometer having a linear scale of 100 divisions that had been calibrated using a stage micrometer. The scale used in the illustrations is in millimeters.

The method of preparation of specimens followed Reinert (2000a). During dissection of the genitalia, extra care was taken when separating the insula and lower vaginal lip from sternum VIII as the insula often breaks off and remains attached to the apical intersegmental membrane of the sternum. To avoid this, the intersegmental membrane of sternum VIII can be separated from the apical margin of the sternum and mounted with the insula and lower vaginal lip.

FEMALE GENITALIA OF GENUS *CATAGEIOMYIA* THEOBALD

Genus description. Segments VII and VIII. Dorsoventrally flattened; intersegmental membrane between VII-Te and VIII-Te relatively long. **Tergum VIII.** Width greater than length; covered with minute spicules; moderately pigmented, lateral margins normally with irregular non-pigmented areas; base with mesal area slightly concave; apex straight, with few moderately long and short, relatively straight setae; setae on distal 0.69-0.86; basolateral seta often present but absent in some species; scales usually absent or with 1-3 adventitious scales in some species; VIII-Te index 0.63-0.95; VIII-Te/IX-Te index 1.40-1.88; length 0.17-0.29 mm; width 0.20-0.43 mm. **Sternum VIII.** Width greater than length; covered with minute spicules; moderately pigmented; base with median area slightly concave; apex with relatively deep, median emargination separating broadly rounded lobes, with several short, slightly curved setae and several somewhat longer, slightly curved setae interspersed with short setae; few moderately long and numerous short setae on distal 0.88-0.98; setae 1,2-S present, seta 1-S inserted relatively short distance from basal margin, seta 2-S inserted posterior and lateral to seta 1-S, both setae inserted on proximal half of sclerite; basolateral seta absent; scales absent or with only 1-3 (1-8 in *Cg. irritans*) adventitious scales; VIII-S index 0.67-0.92; length 0.22-0.33 mm; width 0.25-0.39 mm. **Tergum IX.** Moderately long; moderately wide; covered with minute spicules; comprised of single moderately pigmented sclerite; apex with 2 small, rounded lobes each with 2-6 short, slender setae; 5-12 total setae; dorsal spheres present; IX-Te width/length ratio 0.70-0.98; length 0.11-0.18 mm; width 0.09-0.15 mm. **Insula.** Tonguelike; long; covered with minute to short spicules; usually with 4 (rarely 3 or 5) small tuberculi on distal area. **Lower vaginal lip.** Covered with minute to short spicules; lightly pigmented; narrow; hinge relatively narrow; without lower vaginal sclerite; ventral tuft present, small. **Upper vaginal lip.** Covered with minute to short spicules; moderately pigmented; narrow laterally and curved outward, caudal part with posterior margin relatively straight; upper vaginal sclerite moderately pigmented, small to moderately large. **Spermathecal eminence.** Membranous; somewhat ovoid in outline; with few to several small spicules on basolateral area. **Postgenital lobe.** Covered with short spicules; moderately long; relatively narrow; apex with relatively deep, median emargination; basal mesal apodeme relatively

short, moderately pigmented; setae on distal 0.35-0.58 of ventral surface; PGL ventral index 1.33-1.80; PGL ventral width/Ce dorsal width ratio 0.77-0.97. **Proctiger.** Membranous; with minute spicules in more or less short rows on proximal area. **Cercus.** Covered with minute to short spicules; moderately pigmented; relatively moderately long; narrow to moderately wide; apex narrowly rounded (rarely somewhat moderately rounded), with few short and few moderately long setae; setae on distal 0.87-0.96 of dorsal surface; dorsal surface without scales; cercus index 2.17-3.40; Ce/dorsal PGL index 2.76-4.16; length 0.18-0.27 mm; width 0.06-0.08 mm. **Spermathecal capsule.** Single large one; heavily pigmented; spherical; with several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area narrow, darkly pigmented, relatively long.

