

**COMPARATIVE ANATOMY OF THE FEMALE GENITALIA OF GENERA
AND SUBGENERA IN TRIBE AEDINI (DIPTERA: CULICIDAE).
PART XI. GENUS *HAEMAGOGUS* WILLISTON**

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Abstract. A comparative, morphological analysis of the female genitalia of species of the genus *Haemagogus* Williston was conducted. Based on the analysis, the female genitalia of the genus are characterized, a key to the included subgenera (i.e., *Conopostegus* Dyar and *Haemagogus*) is given, and a comparison with other taxa is provided. The female genitalia of the two currently recognized subgenera are described. Treatment of the genital morphology of each subgenus includes a composite description, description of subcategories, detailed description and illustration of the type species, list of the species examined, list of published illustrations of species with their citations, and a discussion. The discussion section contains a list of the most distinctive features that characterize species of each subgenus, a comparison with other subgenera, and other pertinent information.

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INTRODUCTION

This is the eleventh in a series of papers by the author that describes the female genitalia of the genera and subgenera included in tribe Aedini of family Culicidae. Part I of the series (Reinert 2000b) included a brief historical background of published papers dealing with the subject

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and provided an introduction to the series, part II (Reinert 2000c) dealt with genus *Psorophora* Robineau-Desvoidy, part III (Reinert 2000d) with genus *Udaya* Thurman, part IV (Reinert 2000e) with genus *Zeugomyia* Leicester, part V (Reinert 2000f) 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, and Part X (Reinert 2002) with genus *Heizmannia* Ludlow. This paper covers genus *Haemagogus* Williston.

MATERIALS AND METHODS

A comparative, morphological analysis of the female genitalia of the subgenera of *Haemagogus* (i.e., *Conopostegus* Dyar and *Haemagogus*) was conducted, a characterization of the female genitalia of the genus is given, a key to the included subgenera is provided, and a discussion that includes a comparison with other taxa is included. The genitalia of the two currently recognized subgenera of the genus are described. The format used for each subgenus includes a composite description, a detailed description and illustration of the type species, a list of the species examined, a list of published illustrations of species with their citations, a discussion including the most distinctive features, and other items of note.

Within the subgenus *Haemagogus*, the term Assemblage is used to avoid confusion with other recognized informal categories (e.g., Section, Group). Assemblage, as used here, refers to a collection of species with similar morphological features of the female genitalia. The term is not meant to be a designated taxon; however, the grouping of species in the subgenus correlates with the Albomaculatus and Splendens Sections of Arnell (1973).

Female genitalia of genus *Haemagogus* 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 (2000b) and the abbreviations used are found in the "List of Abbreviations Used in the Text and/or Figures" that precedes the figures. Morphological descriptions are 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 of measurements and setal counts given in the key and descriptions are based on the species (listed under "species examined" section of each subgenus) and the specimens that I have examined, therefore for a specific subgenus some variation may occur in species not seen. A phase contrast microscope was used because this was usually necessary to determine some structures of the 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 made at 400X magnification using an ocular micrometer having a linear scale of 100 divisions that had been calibrated using a stage micrometer. The scales used in the illustrations are in millimeters.

The method of preparation of specimens follows Reinert (2000b). During dissection of the genitalia extra care was taken when separating the insula and lower vaginal lip from sternum VIII since the distal portion of the insula containing the setae often breaks off and remains attached to the apical intersegmental membrane of sternum VIII. These structures tend to fold beneath sternum VIII and become obscured. Also, the setae can become detached and lost during the

dissection. These conditions were noted in a number of specimens that were used in Arnell's (1973) study.

