COMPARATIVE ANATOMY OF THE FEMALE GENITALIA OF GENERIC-LEVEL TAXA IN TRIBE AEDINI (DIPTERA: CULICIDAE). PART XXX. GENUS *GILESIUS* REINERT, HARBACH AND KITCHING

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Abstract. A morphological analysis of the female genitalia of species included in genus *Gilesius* Reinert, Harbach and Kitching was conducted. The genitalia of the type species of the genus, *Gi. pulchriventer* (Giles), are illustrated. Treatment of the genital morphology of the genus includes a description of the genus, a detailed description of the type species, list of the species examined, published illustration and descriptions of the type species with literature citations, and a discussion. The discussion section contains a list of the most distinctive female genital features of *Gilesius*, a comparison of these with other aedine genera, and other pertinent information.

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INTRODUCTION

This is the thirtieth 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 *Zeugnomyia* 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 *Dahliana* 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, and part XXIX (Reinert 2009c) with genus *Jihlienius* Reinert, Harbach and Kitching. Reinert et al. (2004, 2006 and 2008) conducted phylogenetic analyses of tribe Aedini and revised the classification of generic-level taxa. This paper covers the female genitalia of genus *Gilesius* Reinert, Harbach and Kitching, which was described by Reinert et al. (2006).

A morphological analysis of the female genitalia of *Gilesius* was conducted, a characterization is given, and a discussion including a comparison with other aedine taxa is provided. The format used includes a description of the genus, a description and illustration of the type species, a list of the species examined, published illustration and descriptions of the type species with literature citations, and a discussion including the most distinctive features and other pertinent information.

MATERIALS AND METHODS

Female genitalia of genus *Gilesius* 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 illustration follows Reinert (2000a, 2008a) and the abbreviations used are found in the "List of Abbreviations Used in the Text and/or Figure" that precedes the figure. The morphological description is based on slide-mounted genitalia that were dissected from nonliving, 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, therefore some variation may occur in species not seen. 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 illustration is in millimeters.

The method of preparation of the specimens followed Reinert (2000a). During dissection of the genitalia, extra care should be 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 *GILESIUS* REINERT, HARBACH AND KITCHING

Genus description. ***Segments VII and VIII.*** Dorsoventrally flattened; intersegmental membrane between VII-Te and VIII-Te relatively short in length. ***Tergum VIII.*** Width greater than length; covered with minute spicules; moderately pigmented; base nearly straight; apex broadly rounded, with several moderately long and few short, relatively straight setae; setae on distal 0.81; basolateral seta present; numerous dark and pale, broad scales densely covering distal 0.78; VIII-Te index 0.64; VIII-Te/IX-Te index 2.54; length 0.42 mm; width 0.65 mm. ***Sternum VIII.*** Width greater than length; covered with minute spicules; moderately pigmented; base gently concave on median area; apex with small to moderate, median emargination separating broadly rounded lobes, with numerous short, curved setae and 3 or 4 slightly longer, straight setae interspersed with short setae; several moderately long and short setae on distal 0.89; seta 1-S inserted relatively short distance from basal margin; seta 2-S inserted posterior to seta 1-S; basolateral seta present; numerous broad, primarily pale scales on distal 0.77; VIII-S index 0.88; length 0.49 mm; width 0.56 mm. ***Tergum IX.*** Moderately long; moderately wide; covered with minute spicules; comprised of 2 moderately pigmented, lateral sclerites connected mesally by lightly pigmented area; apex with 2 rounded lobes each with 13 short, slender setae; 26 total setae; IX-Te width/length ratio 1.14; length 0.16 mm; width 0.19 mm. ***Insula.*** Liplike; covered with minute to short spicules; with 4 or 5 moderately long setae laterally on each side; 9 total setae. ***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; heavily pigmented; narrow laterally and curved outward, caudal part broad and posterior margin relatively straight; upper vaginal sclerite moderately pigmented, small to moderately large. ***Spermathecal eminence.*** Membranous; ill-defined. ***Postgenital lobe.*** Covered with short spicules, those on distal part of lateral margin somewhat longer; relatively long; moderately wide; apex flat; basal mesal apodeme elongate, moderately long, relatively narrow, moderately pigmented; setae on distal 0.39 of ventral surface; PGL ventral index 2.40; PGL ventral width/Ce dorsal width ratio 0.71. ***Proctiger.*** Membranous; with minute spicules in short rows on proximal area. ***Cercus.*** Covered with minute to short spicules; moderately long; moderately wide throughout length; apex broadly rounded, with few short and few moderately long setae; setae on distal 0.51 of dorsal surface; dorsal surface with numerous

