

A NEW SUBGENUS IN *WYEOMYIA* (DIPTERA: CULICIDAE), WITH THE RECLASSIFICATION AND REDESCRIPTION OF THE TYPE SPECIES, *SABETHES FERNANDEZYPEZI*¹

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ABSTRACT. *Sabethes fernandezypezi* is transferred to the genus *Wyeomyia* and designated as the type species of a new subgenus named *Caenomyiella*. The subgenus and species are described and contrasted with certain other nominal taxa in *Wyeomyia*. The larval and pupal exuviae of an undescribed species from Colombia contributed to the concept of the subgenus.

INTRODUCTION

Few genera of mosquitoes are as poorly known as the New World genus of *Wyeomyia* Theobald. This genus currently includes more than 100 recognized species which are generally incompletely defined and difficult to identify. The recognition of most species is based on cursory descriptions of the adults and superficial (partial) treatments of the immature stages where these are known. It is apparent that inattention to morphological characters in the larval and pupal stages is responsible for the unnatural classification of the genus proposed by Lane and Cerqueira (1942) and Lane (1953) and presently followed by mosquito workers (Knight and Stone 1977). The artificiality of the various subgeneric groups within the genus was noted previously by Belkin et al. (1970) and Zavortink (1986) and recently became especially apparent when one of us (ELP) examined virtually every *Wyeomyia* larva and pupa in the National Museum of Natural History (NMNH) Mosquito Collection for the development of modern keys to the mosquito genera of the New World. The structural diversity exhibited by the various species is enormous. Some species quite obviously have common phylogenetic origins while others appear to be much more closely related to species of other genera, particularly *Sabethes* Robineau-Desvoidy, than to species and groups currently placed in *Wyeomyia*. This paper and several to follow will provide some insight into the complexity and simplicity of relationships that exist between the species and groups which are lumped together in this genus and the genus *Sabethes*.

Sabethes fernandezypezi Cova Garcia, Sutil Oramas and Pulido F. was described from an unspecified number of male mosquitoes (Cova Garcia et al. 1974) deposited in

the Laboratorio de Entomologia, Division de Endemias Rurales, Maracay, Venezuela. In June 1988, Yasmin Rubio of the Ministry of Health and Social Welfare in Maracay kindly arranged a loan of the type material of this species and had it handcarried to the senior author for examination during a revisionary study of the genus *Sabethes*. As it turns out, the type material consists of only a holotype male with associated larval and pupal exuviae. The dissected genitalia of another specimen was received with the holotype. Examination of the holotype revealed that it represents a species of *Wyeomyia*, not a species of *Sabethes*. Consequently, an in-depth study of the species was undertaken, with particular emphasis on the larval and pupal stages. As a result of this study and the earlier exhaustive examination of *Wyeomyia* larvae and pupae by the junior author, the following discoveries were made: (1) the NMNH Mosquito Collection contains a single, previously unidentified fourth-instar larva of *fernandezypezi* from eastern Panama, (2) the immature stages of *fernandezypezi* are so distinct from those of other known species of *Wyeomyia* that the species should be placed into a separate subgenus, and (3) an undescribed species represented in the collection by a larval and pupal exuviae (no adult) from Colombia belongs in the same subgenus as *fernandezypezi*. In this paper we present a diagnosis and description of the new subgenus and a redescription of the species that Cova Garcia et al. (1974) described and named as *Sabethes fernandezypezi*.

The limited material available does not include adult females, and the subgeneric and species descriptions of the male are based entirely on the incomplete and damaged holotype of *fernandezypezi*. The poor condition of this specimen is probably why Cova Garcia et al. (1974) described only the male genitalia, larva, and pupa of this species. The specimen is somewhat teneral, the thorax collapsed, and the abdomen, right midleg and both hindlegs are missing. Tarsomeres belonging to the right mid- and hindlegs are encased in the associated pupal exuviae along with most of the scaling from the left midleg. The left

¹The views of the authors do not purport to reflect the views of the Department of the Army or the Department of Defense.

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wing and dismembered genitalia are mounted on slides. Other material used for the descriptions is indicated above and listed with available collection data in the "material examined" section.

The terminology and abbreviations used in the descriptions and illustrations follow Harbach and Knight (1980, 1982). Names for the gonostylar lobes, gonocoxital setae, and substructures of the aedeagus of the male are taken from Belkin et al. (1970). The system of reference for elements of seta 1-S of the larval siphon is adopted from Belkin (1962) and Zavortink (1986).