FEMALE GENITALIA OF GENUS *HAEMAGOGUS* WILLISTON

Genus description. *Segments VII and VIII.* Laterally compressed. *Tergum VIII.* Proximal 0.20-0.60 retracted into segment VII; heavily pigmented; moderately long; wide; apex convex, with several moderately long and few shorter, stout setae; base wider than apex, very gently and broadly concave but with lateral corners slightly produced cephalad; numerous broad, spatulate scales densely covering distal 0.61-0.92; setae on distal 0.32-0.77; basal lateral seta present (rarely on only one side); VIII-Te index 0.56-0.94; VIII-Te/IX-Te index 1.46-2.38; length 0.23-0.42 mm; width 0.31-0.57 mm. *Sternum VIII.* Heavily pigmented; width normally slightly greater than length; apex very gently sloping caudally from apicolateral corners to minute (0.01-0.03 of dorsal VIII-S length), median emargination separating very small lobe on each side of midline or apex nearly flat, numerous short, mostly straight, slender setae on apical margin; apex and base approximately equal in width; base very gently convex; spatulate scales few to numerous, forming elongate patch on each side of distal 0.66-0.99, patch narrow distally and broader proximally; numerous short and few moderately long, slender setae on distal 0.95-1.00; apical, intersegmental membrane lightly pigmented but few species also with moderately pigmented spots; intersegmental membrane between segments VII and VIII short or moderately long; VIII-S index 0.76-1.08; length 0.30-0.49 mm; width 0.35-0.50 mm. *Tergum IX.* Heavily pigmented; more or less V- or Y-shaped; apex wider than base, with moderately long to long, narrow, thumb-shaped lobe on each side of midline, apical margin of lobe darker and with setae absent or with 1-3 short setae on each lobe, 2-5 total setae; IX-Te index 0.96-1.60; length 0.12-0.25 mm; width 0.11-0.19 mm. *Insula.* Long; tongue-like; with 2-5 moderately long to long, slender setae. *Lower vaginal lip.* Moderately pigmented; narrow; lower vaginal sclerite absent. *Upper vaginal lip.* Heavily pigmented; narrow; posterior margin evenly rounded; hinge narrow; upper vaginal sclerite absent. *Spermathecal eminence.* Membranous; with few short, simple spermathecal eminence spicules. *Postgenital lobe.* With short spicules mostly arranged in small groups giving surface rough appearance; heavily pigmented; long; moderately wide to wide; apex broadly rounded or with small, median emargination; ventral surface with 8-25 setae distally on each side of midline, 18-49 total setae (1 pair of apical setae moderately long and remainder short); dorsal surface with 1 pair (very rarely 2 pairs) of very short setae on distal 0.40-0.50; ventral PGL/Ce index 0.75-0.95; dorsal PGL index 0.84-1.28; ventral PGL index 1.52-2.40; ventral length 0.12-0.21 mm. *Cercus.* Heavily pigmented; moderately long; moderately wide to wide; apex truncate; apical margin normally with 3 (rarely 4) long, very stout, somewhat flattened (especially inner and outer) setae and few short, curved setae; lateral margin normally with 1 long and 1 moderately long (only 1 seta when 4 setae on apical margin), stout setae on distal portion; scales normally absent but some species with 1 or few broad, spatulate scales on one or both cerci; dorsal surface with several short and 1,2 long setae on distal 0.40-0.80; mesal margin with patch of short, curved setae on distal area; cercus index 1.68-2.93; Ce/dorsal PGL index 1.79-2.70; length 0.14-0.23 mm; width 0.06-0.10 mm. *Spermathecal capsules.* One large and 2 medium; heavily pigmented; spherical; with few to several small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal, lightly to heavily pigmented area short.

Discussion. *Haemagogus* was originally described by Williston in 1896. The most recent revisions of the genus are by Zavortink (1972) who provided a detailed description of subgenus

Conopostegus, resurrected the name, removed it from synonymy with subgenus *Finlaya* Theobald (formerly in genus *Aedes*, see Reinert 2000a), and included it as a subgenus of *Haemagogus*, and by Arnell (1973) who revised the genus *Haemagogus* and provided detailed descriptions of the species included in subgenus *Haemagogus*. Similarity of the female genitalia, as shown by the present study, strongly support the conclusions of Zavortink (1972) and Arnell (1973) that *Conopostegus* belongs in the genus *Haemagogus*. All species within each subgenus and among the two subgenera display a great amount of similarity.

The following combination of features is most distinctive for the female genitalia of genus *Haemagogus*: tergum IX is V- or Y-shaped with the apical margin darker; sternum VIII has the apex very gently sloping caudally from the lateroapical corners to a minute, median emargination that separates a pair of small lobes or the apex is flat, setae on the apical margin are short, mostly straight, and slender, numerous primarily short setae cover the sclerite from the apex to the base or nearly to the base, and the base is gently convex; insula is long, tonguelike, and bears two to five moderately long to long, slender setae; cercus is moderately long and moderately wide to wide, the apex is moderately to strongly truncate with normally three (rarely four) long, *very stout*, somewhat flattened setae along the apical margin, and the lateral margin has normally one long and one moderately long (only one moderately long seta when there are four setae on the apex), stout setae distally; postgenital lobe is long, moderately wide to wide, is covered with small groups of short spicules that give it a rough appearance, the ventral surface bears a pair of moderately long setae apically and 16-49 short setae distally, and the dorsal surface has a pair (very rarely two pairs) of very short setae at about midlength; and the upper vaginal sclerite is absent.

