

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

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**Abstract.** A comparative, morphological analysis of the female genitalia of species included in genus *Danielsia* Theobald was conducted. The female genitalia of the genus are characterized and a comparison with other taxa is provided. The type species of the genus, *Dn. albotaeniata* Leicester, is illustrated. Treatment of the genital morphology of the genus includes a composite description, detailed description of the type species, list of the species examined, list of published illustrations and/or descriptions of included species with their literature citations, and a discussion. The discussion section contains a list of the most distinctive female genital features of *Danielsia*, a comparison of these with other aedine genera, and other pertinent information.

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## INTRODUCTION

This is the nineteenth 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, and part XVIII (Reinert 2008d) with genus *Hulecoeteomyia* Theobald. 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 *Danielsia* Theobald, which was resurrected from synonymy with *Finlaya* Theobald by Reinert et al. (2008).

A comparative, morphological analysis of the female genitalia of *Danielsia* species 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 detailed description and illustration of the type species, *Dn. albotaeniata* Leicester, a list of the species examined, a list of published illustrations and/or descriptions of species with their literature citations, and a discussion including the most distinctive features and other items of note.

## MATERIALS AND METHODS

Female genitalia of genus *Danielsia* 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 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 the 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 illustration 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 *DANIELSIA* THEOBALD

**Genus description.** *Segments VII and VIII.* Laterally compressed; intersegmental membrane between VII-Te and VIII-Te short. *Tergum VIII.* Width greater than length; covered with minute spicules; moderately pigmented; base very gently concave to nearly straight; apex broadly rounded, with several moderately long to long setae; setae on distal 0.47-0.64 (rarely on distal 0.66); basolateral seta very short; numerous broad scales densely covering distal 0.71-0.85; VIII-Te index 0.61-0.74; VIII-Te/IX-Te index 2.22-2.74; length 0.22-0.28 mm; width 0.33-0.46 mm. *Sternum VIII.* Width greater than length; covered with minute spicules; moderately pigmented; base relatively straight; apex gently sloping from apicolateral corners to midline, with several short, slightly curved setae, few slightly longer, nearly straight setae laterally; setae on distal 0.79-0.91; setae 1-5-S moderately long to long, in more or less angular or diagonal line extending from basomesal area to apicolateral area, setae 1-S inserted moderate distance from basal margin; basolateral seta normally absent; moderate number to numerous broad scales on distal 0.86-0.90; VIII-S index 0.76-0.94 (usually 0.85-0.94); length 0.28-0.38 mm; width 0.33-0.46 mm. *Tergum IX.* Moderately long and moderately wide; comprised of single, moderately pigmented sclerite, with pair of rounded apical lobes; covered with minute spicules; normally 1-3 (range 0-4, rarely absent on one side) short setae distally on each lobe, 1-7 total setae; IX-Te width/length ratio 0.85-1.17; length 0.09-0.12 mm; width 0.09-0.14 mm. *Insula.* Liplike; somewhat U-shaped (depressed) transversely; covered with minute spicules; moderately pigmented; with 3-5 (usually 3 or 4) moderately long setae laterally on each side, 6-10 (usually 6-8) total setae. *Lower vaginal lip.* Covered with minute to short spicules; lightly pigmented; narrow; hinge moderately wide; 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 somewhat broader and flattened; upper vaginal sclerite moderately pigmented, small. *Spermathecal eminence.* Membranous; ill-defined. *Postgenital lobe.* Covered with short spicules; relatively narrow; apex flat; basal mesal apodeme weakly developed; few to several setae on distal 0.30-0.38 of ventral surface; PGL ventral index 2.50-2.81 (rarely 2.82); PGL ventral width/Ce dorsal width ratio 0.67-0.82. *Proctiger.* Membranous; with scattered minute spicules. *Cercus.* Covered with minute to short spicules; moderately long; moderately wide; apex gently oblique, with few moderately long, nearly straight and several short, gently curved setae; dorsal surface without scales (rarely with 1 adventitious scale on one cercus in *Dn. harperi* (Knight)); setae on distal 0.68-0.76 of dorsal surface; mesal margin broadly and gently concave; cercus index 2.50-2.95; Ce/dorsal PGL index 2.41-2.83; length 0.16-0.18 mm; width 0.06-0.07 mm. *Spermathecal capsules.* One large and 2 slightly smaller ones; heavily pigmented; spherical; with few small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area lightly to moderately pigmented, short.