broad scales on approximately distal 0.53; cercus index 2.14; Ce/dorsal PGL index 2.20; length 0.23 mm; width 0.11 mm. ***Spermathecal capsules.*** One large and 2 slightly smaller ones; heavily pigmented; spherical; with several small, spermathecal capsule pores near orifice. ***Accessory gland duct.*** Basal area narrow, darkly pigmented, relatively short.

Type species description (*Gi. pulchriventer*, Figure 1). The above description is based on the type species.

Species examined. *Gilesius pulchriventer*.

Discussion. The following combination of features is most distinctive for the female genitalia of species belonging to genus *Gilesius*. The cercus is moderately long, moderately wide throughout its length, the apex is broadly rounded, and the dorsal surface has numerous broad scales on approximately the distal half. The postgenital lobe is relatively long, moderately wide, and the apex is flat. Sternum VIII is mostly covered with broad scales, the width is greater than the length, and the apex has a small to moderate, median emargination separating broadly rounded lobes each bearing numerous short, curved setae and three or four slightly longer, straight setae interspersed with the short setae. Tergum VIII has numerous scales covering the approximately distal three fourths of the surface, the width is greater than the length, the apex is broadly rounded with several moderately long and short setae, and the base is relatively straight.

Female genitalia of *Gilesius* bear some similarity to some other aedine genera with a liplike insula bearing setae in lateral patches, i.e., cercus and tergum VIII somewhat like those in species of *Finlaya*, cercus and postgenital lobe somewhat like those of species in *Collessius* and *Hulecoeteomyia*, tergum VIII somewhat like that in species of *Dobrotworskyius* and *Hulecoeteomyia*, and tergum IX somewhat like that of some species of *Ochlerotatus*. However, species of these genera have numerous other female genital characters that are different from those of the species of *Gilesius* examined.

Reinert et al. (2006) provided a brief description of the female genitalia of *Gilesius* and a description of all known life stages of the genus.

Published illustrations (1) and/or descriptions (2) of female genitalia. *Gilesius pulchriventer*: Christophers (1923) (1, 2), Reinert et al. (2006) (2), (2008) (2).

ACKNOWLEDGMENTS

Appreciation is expressed to Kenneth J. Linthicum and Gary G. Clark (CMAVE) for providing facilities to complete this study; to Ralph E. Harbach (The Natural History Museum (NHM), London, United Kingdom) and Graham B. White (Department of Entomology and Nematology, University of Florida, Gainesville, FL) for reviewing the manuscript; to Taina R. Litwak (Litwak Illustration Studio, Darnestown, MD) for preparing the illustration; and to James E. Pecor and Thomas V. Gaffigan (WRBU) for the loan of specimens.