A resemblance of the adult habitus of *Haemagogus* and *Heizmannia* Ludlow was noted by Edwards (1922, 1932), Mattingly (1957, 1970), Arnell (1973), and others. The female genitalia of the two genera, however, are very different. Those of *Heizmannia* differ notably in the following: upper vaginal sclerite is present and moderately large; insula bears three to six very short setae (subgenus *Heizmannia*), or setae are absent and one or two small tuberculi are usually present (subgenus *Mattinglyia* Lien); cercus is broad (however, cercus also is broad in subgenus *Conopostegus*) and usually bears four or five (range four to six) long, stout (but not *very stout*) setae apically; tergum IX is shaped differently and bears two to six short setae apically (except setae absent in *H. reidi* Mattingly); and sternum VIII has setae covering less of the surface (distal 0.75-0.89) and has a different shape, especially the apical and basal margins.

Arnell (1973) also indicated "Members of the Kochi Group of *Aedes* (*Finlaya*) of Southeast Asia and the South Pacific show remarkable similarities to *Haemagogus* in the male genitalia, especially in the aedeagus and proctiger, the sidepiece including the specialized scales on the distal sternomesal margin, the clasper and the reduction of tergite IX. However there is little in the adults or immatures stages to indicate relationship to *Haemagogus*." The female genitalia of the Kochi Group of *Finlaya* also differ from those of *Haemagogus*, especially in the following: insula is liplike; upper vaginal sclerite is well developed; postgenital lobe is differently developed; and cercus has the apical margin broadly rounded and bears about five long and moderately long, stout setae, and the dorsal surface has numerous broad, spatulate scales on the distal 0.45-0.74.

The presence of setae on the tonguelike insula of genus *Haemagogus* is unusual for Aedini, but this condition also is found in genera *Ayurakitia*, *Psorophora*, and subgenus *Heizmannia* of genus *Heizmannia*; however, in the last taxon the setae are very short.

KEY TO SUBGENERA AND ASSEMBLAGES BASED ON FEMALE GENITALIA

1. Cercus shorter, length usually 0.14-0.16 mm (rarely 0.18 mm), index 1.68-2.00; sternum VIII with apical margin nearly flat; ventral postgenital lobe index 1.52-1.69....subgenus *Conopostegus*
- Cercus longer, length usually 0.18-0.23 mm (rarely 0.17 mm), index 2.07-2.93; sternum VIII with apical margin convex; ventral postgenital lobe index 1.78-2.40 (subgenus *Haemagogus*).....2
2. Tergum IX without setaeSplendens Assemblage
- Tergum IX with 1-3 setae on each apical lobe (rarely one of lobes without setae).....
.....Equinus Assemblage

FEMALE GENITALIA OF SUBGENERA OF HAEMAGOGUS**SUBGENUS CONOPOSTIGUS DYAR**

(Fig. 1)

Subgenus description. *Tergum VIII.* Proximal 0.40-0.60 retracted into segment VII; covered with minute spicules; apex convex, with several moderately long and few shorter, stout setae; numerous scales densely covering distal 0.75-0.87; few moderately long and several short setae (in addition to apical setae) on distal 0.42-0.63 and more numerous along margins of sclerite; basal lateral seta present; VIII-Te index 0.61-0.94; VIII-Te/IX-Te index 1.55-2.23; length 0.23-0.31 mm; width 0.31-0.45 mm. *Sternum VIII.* Covered with minute spicules; heavily pigmented but *Hg. leucocelaenus* (Dyar and Shannon) and *Hg. leucotaeniatus* (Komp) with narrow, lightly pigmented, median stripe; width greater than length; apex very gently convex and nearly flat, minute (0.01-0.02 of dorsal VIII-S length), median emargination present or absent; lateral margins nearly straight; number of broad and few moderately broad, spatulate scales forming elongate patch on each side on distal 0.79-0.88; numerous setae on distal 0.95-0.98; basolateral seta normally near basal margin; setae 1-5-S present, 1-3-S in more or less submedian line and 4,5-S sloping diagonally to apicolateral corner, 1-S near basomesal margin; apical, intersegmental membrane lightly pigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.81-0.91; length 0.30-0.39 mm; width 0.35-0.43 mm. *Tergum IX.* Covered with minute spicules; more or less V-shaped; apex with long, narrow, thumb-shaped lobe on each side of midline, lobe often with few longitudinal wrinkles, apical margin of lobe somewhat truncate, more darkly pigmented and bearing few longer, stouter spicules (often on small tuberculi), setae absent; area proximal to lobes relatively short, basal margin convex; IX-Te index 0.96-1.18; length 0.12-0.19 mm; width 0.12-0.18 mm. *Insula.* Covered with minute spicules; moderately pigmented but some specimens with distal 0.20-0.30 more lightly pigmented; 4 moderately long to long, slender setae on distal 0.15-0.50. *Lower vaginal lip.* Covered with short spicules; ventral tuft present. *Upper vaginal lip.* Covered with short spicules. *Spermathecal eminence.* Posterior 0.75 somewhat ovoid and basal area narrower; few short, simple spermathecal eminence spicules on basolateral areas. *Postgenital lobe.* Covered with short spicules, lateral margins with longer, stouter spicules, those at approximately midventral length with basolateral denticles; moderately long; wide; apex broadly rounded or with small (0.03 of dorsal