From our studies it is evident that certain previously published names now held in synonymy with currently accepted subgeneric divisions of *Wyeomyia* should be recognized for separate subgenera. This is particularly true of *Decamyia* Dyar which has been treated as a synonym of *Dendromyia* Theobald since Edwards (1932). In our opinion, *Decamyia* represents a distinct phyletic group and we hereby formally recognize it as a valid subgenus in *Wyeomyia*. This action is taken to help stabilize the internal classification of the genus and to facilitate the comparison of *Decamyia* and the new subgenus named below. *Decamyia*, as originally defined by Dyar (1919, 1928) includes *ulocoma* (Theobald), *pseudopecten* Dyar and Knab, and *felicia* (Dyar and Nunez Tovar). It should be noted that *Decamyia* was used informally as a subgenus of *Wyeomyia* in the series of published collection records for the project "Mosquitoes of Middle America" (see Heinemann and Belkin 1977 for explanation).

TAXONOMIC TREATMENT

Wyeomyia subgenus *Caenomyiella*, new subgenus

Type species. *Sabethes fernandezyepezi* Cova Garcia, Sutil Oramas and Pulido F., 1974, Venezuela. Included species: *Wyeomyia* sp. 69 (unpublished), slide no. CV600-1 (in NMNH), Colombia.

The subgenus *Caenomyiella* possesses the general characteristics of the genus *Wyeomyia*. Based on the holotype male of *fernandezyepezi*, it seems likely that adults are probably not much differentiated from those of other subgenera within the genus. The male genitalia are distinguished by the unique antlerlike development of lobe C of the gonostylus; pupae by the combination of seta 2-III located far mesad of seta 1, seta 6-VII borne ventrally, and a short paddle bearing a distal fringe of long spicules; and larvae by the distinctive maxilla with a long palpus, seta 15-C located near the middle of the labiogula and slightly posterior to seta 14, the comb with two types of scales in a single row, and the siphon with a single midventral row of pecten spines on the distal two-thirds. Additional diagnostic and differential characters for the pupal and larval stages are listed in Tables 1 and 2, respectively.

Female. Unknown.

Male. Incompletely known but probably resembling

Wyeomyia and *Decamyia* in features of ornamentation and external form. **Head:** Eyes adjoined above antennae. Vertex, occiput and postgena covered with broad decumbent scales, scales dark with bluish reflections on vertex and occiput, white on postgena; occiput without erect scales; ocular and interocular setae prominent. Clypeus and frons without setae or scales. Antenna not densely plumose; pedicel without scales; flagellomere 1 with scales. Proboscis slightly longer than antenna, slightly shorter than forefemur; dark-scaled. Maxillary palpus very short, about 0.04 length of proboscis; dark-scaled. **Thorax:** Scutum densely covered with moderately broad dark scales with dull bluish reflections, anterior promontory with few whitish scales in middle; median anterior promontory, anterior scutal fossal, supralar and prescutellar setae present. Scutellum with broad decumbent scales and well-developed setae, scales concolorous with scutal scales. Mesopostnotum with setae on midline near posterior margin, integument pale. Condition of paratergite with regard to scaling unknown. Anteprototum with dark scales and dark setae. Postprototum and pleura with small white spatulate scales, extent of pleural scaling uncertain, mesomeron, metameron and metapleuron probably without scales; pleural integument yellowish; prespiracular, prealar, upper proepisternal, lower mesokatepisternal and upper mesepimeral setae present. **Wing:** Dark-scaled; alula with piliform scales on margin distally; vein 1A terminating well beyond medio-cubital crossvein. **Halter:** Integument pale, pedicel and capitellum dark-scaled. **Legs:** Coxae largely covered with white scales; femora, tibiae and tarsi dark-scaled (scaling of hindfemur and -tibia unknown), femora and tibiae pale-scaled ventrally except at distal ends of tibiae. **Abdomen:** Unknown. **Genitalia:** Tergum and sternum IX indistinguishably fused to form continuous ring of sclerotization; tergum IX lobe small, with strongly developed setae; sternum with long slender caudal process projecting between gonocoxites. Gonocoxite without long setae except for long lateral and tergal triad; with distinct basal mesal lobe (median plate of Lane 1953; mesal plate of Belkin et al. 1970). Gonostylus with lobe C strongly developed, arising from sternomesal margin near base. Aedeagus broad, width about two-thirds length; submedian tergal arms weakly if at all connected, well sclerotized; apical tergal arms fused to form an apical tergal bridge (new term, *atb* in Fig.1); median sternal plates rather membranous, approximated. Proctiger normal; paraproct with toothed apex; cercal setae present.

Pupa. *Trumpet:* Gently curved; slightly flattened, not laterally expanded. **Abdomen:** Seta 1-I strongly developed; 2-II-VII very near posterior margin of tergum, 2-II lateral to seta 1 and 2-III-VII far mesad of seta 1; 3-V, VI mesad of seta 1; 6-II single, long, at least 2.0 length of 7-II, 6-VII ventral. **Paddle:** Short, length less than 1.5 greatest width, extending only slightly beyond genital lobe of either sex; apex fringed with long spicules which decrease rapidly and progressively in proximal direction along both margins.

