

A New Species of *Culex (Melanoconion)* from  
Southern South America (Diptera: Culicidae)<sup>1</sup>

Ralph E. Harbach, E.L. Peyton and Bruce A. Harrison

Walter Reed Biosystematics Unit  
NHB-165, National Museum of Natural History  
Washington, DC 20560

**ABSTRACT.** The adult, larval and pupal stages of *Culex (Melanoconion) glyptosalpina*, a new species from southern South America, are described and illustrated. The male genitalia of a related species, *Culex (Melanoconion) intricatus* Brèthes, are illustrated and compared with those of the new species. The known distribution and bionomics of the new species are presented.

In a report on mosquito collections made during May 1982 from the area of Rincón Del Tigre, southeastern Bolivia, Peyton et al. (1983) listed and discussed a species of *Culex (Melanoconion)* near *intricatus* Brèthes. They suggested that this species was very likely undescribed, but deferred judgment on the significance of noted differences in the male genitalia until a more detailed comparison could be made with specimens of *intricatus* from other localities.

Duret (1954) called attention to 3 atypical males of *intricatus* from Argentina which differed from typical *intricatus* in the character of the lateral setal patch and the foliform seta of the gonocoxite. Duret and Barreto (1956) and Duret (1969) reported additional specimens of this form from Brazil (4♂) and Paraguay (21♂), respectively. We have examined all of the specimens of *intricatus* available to us (11♂) from Brazil and Paraguay and compared these with the specimens from Bolivia. We conclude that the Bolivian specimens are conspecific with the atypical males reported by Duret (1954) and that the morphological differences noted between this form and *intricatus* are constant specific differences (Figs. 2,3). We take this opportunity to name and fully describe the species collected in Bolivia as *Culex (Melanoconion) glyptosalpina*.

The terminology used follows Harbach and Knight (1980) except that siphon indices were calculated from the basal width of the siphon rather than width measured at midlength. The term "siphon/saddle index" is used for the ratio of siphon length to saddle length instead of the misleading term of "saddle/siphon index."

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<sup>1</sup> The views of the authors do not purport to reflect the position of the Department of the Army or the Department of Defense.

*Culex (Melanoconion) glyptosalpinx*, New Species

*Culex (Melanoconion) intricatus?* of Duret 1954:115.

*Culex (Melanoconion) intricatus* of Duret and Barreto 1956:86 (in part, 4 males from the state of São Paulo, Brazil [exact localities not specified], male genitalia in Fig. 1); Duret 1969:7.

*Culex (Melanoconion)* sp. near *intricatus* of Peyton et al. 1983:72; Peyton et al. 1984:183.

*Adult.* A small dark species closely resembling *Culex intricatus*, but differing in details of the gonocoxite of the male genitalia (Fig. 3).

