

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

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**Abstract.** A comparative, morphological analysis of the female genitalia of species included in genus *Dahliana* was conducted. The female genitalia of the genus are characterized and a comparison with other taxa is provided. The type species of the genus, *Da. geniculata* (Olivier), 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 *Dahliana*, a comparison of these with other aedine genera, and other pertinent information.

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## INTRODUCTION

This is the seventeenth 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 a brief historical background of published papers dealing with the subject and provided an introduction to the series, 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, and part XVI (Reinert 2008b) with genus *Phagomyia* 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 *Dahlia* Reinert, Harbach and Kitching, which was formally described as a new genus by Reinert et al. (2006).

A comparative, morphological analysis of the female genitalia of *Dahlia* species was conducted, a characterization is given, and a comparison with other aedine taxa is provided. The format used includes a composite description, a detailed description and illustration of the type species, *Da. geniculata* (Olivier), 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 *Dahlia* 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, 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 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 was separated from the apical margin of the sternum and mounted with the insula and lower vaginal lip.

## FEMALE GENITALIA OF GENUS *DAHLIA* REINERT, HARBACH AND KITCHING

**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 nearly flat for most of median area, slightly concave on outer area; basolateral area relatively narrow and projecting outward; apex broadly rounded, with approximately 4 moderately long to long and several short setae; setae on distal 0.55-0.63 (rarely on distal 0.65); basolateral seta very short; numerous broad scales densely covering distal 0.44-0.65; VIII-Te/IX-Te index 1.51-1.99; length 0.29-0.38 mm; width 0.60-0.65 mm. **Sternum VIII.** Width greater than length; covered with minute spicules; moderately pigmented; base relatively straight; apex more or less straight but with very shallow, median emargination, with several short, nearly straight setae and 2 moderately long setae on lateral areas; setae on distal 0.90-0.97; setae 1-5-S in more or less diagonal line extending from basomesal area to apicolateral area, seta 1-S inserted relatively near basal margin; basolateral seta absent; scales absent or 1-3 adventitious scales in *Da. geniculata* or with numerous scales in *Da. echinus* (Edwards); VIII-S index 0.66-0.75; length 0.44-0.48 mm; width 0.64-0.69 mm. **Tergum IX.** Moderately long and moderately wide; comprised of single, moderately pigmented sclerite, with pair of moderately broad, narrowly rounded, apical lobes; covered with minute spicules; 4-6 (rarely 7) moderately long setae distally on each lobe, 8-13 total setae; IX-Te width/length ratio 1.07-1.14; length 0.18-0.20 mm; width 0.20-0.21 mm. **Insula.** Liplike; flat transversally; covered with minute spicules; moderately pigmented; with 3-5 (usually 4 or 5) moderately long setae laterally on each side; 7-10 total setae. **Lower vaginal lip.** Covered with minute to short spicules; lightly to moderately pigmented; narrow; hinge moderately wide; without lower vaginal sclerite; ventral tuft present, small. **Upper vaginal lip.** Covered with minute to small spicules, moderately to somewhat darker pigmented; moderately wide laterally and curved outward, caudal part moderately wide and somewhat flattened; upper vaginal sclerite moderately to heavily pigmented, moderately large. **Spermathecal eminence.** Membranous; somewhat ovoid in outline. **Postgenital lobe.** Covered with short spicules; moderately wide; apex rounded; basal mesal apodeme relatively short, narrow; several setae on distal 0.37-0.49 of ventral surface; PGL ventral index 2.31-2.81; PGL ventral width/Ce dorsal width ratio 0.45-0.64. **Proctiger.** Membranous; with scattered minute spicules. **Cercus.** Covered with minute to short spicules; moderately long; moderately wide; apex broadly rounded, with few moderately long and several short setae; dorsal surface without scales; setae on distal 0.59-0.72 of dorsal surface; mesal and lateral margins nearly straight and parallel; cercus index 2.00-2.55; Ce/dorsal PGL index 2.76-3.20; length 0.27-0.32 mm; width 0.11-0.15 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 moderately pigmented, short.

**Type species description (*Da. geniculata*, Figure 1).** **Tergum VIII.** Setae on distal 0.55-0.63 (rarely on distal 0.65); scales on distal 0.44-0.58; length 0.31-0.38 mm; width 0.60-0.65 mm. **Sternum VIII.** Scales absent or occasionally 1-3 adventitious scales present; setae on distal 0.90-0.95; length 0.45-0.48 mm; width 0.64-0.69 mm. **Tergum IX.** IX-Te width/length ratio 1.11-1.14; length 0.18-0.20 mm; width 0.20-0.21 mm. **Insula.** With 4 or 5 setae laterally

on each side, 8-10 total setae. **Postgenital lobe.** PGL ventral index 2.31-2.72. **Cercus.** Cercus index 2.00-2.55; Ce/dorsal PGL index 2.76-3.20; length 0.27-0.30 mm; width 0.11-0.15 mm.

**Species examined.** *Dahlia echinus* and *Da. geniculata*.

**Discussion.** The following combination of features is most distinctive for the female genitalia of species belonging to genus *Dahlia*. Cercus is moderately long, moderately wide, the apex is broadly rounded, the mesal and lateral margins are nearly straight and parallel, and scales are absent. Tergum VIII has the width greater than the length, the apex is broadly rounded with approximately four long and several short setae, the basolateral areas are relatively narrow and project somewhat anteriorly, and numerous scales are present on the distal 0.44-0.65. Sternum VIII has the width greater than the length and the apex is more or less straight with a very shallow, median emargination and the lateral areas have several short, nearly straight setae and two moderately long setae. Insula is liplike, flat transversally, and with three to five moderately long setae laterally on each side. Tergum IX is comprised of a single moderately long, moderately wide, moderately pigmented, bilobed sclerite bearing four to seven setae on each apical lobe.