PGL length), median emargination; ventral surface with 11-25 setae distally on each side of midline, 22-49 total setae (1 pair of apical setae moderately long and remainder short); dorsal surface with 1 pair of very short setae on distal 0.50; basal mesal apodeme present or absent; ventral PGL/Ce index 0.75-0.92; dorsal PGL index 0.84-1.02; ventral PGL index 1.52-1.69; ventral length 0.12-0.16 mm. **Proctiger.** With scattered small spicules; membranous. **Cercus.** Covered with short to moderately long spicules; relatively wide; apex wide, strongly truncate; apical margin with 3 long, stout, somewhat flattened, nearly straight setae and few short, curved setae; lateral margin with 1 long and 1 moderately long, stout setae on distal portion; base with basomesal extension; scales absent or only 1-4 broad, spatulate ones on one or both cerci; dorsal surface with several short and 2 long setae on distal 0.52-0.67; ventral surface with few short setae distally near apical margin; mesal margin slightly concave on basal 0.40-0.50; cercus index 1.68-2.00; Ce/dorsal PGL index 1.79-2.41; length 0.14-0.18 mm; width 0.08-0.10 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; with few to several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal, moderately pigmented area short.

Type species description (*Hg. leucocelaenus*, Fig. 1). **Tergum VIII.** Scales covering distal 0.75-0.83; setae on distal 0.42-0.61; VIII-Te index 0.61-0.75; VIII-Te/IX-Te index 1.55-2.05; length 0.25-0.31 mm; width 0.35-0.45 mm. **Sternum VIII.** Number of scales in lateral patches on distal 0.80-0.88; setae covering distal 0.93-0.98; VIII-S index 0.81-0.91; length 0.32-0.39 mm; width 0.35-0.43 mm. **Tergum IX.** IX-Te index 0.97-1.18; length 0.14-0.19 mm; width 0.13-0.18 mm. **Postgenital lobe.** With 14-26 setae distally (combined setae on dorsal and ventral surfaces) on each side of midline, 30-51 total setae; ventral PGL/Ce index 0.79-0.92, dorsal PGL index 0.84-0.94; ventral PGL index 1.55-1.69; ventral length 0.12-0.16 mm. **Cercus.** Scales normally absent (4 scales on 1 cercus of 1 specimen); setae on distal 0.56-0.66; cercus index 1.68-2.00; Ce/dorsal PGL index 1.79-2.41; length 0.14-0.18 mm; width 0.08-0.10 mm.

Species examined. *Haemagogus clarki* (Galindo, Carpenter, and Trapido), *Hg. leucocelaenus*, and *Hg. leucotaeniatus*.

Discussion. The following combination of features is most distinctive for the female genitalia of subgenus *Conopostegus*: cercus is moderately long (length is usually 0.14-0.16 mm, rarely 0.18 mm) and wide, the apex is strongly truncate and bears three long, very stout, somewhat flattened, nearly straight setae and several short, curved setae, the lateral margin has one long and one moderately long, stout setae on the distal portion, and the cercus index is 1.86-2.00; sternum VIII has the apex normally nearly flat, the lateral margins are nearly straight, and numerous setae cover the distal 0.95-0.98; tergum IX is V-shaped, setae are absent, and the area proximal to the lobes is relatively short; and postgenital lobe is long, wide, bears a pair of moderately long setae apically and 22-49 short setae on the distal area of the ventral surface, and the ventral postgenital lobe index is 1.52-1.69.