**FEMALE.** Almost entirely clothed in dark brownish-black scales. *Head:* Antenna dark, length about 1.6 mm; flagellum normal, whorls normally with 6 setae. Proboscis entirely dark-scaled; length 1.3-1.5 mm, mean 1.4 mm. Maxillary palpus entirely dark-scaled; length 0.24-0.28 mm, mean 0.25 mm, about 0.18 length of proboscis. Vertex (Fig. 1A) with broad spatulate scales, these dark dorsally, dingy white laterally; forked scales dark; occipital region with some dark falcate scales. *Cibarial armature:* Cibarial bar (Fig. 4) concave; with 9 stout, curved, blunt teeth. Cibarial dome nearly circular in outline, produced anteriorly in middle; surface with short, indurated, sharp-pointed, posteriorly-directed denticles. *Thorax:* Integument black. Scutum with very fine falcate scales (Fig. 1B) of uniform size and color, brownish black with reddish-brown reflections; scutal setae prominent (acrostichal setae absent), brownish black with golden or reddish reflections. Scutellar scales same as scutal scales; lateral lobes each with 3 or 4 large setae, median lobe usually with 6 large setae. Anteprenotum without scales; with evenly dispersed dark setae. Postpronotum with scales same as scutal scales (Fig. 1B,C); with 4-6 dark setae on posterodorsal margin. Pleural setae (Fig. 1C) golden brown, darker on prealar knob: about 10 upper proepisternal, 4 or 5 prealar, 5-8 upper mesokatepisternal, 7-9 lower mesokatepisternal, 5-7 upper mesepimeral and 1 lower mesepimeral. Pleura with scales on mesokatepisternum only (Fig. 1C,D): nearly colorless spatulate scales on upper corner and small patch of white spatulate scales on lower posterior border. *Wing:* Length 2.4-2.9 mm, mean 2.7 mm; cell  $R_2$  1.1-1.3 of  $R_{2+3}$ , mean 1.2; cell  $M_1$  0.7-0.8 of cell  $R_2$ ; subcosta intersects costa beyond furcation of  $R_{2+3}$ . Dorsal scaling (Fig. 1E-G): appressed spatulate scales on costa, subcosta,  $R_s$ ,  $R_1$ ,  $R_{4+5}$ , distal 0.5 of  $M_1$ ,  $M_2$ ,  $M_{3+4}$ , mcu, CuA and 1A; linear plume scales on  $R_s$ ,  $R_{2+3}$ ,  $M$ ,  $M_{1+2}$  and proximally on  $M_1$ ; inclined, narrow spatulate scales on  $R_2$  and  $R_3$ ; remigium with appressed spatulate scales and 2 or 3 distal setae. Ventral scaling: appressed spatulate scales on costa, subcosta,  $R_s$ ,  $R_{2+3}$ ,  $R_2$ ,  $R_3$ ,  $M$ ,  $M_{2+3}$  and proximally on  $M_2$ ; linear plume scales on proximal 0.5 of  $R_1$ , proximal 0.5 of  $R_{4+5}$ ,  $M_{3+4}$ , mcu, CuA beyond mcu and on middle of 1A; inclined, narrow spatulate scales on proximal 0.5 of  $R_1$ , proximal 0.5 of  $R_{4+5}$  and distally on 1A; CuA before mcu and proximal 0.5 of 1A devoid of scales. *Halter:* Scabellum and ventral portion of pedicel pale; capitellum and dorsal portion of pedicel dark. *Legs:* Anterior surface of forecoxa dark-scaled; anterior surfaces of mid- and hindcoxae with longitudinal patch of nearly colorless scales. Antero- and posteroventral surfaces of foretrochanter dark-scaled, mid- and hindtrochanters with anteroventral surface dark-scaled and posteroventral surface pale-scaled. Fore- and midfemora mainly dark-scaled, posterior surface of forefemur with indistinct longitudinal stripe of dingy pale scales, posteroventral surface of midfemur with dingy pale scales; hindfemur with complete dark dorsal stripe, gradually

widening distally, expanded over whole of anterior and posterior surfaces at apex. Tibiae and tarsi entirely dark-scaled. *Abdomen*: Tergum I with median posterior patch of dark scales; terga II-VII dark-scaled with basolateral patches of white scales; tergum VIII entirely dark-scaled. Sterna II-VII with broad basal white bands, bands usually constricted in middle; sternum VIII usually without scales, lateral patches of white scales sometimes present. *Genitalia* (Fig. 4): Tergum IX narrowed in middle, posterolateral margin of either side with 10-13 setae. Upper vaginal lip narrow, distinct; lower vaginal lip and insula indistinct; about 9 insular setae in cluster. Upper vaginal sclerite distinct; U-shaped, thick, thickest at bottom of U. Post-genital lobe short, broadly rounded distally; with 5-10 setae on either side of midline, setae mostly on ventral surface.