Type species description (*Cg. irritans*, Figure 1). **Tergum VIII.** Setae on distal 0.76-0.84; VIII-Te index 0.88-0.94; VIII-Te/IX-Te index 1.61-1.71; length 0.29-0.30 mm; width 0.32-0.33 mm. **Sternum VIII.** Setae on distal 0.90-0.91; basal lateral seta absent; with 1-8 adventitious scales; VIII-S index 0.86-0.92; length 0.33 mm; width 0.35-0.38 mm. **Tergum IX.** Apical lobes each with 4 or 5 short setae, 8-10 total setae; IX-Te index 1.11-1.21; IX-Te width/length ratio 0.83-0.90; length 0.16-0.18 mm; width 0.15 mm. **Insula.** Normally with 4 (rarely 3) tuberculi on distal area. **Postgenital lobe.** Setae on distal 0.43-0.46 of ventral surface; PGL ventral index 1.47-1.66; PGL ventral width/Ce dorsal width ratio 0.85-0.86. **Cercus.** Setae on distal 0.90-0.96 of dorsal surface; cercus index 2.17-2.35; Ce/dorsal PGL index 2.76-3.30; length 0.20-0.21 mm; width 0.09 mm.

Species examined. *Catageiomyia argenteopunctata*, *Cg. irritans*, *Cg. minuta* (Theobald), *Cg. mixta* (Edwards), *Cg. mutila* (Edwards), *Cg. nyounae* (Hamon and Adam), *Cg. phyllolabis* (Edwards), *Cg. pseudotarsalis* (van Someren), *Cg. punctothoracis* (Theobald) and *Cg. tarsalis* (Newstead).

Discussion. The following combination of features is most distinctive for the female genitalia of species belonging to genus *Catageiomyia*. Only a single, large, spherical, spermathecal capsule is present. Insula is tongue-like, long and with a few small tuberculi on the distal area. Sternum VIII has the width greater than the length, the apex has a relatively deep, median emargination separating broadly rounded lobes, and setae 1,2-S are long (other setae S absent) and inserted on the proximal half of the sclerite. Postgenital lobe is moderately long, relatively narrow, and the apex has a relatively deep, median emargination. Cercus is moderately long, narrow to moderately wide, scales are absent, and the apex is relatively narrowly rounded.

Female genitalia of *Catageiomyia* bear some similarity to other aedine genera with a tongue-like insula without setae. They are most similar to species of *Elpeytonius* Reinert, Harbach and Kitching in the development of a single large spermathecal capsule but differ from these species in the development of the longer, narrower cercus with the apex relatively narrowly rounded, the sternum VIII with the posterior, median area not heavily pigmented, the apical median emargination is relatively deep and only setae 1,2-S are present, the postgenital lobe is narrower and with a deep, apical emargination, and other features. Species of *Catageiomyia* are easily distinguished from aedine generic-level taxa with a liplike insula bearing setae by the long, tongue-like insula without setae.

Reinert et al. (2009) resurrected *Catageiomyia* from synonymy with genus *Aedimorphus*. Female genitalia of *Cg. argenteopunctata* are also illustrated (Figure 2) below.

Published illustrations (1) and/or descriptions (2) of female genitalia. *Catageiomyia argenteopunctata*: Reinert 2000e (1), Reinert et al. 2009 (2); *Cg. irritans*: Macfie and Ingram 1922 (1, 2), Reinert et al. 2009 (2); *Cg. punctothoracis*: Macfie and Ingram 1922 (2); and *Cg. tarsalis*: Reinert et al. 2009 (2).