Published illustration of female genitalia. Zavortink (1972), *Hg. leucocelaenus*.

SUBGENUS *HAEMAGOGUS* WILLISTON

(Fig. 2)

Subgenus description. **Tergum VIII.** Proximal 0.20-0.45 retracted into segment VII; covered with minute spicules; apex convex, with several moderately long and few shorter, stout setae; numerous scales densely covering distal 0.61-0.92; few moderately long and short setae (in addition to apical setae) on distal 0.32-0.77 and more numerous along margins of sclerite; basal lateral seta present (rarely on only one side); VIII-Te index 0.56-0.82; VIII-Te/IX-Te index 1.46-2.38; length 0.25-0.42 mm; width 0.37-0.57 mm. **Sternum VIII.** Covered with minute spicules;

width slightly greater than length (rarely slightly less than length); apex very gently sloping caudally from apicolateral corners to minute (0.01-0.03 of dorsal VIII-S length), median emargination separating very small lobe on each side of midline; lateral margins slightly bowed outward; basal margin very gently convex; broad, spatulate scales few to numerous, forming elongate patch on each side on distal 0.68-0.99; numerous short and few moderately long, slender setae on distal 0.97-1.00; basolateral seta usually present; setae 1-4 (5)-S in more or less, irregular, diagonal line or in submedian line, 1-S near basomesal margin, 4- or 5-S apicolateral but some distance from apicolateral corner; apical, intersegmental membrane lightly pigmented but some species with few moderately pigmented spots or entirely moderately pigmented; intersegmental membrane between segments VII and VIII short or moderately long; VIII-S index 0.76-1.08; length 0.34-0.49 mm; width 0.37-0.50 mm. **Tergum IX.** Covered with minute spicules; more or less Y-shaped; apex with moderately long to long, narrow, thumb-shaped lobe on each side of midline, apical margin of lobe somewhat truncate or pointed, more darkly pigmented and bearing few longer, stouter spicules (often on small tuberculi), setae absent (*Splendens Assemblage*) or with 1-3 short, slightly curved setae on each lobe (rarely one of lobes without setae) (*Equinus Assemblage*), 2-5 total setae; area proximal to lobes relatively long, basal margin convex; IX-Te index 1.03-1.60; length 0.16-0.25 mm; width 0.11-0.19 mm; dorsal spheres present, small, darkly pigmented. **Insula.** Covered with minute spicules; moderately pigmented (some species with distal 0.25-0.40 lightly pigmented); long; tongue-like; 2-5 moderately long to long, slender setae on distal 0.35-0.60. **Lower vaginal lip.** Covered with short spicules; ventral tuft present. **Upper vaginal lip.** Covered with short spicules. **Spermathecal eminence.** Somewhat irregularly ovoid but with basal area flattened; few short, simple spermathecal eminence spicules on basolateral areas. **Postgenital lobe.** Covered with short spicules, lateral margins with longer, stouter spicules, those at approximately midventral length with basolateral denticles; moderately long; moderately wide; apex normally broadly rounded but few species with small (0.03-0.06 of dorsal PGL length), median emargination; ventral surface with 8-23 setae distally on each side of midline, 18-46 total setae (1 pair of apical setae moderately long and remainder short); dorsal surface with normally 1 pair (very rarely 2 pairs) of very short setae on distal 0.40-0.50; basal mesal apodeme present or absent; ventral PGL/Ce index 0.81-0.95; dorsal PGL index 0.91-1.28; ventral PGL index 1.78-2.40; ventral length 0.14-0.21 mm. **Proctiger.** With scattered small spicules; membranous. **Cercus.** Covered with short to moderately long spicules; moderately wide (some species with proximal portion wider); apex moderately wide, moderately truncate; apical margin with normally 3 (rarely 4) long, very stout, somewhat flattened, nearly straight setae and few short, curved setae; lateral margin with normally 1 long and 1 moderately long (only 1 moderately long seta when 4 setae on apex), stout setae on distal portion; base with narrow emargination near mesal margin (point at which apex of apical lobe of tergum IX is attached); scales normally absent (with 1 or few broad, spatulate scales on one or both cerci in *Hg. boshelli* Osorno-Mesa, *Hg. janthinomys* Dyar, *Hg. mesodentatus* Komp and Kumm, and *Hg. soperi* Levi-Castillo); dorsal surface with several short and 1 (rarely 2) long setae on distal 0.40-0.80; ventral surface with few short setae near apical margin; mesal margin straight or slightly concave at midlength; cercus index 2.07-2.93; Ce/dorsal PGL index 2.09-2.70; length 0.17-0.23 mm; width 0.06-0.10 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; with several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal, lightly to heavily pigmented area short.