Table 1. Comparison of certain pupal characters in four subgenera of *Wyeomyia*.

Character	<i>Caenomyiella</i>	<i>Decamyia</i>	<i>Wyeomyia</i>	<i>Zinzala</i>
Seta 1-I with 3-4 primary stems and numerous apical branches	Yes	Yes	Yes, varied	No, single
Seta 2-III-VII very near posterior margin of tergum and mesad of seta 1	Yes	Yes	Yes, varied	No, on anterior 0.5 of tergum and lateral to seta 1
Seta 2-II between 1,3-II; on same level or slightly anterior to these setae	Yes	Yes	Yes, except <i>atrata</i> Belkin, Heinemann, and Page	No, anterior and lateral to seta 1
Seta 2-III far mesad of seta 1	Yes	No	No, varied	No
Seta 6-II single, at least 2x length of 7-II	Yes	Yes	Yes	No
Seta 6-VII ventral	Yes	No	No	Yes
Paddle short, length 1.5x width	Yes	No, longer, length > 1.5x width	No, longer, length > 1.5x width	Yes
Paddle fringed with long filamentous spicules	Yes	Yes	No, except <i>mitchellii</i> (Theobald)	No
Paddle with long spicules on apical one-third of both margins	Yes	No, long on entire length	<i>mitchellii</i> with long spicules on entire length of outer margin	N/A

Larva. Head: Wider than long; occipital foramen transverse, slitlike, extending laterad to point not far behind seta 10-C; collar absent. Maxilla with distinctive shape and prominent apical tooth; maxillary palpus not fused with main body, long, about two-thirds length of maxillary body. Setae 4-7-C single, simple; 15-C inserted near midlength of labiogula; 14-C inserted more cephalad than 15-C. **Thorax:** Seta 1-P noticeably mesad and slightly caudad of 2,3-P, not borne on plate; 11-P,M,T single, stout, spinelike, 11-T stronger. Seta 4-T small, single or double; 13-T short to moderate in length, not much longer than 0.5 length of thorax. **Abdomen:** Seta 2-I-VII short, single, 2-III-VII far mesad of seta 1 and near midline, at most only slightly anterior to setae 1 and 4; 9-I-VI short, single; 13-II far forward of other setae of segment and near midline, 13-III-VI on level with or cephalad to seta 7. **Segment VIII:** Comb scales of 2 types in single uneven row, dorsal scales long and pointed with short fringe on sides at base, ventral

scales short, broad and fringed distally. **Siphon:** Short, with single midventral (posterior) row of pecten spines on distal two-thirds, spines sturdy, acuminate, with one or both margins minutely serrate. Siphonal setae arranged in distinct dorsolateral (2a-S) and ventrolateral (1a-S) rows. **Segment X:** Saddle without spicules on posterior margin.

Systematics. The subgenus *Caenomyiella* is introduced for *Wyeomyia fernandezyepezi* and an undescribed species previously recognized as *Wyeomyia* sp. 69 in unpublished collection records from Colombia (records mentioned but not included in Heinemann and Belkin 1978b). The natural affinities of these species cannot be determined with certainty at this time, primarily because the various subgenera of *Wyeomyia* are so poorly known and appear to be very heterogeneous groups of species. However, they show a number of similarities with species in *Decamyia*, *Wyeomyia*, and *Zinzala* Zavortink, and seem to be more closely related to these subgenera than to others within the

Table 2. Comparison of certain larval characters in four subgenera of *Wyeomyia*.

Character	<i>Caenomyiella</i>	<i>Decamyia</i>	<i>Wyeomyia</i>	<i>Zinzala</i>
Maxilla with distinctive apical tooth and large palpus	Yes	No	No, varied	No, palpus small
Seta 15-C near middle of labiogula and slightly posterior to seta 14-C	Yes	No, at same level	No, 14-C posterior to 15-C, except <i>nigritubus</i> Galindo, Carpenter and Trapido	No, 15-C near posterior margin
Seta 4-T small, single or double	Yes	No	No, except <i>nigritubus</i>	No, stellate
Seta 11-P,M,T single, spinelike; 11-T stronger	Yes	No, except 11-T	No	No, stellate
Seta 13-T not much longer than 0.5 length of thorax	Yes	No, very long	No, very long	No, very long
Seta 2-I-VII short, single	Yes	Yes/no, 2-I-III branched	Yes/no, usually with multiple branches	No, stellate
Seta 2-III-VII far mesad of seta 1 and near midline	Yes	No, in part, not near midline	No	No
Seta 2-III-VII at most only slightly anterior to setae 1 and 4	Yes	No, noticeably more anterior	No, far anterior	No, far anterior
Seta 9-I-VI short, single	Yes	No, branched	No, with 2 or more branches	No, stellate
Seta 13-II far anterior to other setae and near midline	Yes	No, posterior to other setae	No, posterior to other setae	No
Seta 13-III-VI on level with or anterior to seta 7	Yes	No	No, except <i>nigritubus</i>	Yes, except 13-VI
Siphon with single mid-ventral row of pecten spines	Yes	No, with 2 ventrolateral rows	No, pecten absent	No, pecten absent
Comb with 2 types of scales in single row	Yes	No, 2 or 3 rows	No, but in single row	No, but in single row
Saddle without spicules on posterior margin	Yes	No, with spicules	No, with spicules except 3 species	Yes