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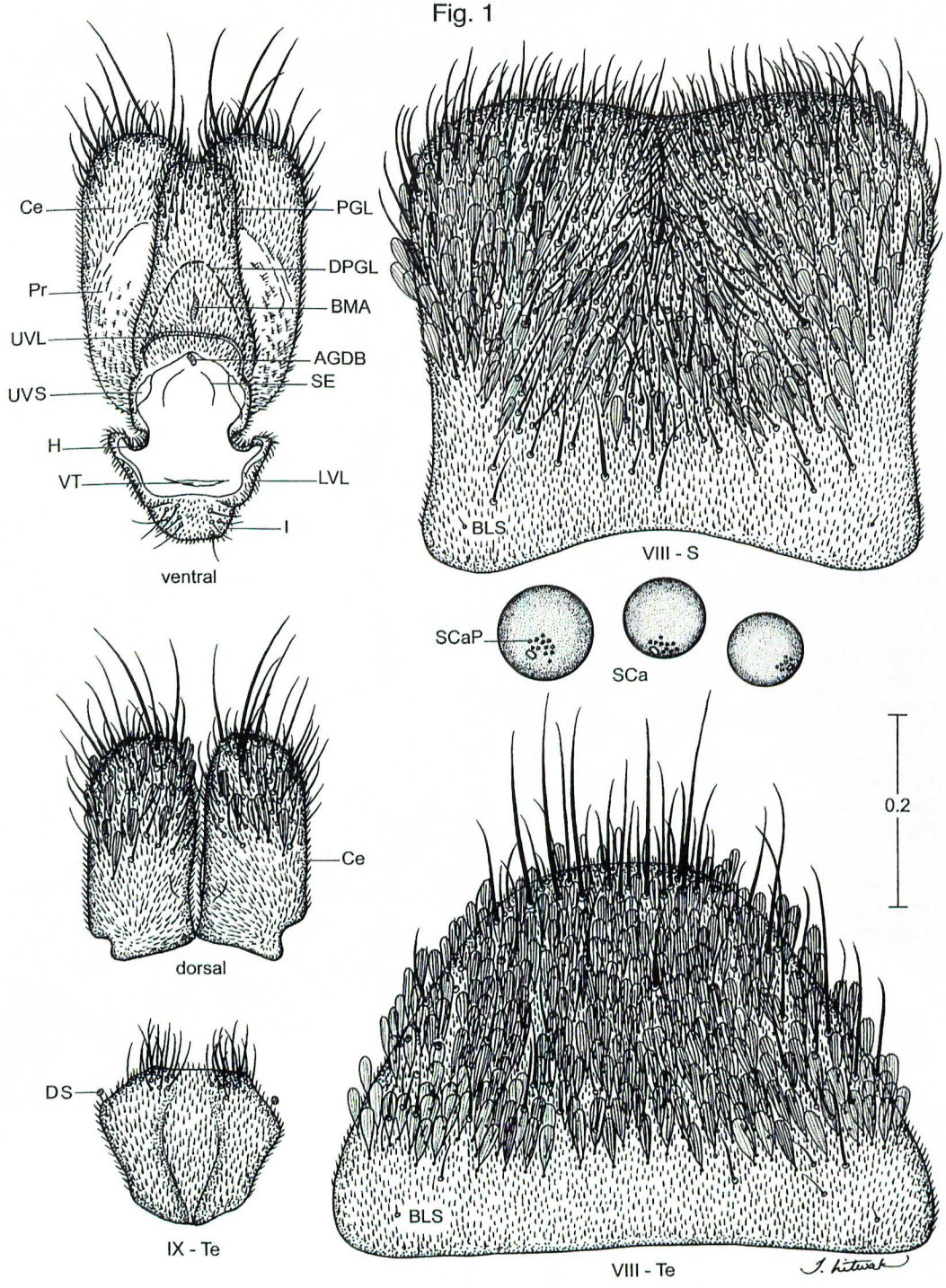
FIGURE 1. FEMALE GENITALIA OF *GILESIUS PULCHRIVENTER*.

LIST OF ABBREVIATIONS USED IN THE TEXT AND/OR FIGURE

AGDB	= accessory gland duct base
BLS	= basolateral seta
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
UVL	= upper vaginal lip
UVS	= upper vaginal sclerite
VIII-S	= sternum VIII
VIII-Te	= tergum VIII
VT	= ventral tuft

Fig. 1



Gilesius pulchriventer

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.