Type species description (*Hg. splendens* Williston, Fig. 2). **Tergum VIII.** Proximal 0.35-0.40 retracted into segment VII; scales covering distal 0.78-0.87; setae on distal 0.60-0.77; VIII-Te index 0.72-0.75; length 0.29-0.33 mm; width 0.46 mm. **Sternum VIII.** Number of scales in lateral patches on distal 0.93-0.99; setae covering distal 0.99; apical intersegmental membrane lightly pigmented; VIII-S index 0.87-0.91; length 0.38-0.39 mm; width 0.42-0.44 mm. **Tergum IX.**

Apical lobes pointed, without setae; length 0.17-0.21 mm; width 0.13-0.14 mm. **Insula.** With 4,5 setae. **Postgenital lobe.** Apex broadly rounded; 9-19 setae distally (combined setae on dorsal and ventral surfaces) on each side of midline, 20-34 total setae; basal mesal apodeme circular; ventral PGL/Ce index 0.81-0.87; dorsal PGL index 1.14-1.18; ventral PGL index 2.21-2.32; ventral length 0.16-0.17 mm. **Cercus.** Apex with 3 long, very stout setae and few short, curved setae; lateral margin with 1 long and 1 moderately long, stout setae on distal portion; scales absent; dorsal surface with short setae on distal 0.40-0.56; cercus index 2.67-2.73; Ce/dorsal PGL index 2.15-2.50; length 0.18-0.21 mm; width 0.07-0.08 mm. **Accessory gland duct.** Basal area lightly pigmented.

Species assemblages within the subgenus based on morphological characters of the female genitalia.

I. Equinus Assemblage. Tergum IX. With 1-3 short, curved setae on each apical lobe (rarely one of lobes without setae), 2-5 total setae.

II. Splendens Assemblage. Tergum IX. Without setae.

Species examined.

I. Equinus Assemblage. *Haemagogus acutisentis* Arnell, *Hg. anastasionis* Dyar, *Hg. andinus* Osorno-Mesa, *Hg. baresi* Cerqueira, *Hg. capricornii* Lutz, *Hg. equinus* Theobald, *Hg. janthinomys*, *Hg. mesodentatus*, *Hg. panarchys* Dyar, and *Hg. soperi*.

II. Splendens Assemblage. *Haemagogus argyromeris* Dyar and Ludlow, *Hg. boshelli*, *Hg. celeste* Dyar and Nunez Tovar, *Hg. chalcospilans* Dyar, *Hg. iridicolor* Dyar, *Hg. lucifer* (Howard, Dyar, and Knab), *Hg. regalis* Dyar and Knab, and *Hg. splendens*.

Discussion. The following combination of features is most distinctive for the female genitalia of subgenus *Haemagogus*: cercus is moderately long (length is usually 0.18-0.23 mm, rarely 0.17 mm) and moderately wide, apex is moderately truncate and bears normally three (rarely four) long, very stout, somewhat flattened, nearly straight setae and several short, curved setae, the lateral margin has one long and one moderately long (only one moderately long seta when apex has four setae), stout setae on the distal portion, and the cercus index is 2.07-2.93; sternum VIII has the apex very gently sloping caudally from the apicolateral corners to a minute, median emargination that separates a pair of small lobes, the lateral margins are bowed outward, and numerous setae cover the distal 0.97-1.00; tergum IX is Y-shaped, has one to three short, slightly curved setae apically on each lobe (rarely is one of the lobes without setae) (Equinus Assemblage) or both lobes are without setae (Splendens Assemblage), and the area proximal to the lobes is relatively long; and postgenital lobe is moderately long, moderately wide, bears a pair of moderately long setae apically and 16-44 short setae on the distal area of the ventral surface, and the ventral postgenital lobe index is 1.78-2.40.

Coher (1948) provided a brief written description of the female genitalia of genus *Haemagogus* based on his examination of two species.

Published illustrations of female genitalia. Cerqueira (1943), *Hg. capricornii* and *Hg. spegazzinii* Brethes; Lane (1953), *Hg. capricornii* and *Hg. spegazzinii*; Morhig (1967), *Hg. albomaculatus* Theobald, *Hg. equinus*, *Hg. iridicolor*, *Hg. lucifer*, and *Hg. regalis*; and Arnell (1973), *Hg. janthinomys*, *Hg. panarchys*, and *Hg. splendens*.