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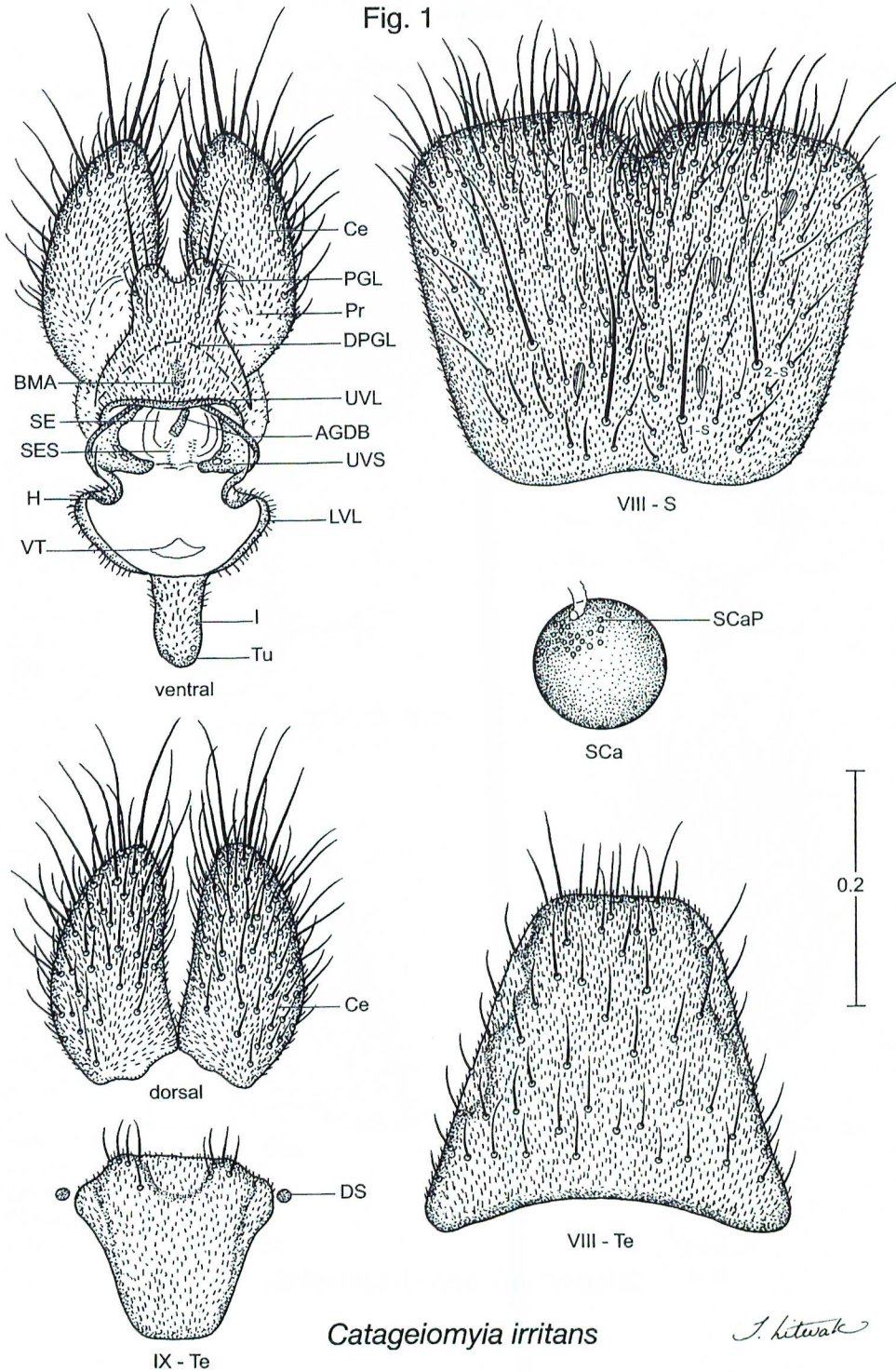
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FIGURE 1. FEMALE GENITALIA OF *CATAGEIOMYIA IRRITANS***FIGURE 2. FEMALE GENITALIA OF *CATAGEIOMYIA ARGENTEOPUNCTATA*****LIST OF ABBREVIATIONS USED IN THE TEXT AND/OR FIGURES**

AGDB	= accessory gland duct base
BMA	= basal mesal apodeme
Ce	= cercus
DPGL	= line of attachment of Pr to dorsal surface of PGL
DS	= dorsal sphere
H	= hinge
I	= insula
IX-Te	= tergum IX
LVL	= lower vaginal lip
mm	= millimeter
PGL	= postgenital lobe
Pr	= proctiger
SCa	= spermathecal capsule
SCaP	= spermathecal capsule pore
SE	= spermathecal eminence
SES	= spermathecal eminence spicule
Tu	= tuberculus
UVL	= upper vaginal lip
UVS	= upper vaginal sclerite
VIII-S	= sternum VIII
VIII-Te	= tergum VIII
VT	= ventral tuft
1-2-S	= setae 1-2-S