Female genitalia of *Dahlia* resemble those of some species of *Howardina* Theobald and some species of *Ochlerotatus* that also have a liplike insula with setae on the lateral areas in having the apical margin of sternum VIII somewhat similar, however the genitalia differ in numerous other features especially the development of the basolateral areas of tergum VIII. Development of the cercus is somewhat like *Hulecoeteomyia* Theobald but longer.

*Dahlia* included species previously included in the Geniculatus Assemblage of *Ochlerotatus* (Finlaya) (sensu Reinert 2002d).

**Published illustrations (1) and/or descriptions (2) of female genitalia.** *Dahlia echinus*: Mohrig (1967) (1, 2); Reinert et al. (2006) (2), (2008) (2); *Da. geniculata*: Brolemann (1919) (1, 2); Edwards (1921) (1); Marshall (1938) (1, 2); Mohrig (1967) (1, 2), (1969) (1, 2); Sicart and Larrouy (1968) (1, 2); Rayazantseva (1970) (1, 2); Skierska (1977) (1); Reinert (2002d) (1, 2); Reinert et al. (2004) (2), (2006) (2) and (2008) (2).

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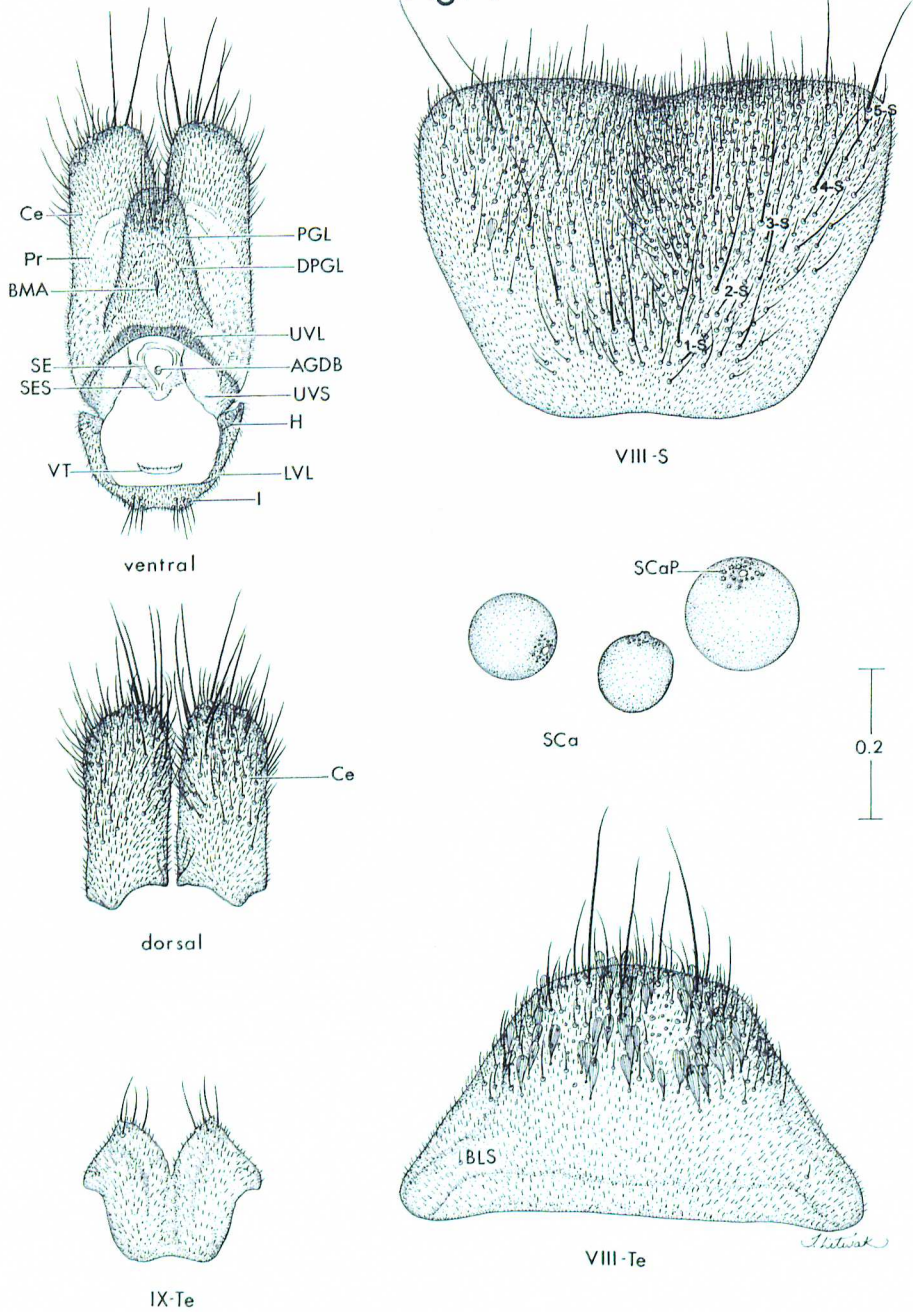
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**FIGURE 1. FEMALE GENITALIA OF *DAHLIANA GENICULATA*****LIST OF ABBREVIATIONS USED IN THE TEXT AND/OR FIGURE**

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
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 spicules
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



*Dahliana geniculata*



## 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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