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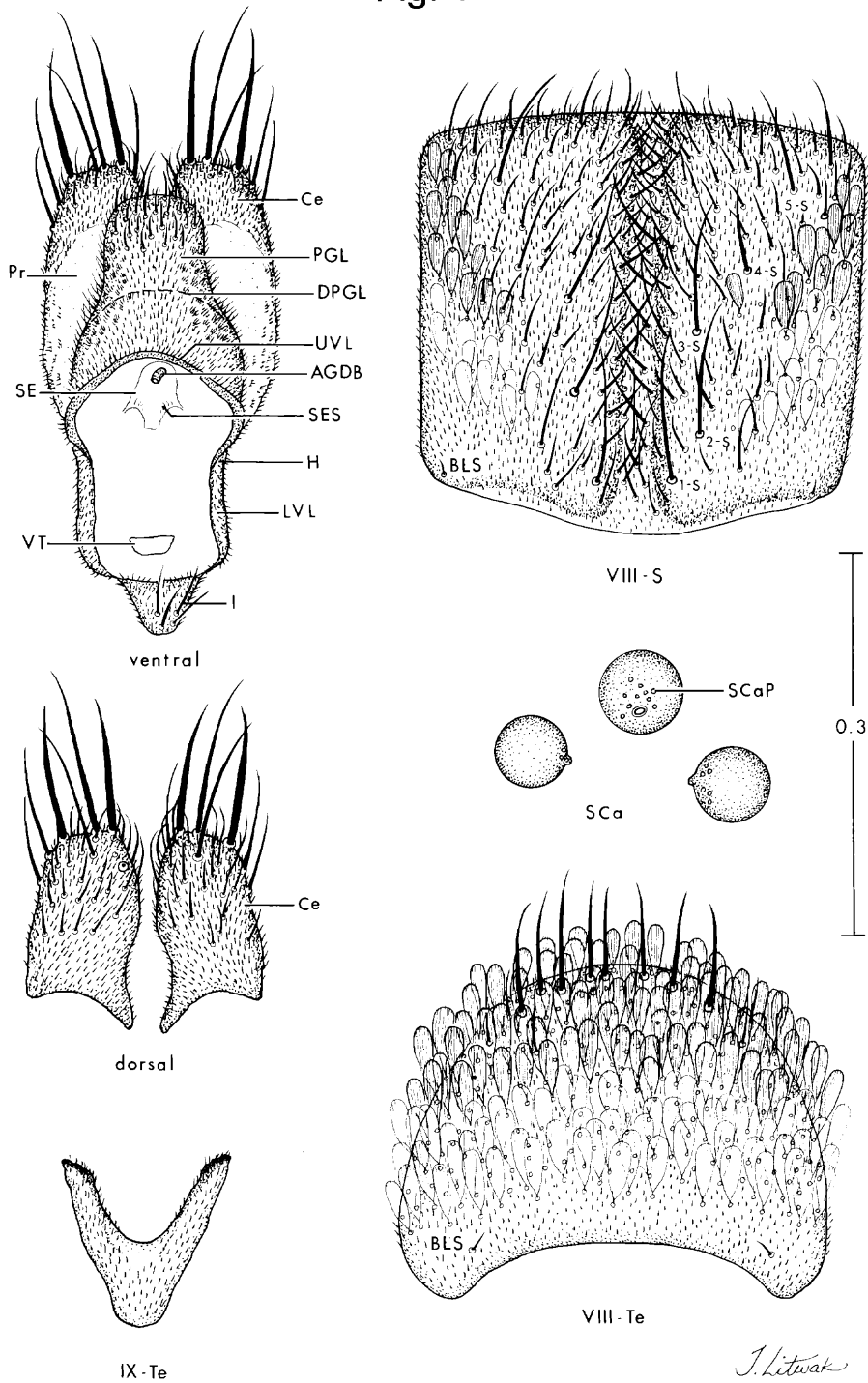
Figure 1. Female genitalia of *Haemagogus (Conopostegus) leucocelaenus* (Dyar and Shannon).

Figure 2. Female genitalia of *Haemagogus (Haemagogus) splendens* Williston.