**Type species description (*Dn. albotaeniata*, Figure 1).** *Tergum VIII.* Setae on distal 0.57-0.64 (rarely on distal 0.66); scales on distal 0.79-0.85; length 0.25-0.28 mm; width 0.38-0.46 mm. *Sternum VIII.* Setae on distal 0.78-0.82; numerous scales on distal 0.86-0.90; VIII-S index 0.76-0.92; length 0.33-0.38 mm; width 0.36-0.46 mm. *Tergum IX.* One short seta on at

least one of 2 apical lobes, 1 or 2 total setae; IX-Te width/length ratio 1.07-1.17; length 0.09-0.11 mm; width 0.11-0.12 mm. **Insula.** With 3-5 (usually 3 or 4) setae laterally on each side. **Postgenital lobe.** Setae on distal 0.30-0.33 of ventral surface; PGL ventral width/Ce dorsal width ratio 0.69-0.82. **Cercus.** Scales absent on dorsal surface; cercus index 2.63-2.95; Ce/dorsal PGL index 2.41-2.63.

**Species examined.** *Danielsia albotaeniata* and *Dn. harperi*.

**Discussion.** The following combination of features is most distinctive for the female genitalia of species belonging to genus *Danielsia*. The lightly pigmented lower vaginal lip contrasts sharply with the moderately pigmented insula. Insula is liplike, somewhat U-shaped (depressed) transversally and with 3-5 moderately long setae laterally on each side. The cercus is moderately long, moderately wide, the apex is gently oblique, the mesal margin is broadly and gently concave, and scales are absent on the dorsal surface (rarely with one scale on one cercus in *Dn. harperi*). Sternum VIII has a moderate number to numerous broad scales on the distal 0.86-0.90, the width is greater than the length, and the apex is gently sloping from the apicolateral corners to the midline. Segments VII and VIII are laterally compressed and the intersegmental membrane between them is short. The upper vaginal sclerite is small and moderately pigmented.

Female genitalia of *Danielsia* have the apex of sternum VIII gently sloping from the apicolateral corners to the midline which is somewhat similar to species of '*Ochlerotatus* (*Protomacleaya*)'; however, numerous other differences exist between these taxa.

**Published illustrations (1) and/or descriptions (2) of female genitalia.** *Danielsia albotaeniata*: Reinert et al. (2006, 2008) (2); *Da. harperi*: Reinert et al. (2006, 2008) (2).