genus. The overall relatedness of these subgenera and the dissimilarity of *Caenomyiella* are evident from the character comparisons presented in Tables 1 and 2. The larval and pupal stages of *fernandezypezi* and species 69 are so very different from all of the species included in these apparently related subgenera that there is no doubt they belong to a separate phyletic line.

Etymology. *Caenomyiella* is the latinized diminutive of the Greek word *Caenomyia*, from *kaines*, new, and *myia*, fly. It is a feminine word meaning "new little fly". In keeping with the practice initiated by Reinert (1975), the three-letter abbreviation *Cae.* is recommended for this subgenus.

***Wyeomyia (Caenomyiella) fernandezypezi* (Cova Garcia, Sutil Oramas and Pulido F.)**

Sabethes fernandezypezi Cova Garcia, Sutil Oramas and Pulido F., 1974: 23. Holotype: male (242-50) with larval and pupal exuviae, left wing, and genitalia on four separate slides; La Raya, Municipio Altamira, Estado Barinas, Venezuela (DERM). NEW COMBINATION.

Wyeomyia sp. 75 of Heinemann and Belkin 1978a: 140 (Panama, collection record).

This species has not been treated in the literature since it was first discovered and described in 1974.

Female. Unknown.

Male. Adult known only from the incomplete holotype and the genitalia of another specimen. **Head:** Covered with broad decumbent scales, dark with bluish reflections on vertex and occiput, scales along lateral margin of eye with white tips, these overlap a narrow row of small appressed white scales along orbital margin, line formed by white tips of lateral scales continuous with broad white scales of subgena; ocular and interocular setae strong, dark. Antenna dark, length 1.55 mm; pedicel bare; base of flagellomere 1 with dark scales dorsomesally. Proboscis dark-scaled, somewhat lighter beneath; distal one-third slightly swollen; length 1.62 mm. Maxillary palpus short, apparently 2-segmented, length 0.07 mm, about 0.04 length of proboscis; dark-scaled. **Thorax:** Integument and setae of scutum and scutellum dark brown, scutum densely covered with moderately broad dark scales except for small patch of whitish scales in center of anterior promontory, scales of scutellum same color but broader; meso-postnotum with yellowish integument and cluster of 4 setae on midline just before junction with abdomen; paratergite obstructed by collapsed pleura; anteprenotum with broad dark scales and dark setae; postpronotum covered with white scales of same size and shape as pleural scales. Pleura collapsed, extent of scaling uncertain, scales spatulate, white and much smaller than scutal scales, lower part of mesopleuron apparently largely denuded, mesomeron, metameron and metapleuron probably without scales; pleural integument and setae yellowish except for single

dark prespiracular seta. **Wing:** Length 2.80 mm; alula with piliform setae on margin distally; margin of wing adjacent to alula with some long hairlike fringe scales which grade over a short distance into typical fusiform scales; entirely dark-scaled. **Halter:** Scabellum without scales, integument pale; pedicel and capitellum with dark scales with bluish luster. **Legs:** Coxae and trochanters largely covered with white scales like those of pleura; fore- and midfemora dark-scaled with white scales on entire length of ventral surface, hindfemora missing; fore- and midtibiae mainly dark-scaled with white scales on ventral surface except distally, hindtibiae missing; tarsi dark-scaled (hindtarsomeres 2-5 present in pupal exuviae). **Abdomen:** Missing. **Genitalia** (Fig. 1): Described and figured from the holotype and another specimen. Tergum and sternum IX fused laterally, forming a rather broad ring of sclerotization; tergum IX lobe small, with 2 flattened lanceolate setae that are slightly bent laterad; sternum IX with long, narrow, spiculate projection between bases of gonocoxites. Gonocoxite roughly pear-shaped; sternal and lateral surfaces apparently without long setae and scales, lateral surface with diagonal row of short setae at apex and alveolus of long lateral about two-thirds from base, tergal triad borne about 0.5 from base on tergal margin; basal tergal lobe nearly triangular in shape, with numerous short needlelike setae on proximal part and 2 stout longer setae on distal corner. Gonostylus about two-thirds length of gonocoxite, with 3 lobes developed; median lobe (M) long, rather slender and cylindrical, with numerous tiny setae mainly on mesal and tergal side at apex; lobe E a digiform process arising just beyond midlength from tergal surface of lobe M, with few small setae on tergal margin and apex; lobe C a large hornlike process borne on sternomesal margin near base of main lobe, laterally compressed, roughly crescentic in lateral view and nearly parallel with and almost as long as lobe M, proximal part with prominent sternal crest, distal part lengthened, curved and hooklike, and base with tiny hairlike spicules. Aedeagus with submedian tergal arms (sta) bent toward each other but not joined; apical tergal arms joined and forming a rather broad apical tergal bridge (atb); median sternal plate simple, rather membranous. Proctiger (in lateral view) with broad basal sclerotization (tergum X) attached to base of rodlike paraproct; apex of paraproct slightly enlarged, toothed, and bearing 2 cercal setae.