MALE. Like female except for the following sexual differences. *Head*: Antennae strongly plumose; length about 1.7 mm. Proboscis with false joint about 0.6 from base. Maxillary palpus entirely dark; length about 2.3 mm, exceeding proboscis length by length of palpomere 5; palpomeres 4 and 5 densely setose, palpomere 3 with 4-6 setae at apex. *Abdomen*: Tergum II entirely dark-scaled or with a few white scales on basolateral areas; terga III and VII with basolateral white patches; terga IV-VI with basal white bands, bands narrowed medially, sometimes incomplete in middle, particularly on tergum IV; tergum VIII (ventral in position) with basolateral white patches and deep V-shaped median posterior emargination. Basal white bands often incomplete on anterior sterna; sternum VIII (dorsal in position) with basolateral white patches. *Genitalia* (Figs. 2,3): Gonocoxite stocky, outer margin convex, inner concave; ventrolateral setae strongly developed, mesal surface with 5-6 rows of small setae extending from base to level of subapical lobe, lateral surface with patch of short sparse setae (lsp, Fig. 3) at level of subapical lobe, proximal part of ventrolateral surface with scales; subapical lobe distinctly divided, divisions approximated; proximal division with 2 arms, basal arm shorter, each with 1 long apical sinuous seta (setae *a* and *b*); distal division elongate, with 8 apical setae, 1 long hooked seta (*h*), 1 short and 1 long saberlike seta (*s*), 1 narrow asymmetrical foliform seta (*l*) and 4 narrow appressed flat setae (*f*) of different lengths. Gonostylus slender, curved and widened distally on lateral side, with wrinkled crest before apical snout on ventral surface; gonostylar claw short, broadest apically, troughlike. Phallosome with lateral plates and aedeagal sclerites of equal length; aedeagal sclerite narrow and curved in lateral view, anterior margin thickened, dorsal end narrowly fused to base of lateral plate; distal part of lateral plate with apical, ventral and lateral processes, apical process broad at base, pointed at apex and bent laterally, ventral process short, blunt and curved laterally, lateral process longer, slender, tapered, nearly pointed and directed dorsolaterally; base of lateral plate with stout dorsal process, base of this process continuous with thickened margin of aedeagal sclerite; aedeagal sclerites not connected by dorsal aedeagal bridge. Proctiger elongate; paraproct narrow distally, expanded basally, base articulated with posterolateral margin of tergum X, crown with row of 10-12 short simple blades. Cercal sclerite long and narrow, broadest anteriorly; 1-3 cercal setae. Tergum X large, concavo-convex with dorsal surface concave, somewhat ovoid from dorsal aspect with broadest part mesal.

PUPA (Fig. 4). Placement and character of setae as figured; range and modal number of branches listed in Table 1. *Cephalothorax*: Lightly but unevenly tanned, legs and metathorax darker. Setae 1,2-CT usually with 4

branches (3-6); 3,4,6,7,9-CT usually double; 5-8-CT frequently with 4 branches (3-6), 5-CT rarely double; 10-CT variable, often with 9 branches (7-15); 11-CT normally single, rarely double, longer than 10,12-CT; 12-CT usually triple (2-4). *Trumpet*: Moderately tanned; slender, cylindrical; index 5.8-8.0, mean 6.5; tracheoid area slightly darkened, extending about 0.5 from base; pinna very small, about 0.1 of trumpet length, lateral margin with conspicuous funnel-shaped indentation or notch; meatus with short slit extending about 0.1 of trumpet length from most proximal margin of spiracular opening. *Abdomen*: Lightly tanned, anterior margins of terga darker, particularly on terga II-IV; length 1.9-2.3 mm, mean 2.1 mm. Setae 1-III-V multiple; 2-III-V mesal to seta 1, 2-VI,VII lateral to seta 1; 3-I single, 3-II,III usually double, occasionally single; 5-IV-VI about same length as following tergum, 5-IV multiple, most often with 6 branches (3-7), 5-V most often triple (2-4), 5-VI normally double, rarely triple; 6-III usually double, infrequently with 3 or 4 branches, 6-IV-VI usually triple (2-5); 9-VII relatively short, usually triple, sometimes with 4 branches; 9-VIII usually with 4 or 5 branches, infrequently with 6, inserted on ventral surface. Posterolateral angle of tergum VIII acute. *Genital lobe*: Lightly tanned in female, darker in male; length about 0.12 mm in female, 0.28-0.30 mm in male. *Paddle*: Very lightly tanned, midrib and buttress darker; midrib strong except at apex; buttress developed at base only; margins smooth; length 0.58-0.67 mm, mean 0.62 mm, width 0.41-0.50 mm, mean 0.46 mm, index 1.3-1.5, mean nearly 1.4. Seta 1-P single; 2-P about 0.5 length of 1-P.