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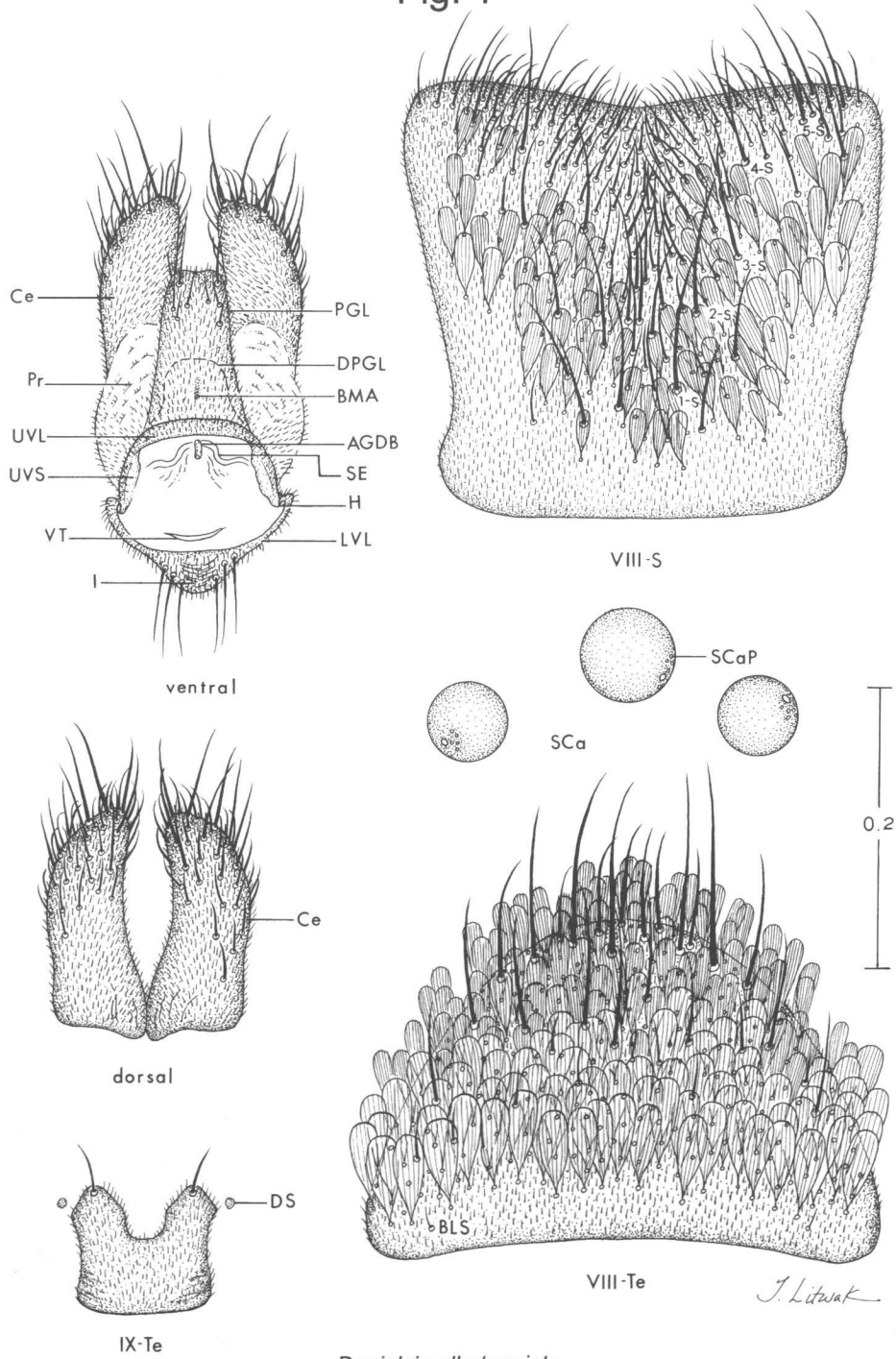
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**FIGURE 1. FEMALE GENITALIA OF *DANIELSIA ALBOTAENIATA*****LIST OF ABBREVIATIONS USED IN THE TEXT AND/OR FIGURE**

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
1-5-S	= Seta 1-5-S

Fig. 1



*Danielsia albotaeniata*



## 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.

<i>Aedes</i>	2
Aedini	1
<i>albotaeniata</i>	1, 2, <b>3</b> , 4, 7, 8
<i>Armigeres</i>	2
<i>Ayurakitia</i>	2
Culicidae	1
<i>Dahlia</i>	2
<i>Danielsia</i>	1, 2, <b>3</b> , 4, 7, 8
Diptera	1
<i>Eretmapodites</i>	2
<i>Finlaya</i>	2
<i>Georgecraigius</i>	2
<i>Haemagogus</i>	2
<i>harperi</i>	<b>3</b> , 4
<i>Heizmannia</i>	2
<i>Hulecoeteomyia</i>	2
<i>Ochlerotatus</i>	2, 4
<i>Opifex</i>	2
<i>Phagomyia</i>	2
<i>Protomacleaya</i>	4
<i>Psorophora</i>	2
<i>Udaya</i>	2
<i>Verrallina</i>	2
<i>Zeugomyia</i>	2