Pupa (Fig. 1). Known only from exuviae of holotype; character and positions of setae as figured. **Cephalothorax:** Lightly tanned, scutum slightly darker. Seta 1-CT very long, double, sigmoid; 5-CT long, double. **Trumpet:** Yellow, short, gradually expanded distally, index 4.33 (width measured at midlength). **Abdomen:** Lightly tanned, middle of tergum I darker, posterior margins of terga and anterior margins of sterna also darker; length about 3.0 mm. Seta 1-I well-developed, dendritic; 2-II-VII single, very near posterior margin of tergum, 2-II between and in line with or only slightly anterior to setae 1 and 3, 2-III mesad of seta

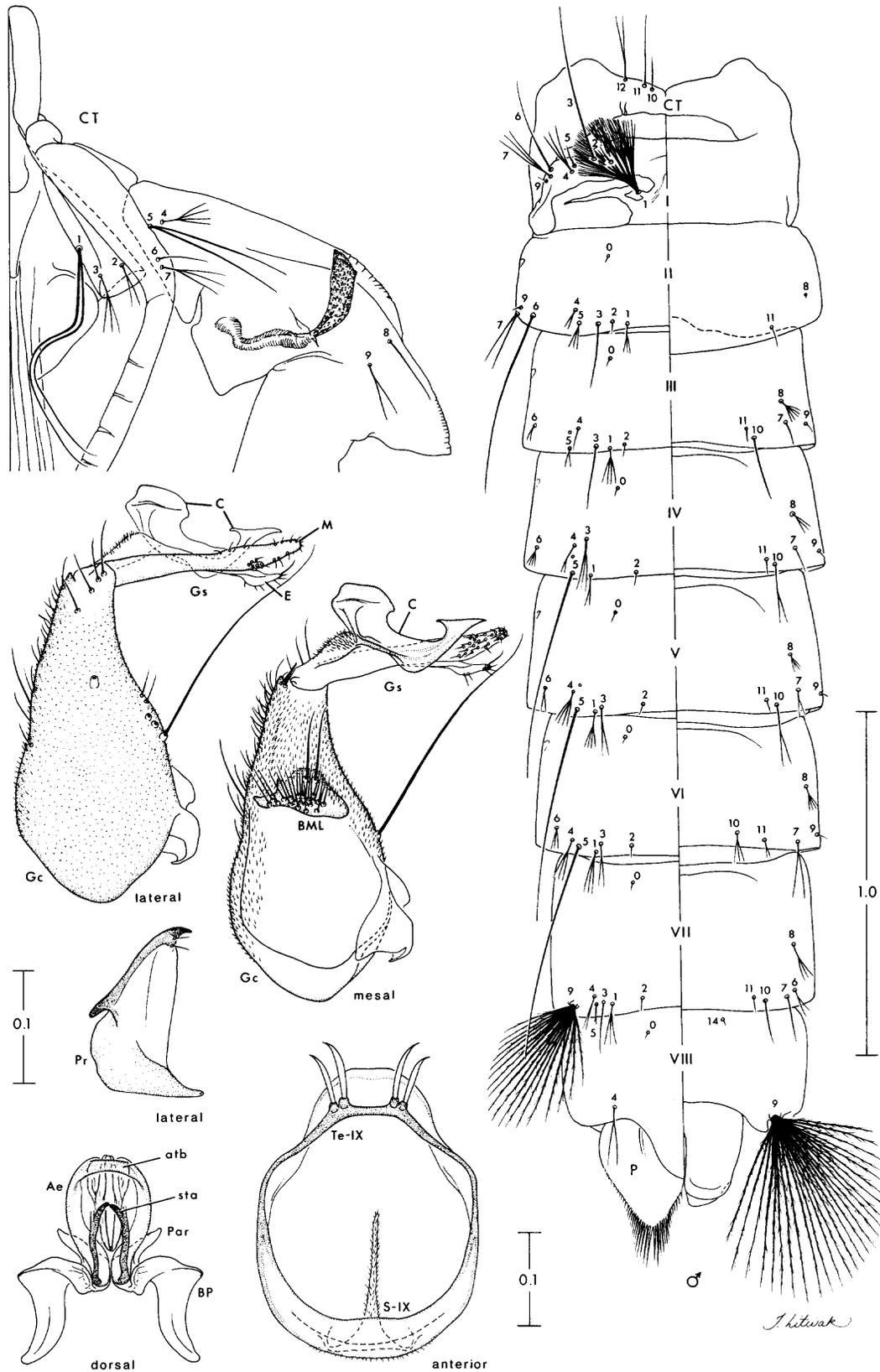


Fig. 1. *Wy. (Cae.) fernandezyepezi*. Male genitalia and pupa.

1 which in turn is mesad of seta 3, 2-IV-VII far mesad of seta 1; 6-II single, posterior to seta 9 and at same level as seta 7, significantly longer than seta 7, 6-VII ventral and only slightly lateral to seta 7; 3-IV well forward of seta 1, 3-V-VII only slightly anterior to seta 1 (also slightly mesad of this seta on V, VI and lateral to it on VII); 5-IV-VI long, single, each about 1.5 length of following tergum; 9-VIII considerably longer than paddle. Left side of segment V with anomalous single seta anterior to seta 4 (not shown in figure). *Genital lobe*: Lightly tanned; bilobed distally; length about 0.3 mm. *Paddle*: Only slightly longer than genital lobe, index 1.28.

Larva (Fig. 2). Described from exuviae of holotype and one fourth instar; character and positions of setae as figured. *Head*: Wider than long; length about 1.6 mm; width about 1.8 mm; lightly and evenly tanned. Maxilla with distinctive shape and strong apical tooth; maxillary brush a tight cluster of flexible filaments; palpus attached (not fused) and long, about two-thirds length of maxillary body. Dorsomentum with 9 or 10 teeth on either side of median tooth, all rounded apically. Hypostomal suture complete, nearly straight, extending obliquely from anterior margin to posterior tentorial pit which is well removed from occipital foramen; occipital foramen (OF) with long dorsolateral slitlike extension on either side, margin heavily tanned at extreme lateral end of slit; collar absent. Seta 1-C long, rather stout, pigmented, bent ventrad; 4-7-C single, simple; 14-C double, long, nearly 0.5 length of head capsule, anterior to 15-C; 15-C inserted halfway between anterior margin and line drawn between