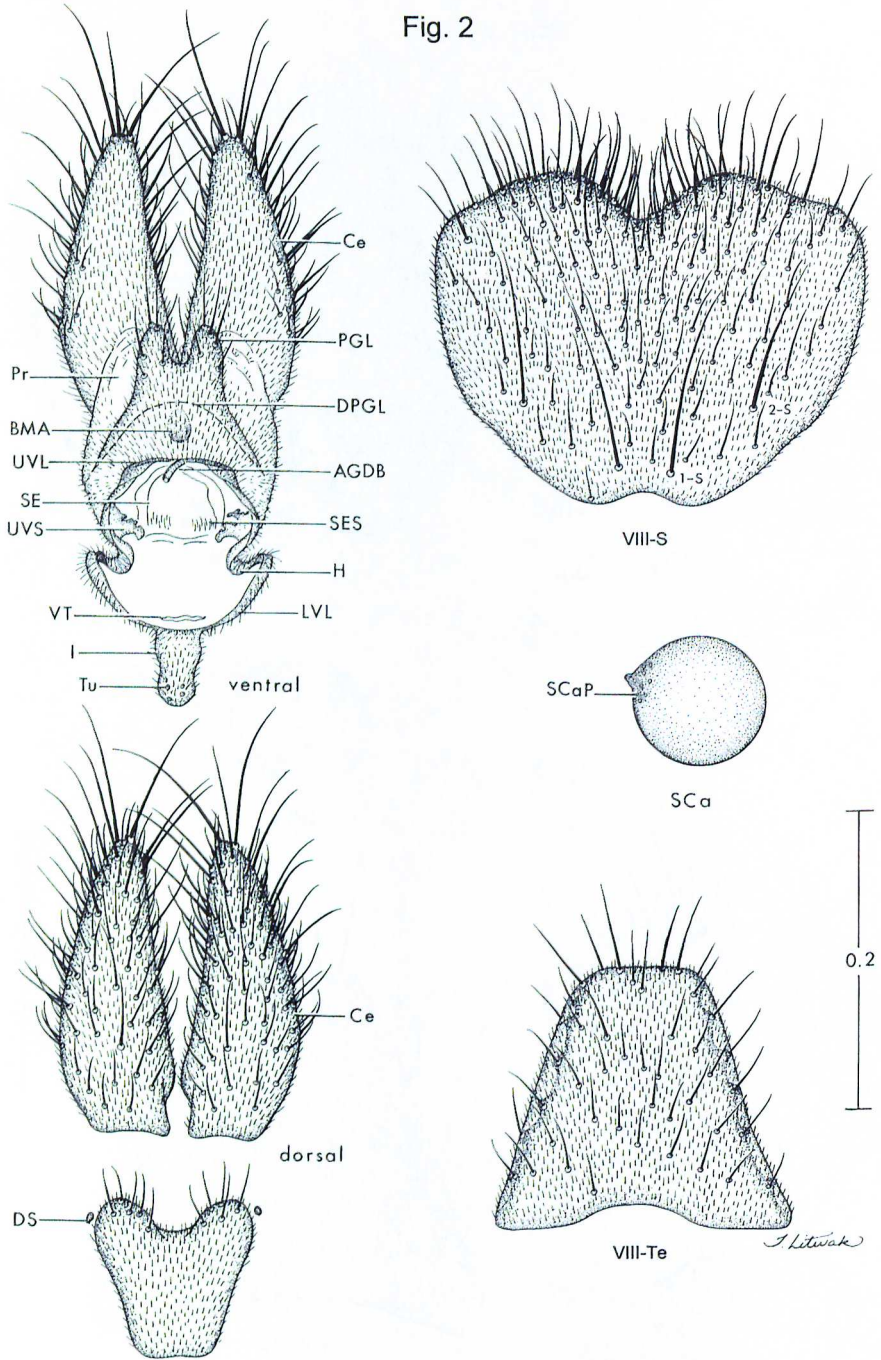
Fig. 1



Catageiomyia irritans

J. Kitzwark

Fig. 2



Catageomyia argenteopunctata

SYSTEMATIC INDEX

Valid generic and specific taxa are italicized, other taxa are in Roman type. Boldface page numbers are those which began the primary treatment of the taxon.

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<i>Psorophora</i>	32
<i>punctothoracis</i>	34
<i>Rampamyia</i>	32
<i>Sallumia</i>	32
<i>Tanakaius</i>	32
<i>tarsalis</i>	34

<i>Udaya</i>	32
<i>Vansomerenis</i>	32
<i>Verrallina</i>	32
<i>Zeugnomys</i>	32