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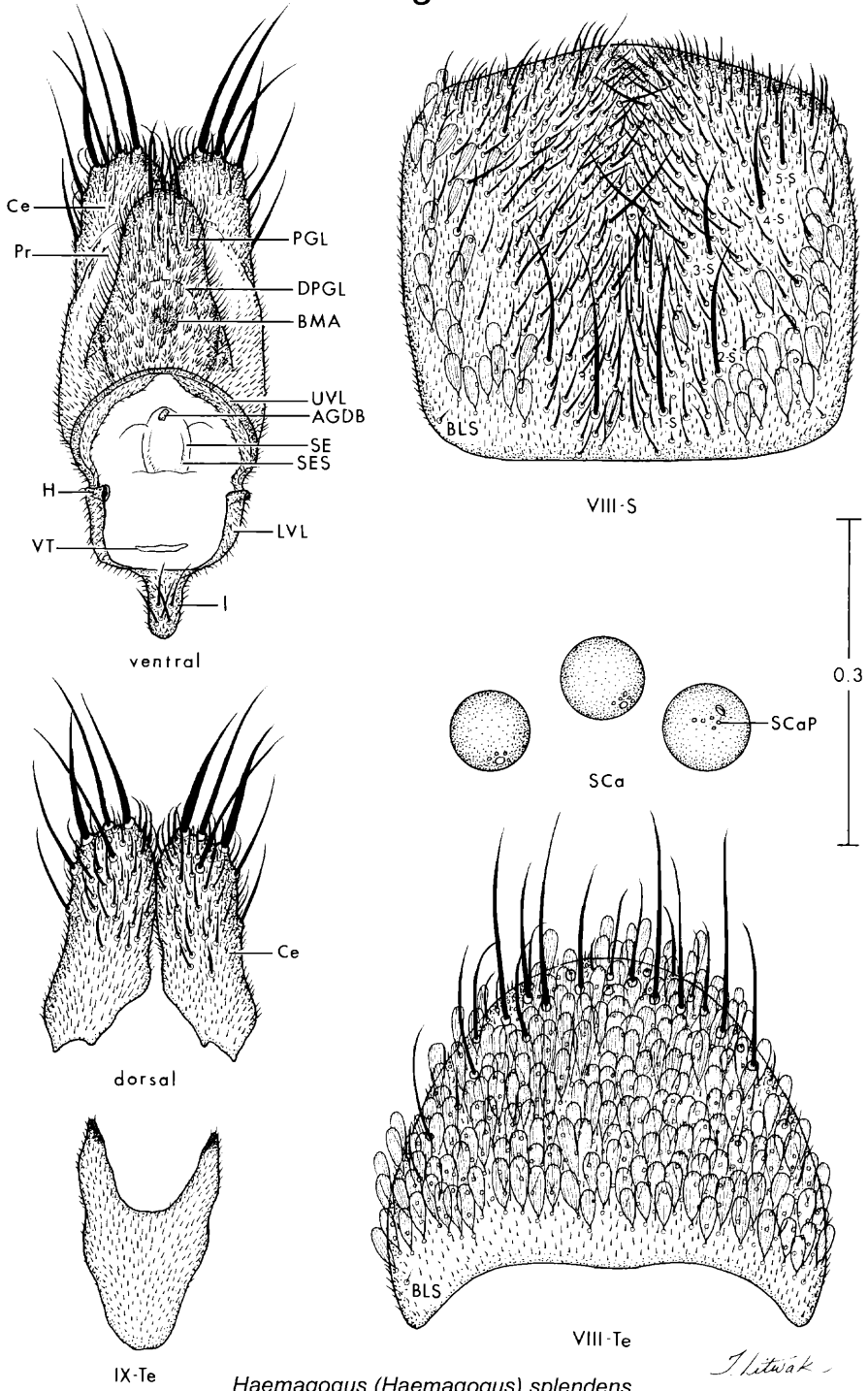
AGDB	= accessory gland duct base
BLS	= basal lateral seta
BMA	= basal mesal apodeme
Ce	= cercus
DPGL	= line of attachment of Pr to dorsal surface of PGL
DS	= dorsal sphere
H	= hinge
I	= insula
IX-Te	= tergum IX
LVL	= lower vaginal lip
mm	= millimeter
PGL	= postgenital lobe
Pr	= proctiger
SCa	= spermathecal capsule
SCaP	= spermathecal capsule pore
SE	= spermathecal eminence
SES	= spermathecal eminence spicule
UVL	= upper vaginal lip
UVS	= upper vaginal sclerite
VIII-S	= sternum VIII
VIII-Te	= tergum VIII
VT	= ventral tuft
1-5-S	= setae 1-5 of sternum VIII

Fig. 1



Haemagogus (Conopostegus) leucocelaenus

Fig. 2



Haemagogus (Haemagogus) splendens

J. Litwák

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