posterior tentorial pits. *Antenna*: Short, about 0.3 length of head capsule; lightly tanned. Seta 1-A single, about 0.2 from apex. *Thorax*: Integument hyaline, smooth. Setae 4-7-P, 5,6,8-M and 7,13-T on small basal plates; pleural groups 9-12-P,M,T on common basal plates. Seta 1-P with fewer branches than most other species of *Wyeomyia*, double; 7-P with 6 or 7 branches, shorter than usual, same length as 4-P, about 0.6 length of 5-P, distinctly posterior to 5,6-P. Seta 7-M weak, with 4 branches. Seta 5-T single, simple; 13-T about 0.5 length of thorax. *Abdomen*: Integument hyaline, smooth. Seta 1-I,II short and with 3-6 branches, 1-III longer and with 2-4 branches, 1-IV-VI longer still and with 2 strong branches of unequal length, 1-VII relatively long with 3 or 4 branches; seta 2 as described for subgenus, 2-III-VII at most only slightly cephalad of setae 1 and 4; seta 3 at least double on II-IV, VI, single and longer on V, single and very long on VII; 5-I short and single, 5-II-VII longer and double (5-II,III each triple one time); 6-I-VI long and well-developed, 6-I with 4 or 5 branches, 6-II with 3 or 4 branches and 6-III-VI double with one branch much longer than the other; 13-I,II far cephalad of seta 9, 13-III-VII near same level as 9, 13-I of relatively moderate length and with 3-6 branches, 13-II short and single, 13-III short with 2-4 branches, 13-IV,V slightly longer and double, 13-VI quite small with 4 branches, 13-VII similar to 13-III but

double or triple. *Segment VIII*: Comb as described for subgenus, with 7-12 scales. *Siphon*: Index about 2.7 (width measured at base); widest at base, tapering distally; lightly and evenly tanned. Pecten of 6 spines in median posterior (ventral) row extending from point about 0.3 from base to near apex; spines long and slender, decreasing in length distally, one or both lateral edges minutely spiculate (not evident from lateral aspect of siphon). Seta 1-S near base, 4-branched, distinctly out of line with ventral accessory setae (1a-S) which are more ventral; 1a-S in straight row, all single; 6 or 7 dorsal accessory setae (2a-S) in slightly curved row; 2-S slightly sinuate, flattened and sharply pointed. *Segment X*: Saddle incomplete; lightly tanned, darker dorsally; length about 1.8 mm, siphon/saddle index about 3.2. Setae 1-3-X very long, 1,3-X double, 2-X with 4 or 5 branches; 4-X of moderate length, about one-third length of 1-3-X, double or triple.

Bionomics. The immature stages of this species and *Wyeomyia* species 69 were collected in bromeliads (see below). Other than this nothing is known about the bionomics of these forms.

Systematics. *Wyeomyia fernandezypezi* is most closely related to *Wyeomyia* species 69 based on the common possession of certain features of the larval and pupal stages. These features are treated as diagnostic characters of the new subgenus. Characters for separating these species are not given here because too few specimens were available for critical comparison and the potential differences which we noted in the larval and pupal stages may prove to be unreliable for separating the species when more specimens become available. The adults of these species could not be compared because the female of *fernandezypezi* and both sexes of the undescribed species are unknown.

Material examined. *Wyeomyia fernandezypezi* - Holotype male (242-50) with detached left wing, dissected genitalia, and larval and pupal exuviae on four separate slides (DERM; the adult labeled "T.2144-5" and each slide labeled "242-50," the adult stored in glass vial labeled "*Sabethes fernandezypezi*," labels bearing the following information were added by us to each of these specimens: "VENEZUELA: 242-50/Estado Barinas/Municipio Altamira/La Raya; bromeliad//*Sabethes fernandezypezi*/Cova Garcia et al."). Also examined were 1 male genitalia (deposited with holotype, not a paratype, labeled "2140-3," no other data) and 1 fourth-instar larva (NMNH; PA 433-1, Panama, Darien, Pucro, Rio Tacarcuna valley, 600 m, 30 Jun 63, bromeliad 2 m above ground in forest, Wy. sp. 75).

Wyeomyia species 69 - The larval and pupal exuviae of the undescribed species of *Caenomyiella* examined during this study are identified with the following collection data: CV600-1, Colombia, Metz Province, Villavicencio, Pozo Azul, Restrepo Rd, 19 Aug 48, small bromeliad 2 cm above ground along path above pool (total contents).

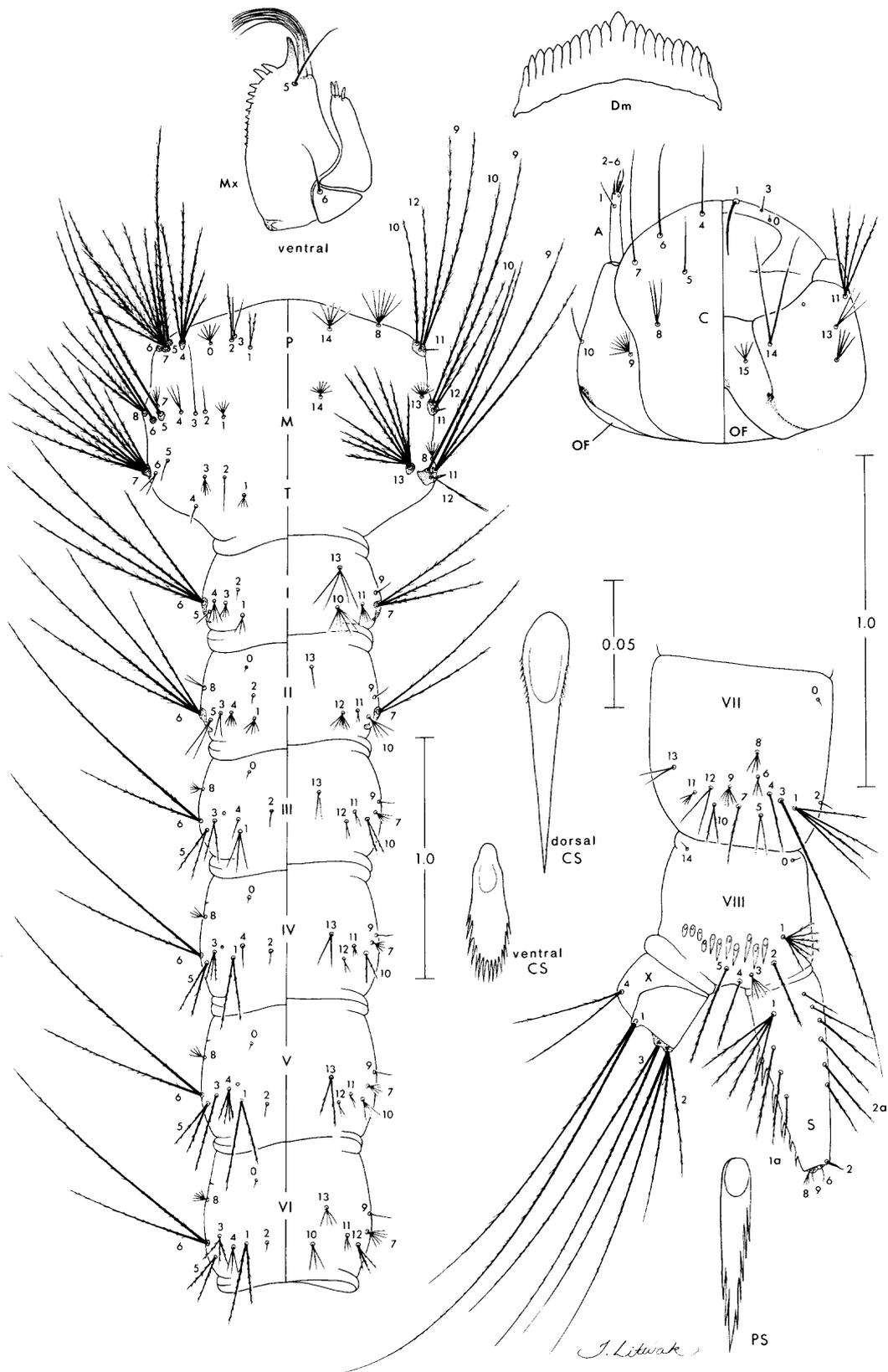


Fig. 2. *Wy. (Cae.) fernandezyepesi*. Larva.

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REFERENCES CITED

- Belkin, J.N. 1962. The mosquitoes of the South Pacific (Diptera: Culicidae). 2 vols. University of California Press. Berkeley and Los Angeles. xii + 608 pp. and 412 pp.
- Belkin, J.N., S.J. Heinemann and W.A. Page. 1970. Mosquito studies (Diptera: Culicidae) XXI. The Culicidae of Jamaica. Contrib. Am. Entomol. Inst. (Ann Arbor) 6(1):1-458.
- Cova Garcia, P., E. Sutil Oramas and J. Pulido F. 1974. *Sabethes fernandezyepezi* n.sp. Bol. Inf. Dir. Malariol. San. Amb. 14:23-24.
- Dyar, H.G. 1919. A revision of the American Sabethini of the *Sabethes* group by the male genitalia (Diptera: Culicidae). Insec. Inscit. Menst. 7:114-142.
- Dyar, H.G. 1928. The mosquitoes of the Americas. Carnegie Inst. Wash. Publ. No. 387:616 pp.
- Edwards, F.W. 1932. Genera Insectorum. Diptera. Fam. Culicidae. Fascicle 194. Desmet-Verteneul, Bruxelles. 258 pp., 5 pl.
- Harbach, R.E. and K.L. Knight. 1980. Taxonomists' glossary of mosquito anatomy. Plexus Publishing, Inc., Marlton, NJ. 415 pp.
- Harbach, R.E. and K.L. Knight. 1982. Corrections and additions to *Taxonomists' glossary of mosquito anatomy*. Mosq. Syst. (1981) 13:201-217.
- Heinemann, S.J. and J.N. Belkin. 1977. Collection records of the project "Mosquitoes of Middle America" 7. Costa Rica (CR). Mosq. Syst. 9:237-287.
- Heinemann, S.J. and J.N. Belkin. 1978a. Collection records of the project "Mosquitoes of Middle America" 10. Panama, including Canal Zone (PA, GG). Mosq. Syst. 10:119-196.
- Heinemann, S.J. and J.N. Belkin. 1978b. Collection records of the project "Mosquitoes of Middle America" 12. Columbia (COA, COB, COL, COM). Mosq. Syst. 10:493-539.
- Knight, K.L. and A. Stone. 1977. A catalog of the mosquitoes of the world (Diptera: Culicidae). 2nd edition. Thomas Say Found. 6:xi + 611 pp.
- Lane, J. 1953. Neotropical Culicidae. Vols. 1 and 2. University of Sao Paulo, Sao Paulo, Brazil. 1,112 pp.
- Lane, J. and N.L. Cerqueira. 1942. Os sabetineos da America (Diptera: Culicidae). Arq. Zool. Estado Sao Paulo 3:473-849.
- Reinert, J.F. 1975. Mosquito generic and subgeneric abbreviations (Diptera: Culicidae). Mosq. Syst. 7:105-110.
- Zavortink, T.J. 1986. *Zinzala*, a new subgenus of *Wyeomyia* with two new species from pitcher-plants in Venezuela (Diptera: Culicidae, Sabethini). Wasmann J. Biol. (1985) 43:46-59.