LARVA (Fig. 5). Placement and attributes of setae as figured; range and modal number of branches given in Table 2. *Head*: Wider than long; length 0.54-0.62 mm, mean 0.57 mm; width 0.85-1.12 mm, mean 1.01 mm; moderately tanned, anterior part of dorsal apotome and area of lateralia around compound eyes lighter, indefinite darker transverse band between insertions of setae 4,7-C. Median labral plate distinct dorsally, anterior margin concave between insertions of seta 1-C. Labiogula longer than broad, broader posteriorly; hypostomal suture complete, extended posteriorly from posterior tentorial pit to collar. Collar poorly developed, heavily tanned. Dorsomentum usually with 6 teeth on either side of median tooth, sometimes with 5 or 7 on either side. Seta 1-C spiniform, dark; 2,3-C absent; 4-C very short, single or double; 5-C most often single, sometimes double; 6-C long, single; 8-10-C similar, all branched (2-6); 13-C with 2-4 branches, often double, near level of 11-C; 14,15-C at same level, of equal length, 14-C usually triple (2-4), 15-C often with 6 branches (6-10). *Antenna*: Length 0.50-0.55 mm, mean 0.53 mm, about equal to length of head; lightly tanned with dark ring at base and level of seta 1-A. Scape developed; pedicel weak, partially detached from flagellum; part of flagellum proximal to seta 1-A curved and aciculate, distal part thinner, straighter and smooth except for few aciculae laterally near seta 1-A; seta 1-A 0.67 from base; antennal puncture distinct. Seta 1-A large, with 15-25 branches. *Thorax*: Integument hyaline, covered with tiny spicules, spicules more conspicuous laterally; lateral areas of pro- and mesothoracic segments with irregular transverse patches of black pigment granules under integument, metathorax ringed with irregular band of similar granules; tubercles of all large setae moderately tanned, setae 1-3-P and 9-12-P,M,T on common tubercles. Setae 1,2-P long, single; 3-P about 0.5 length of 1,2-P, usually double, occasionally triple; 4-P double, occasionally single; 5,6-P single; 7-P triple, infrequently with 4 branches; 8-P double. Seta 1-M small, most often triple (2-4); 2-M shorter than 1-M, often triple or with 4 branches (2-5). Seta 1-T small, usually double (1-3); 5-T usually single, occasionally

double. *Abdomen*: Integument hyaline, with minute, inconspicuous spicules, spicules more evident laterally; segments I-VIII each with very broad band of black pigment granules under integument; setae 6-I,II and 2,3-VIII on moderately tanned tubercles. Seta 6-I,II long, 6-I double, 6-II usually double, occasionally single, 6-III-VI shorter, usually triple, 6-III-V infrequently with 4 branches, 6-V,VI rarely double; 7-I long and single, 7-II-V short and multiple, commonly with 5 branches, 7-VI usually double, sometimes single; 1-III-VI about 0.5 length of segment, most often with 4 branches, 1-III-V frequently with 5 branches. *Segment VIII*: Comb with 35-52 scales, mean 43; scales short, normally fringed on sides and apex, apical fringe distinct, lateral fringes rather inconspicuous; scales arranged in roughly 4 irregular rows. *Siphon*: Index 5.90-7.00 (width measured at base), mean 6.30; lightly tanned with darkened ring at base and near middle; acus attached, long and slender on anterior side of attachment. Pecten of 14-18 spines, mean 16, on slightly more than basal 0.33 of siphon; spines increasing in size from base of siphon, distal spines more widely spaced, ventral edge of spines fringed with numerous closely-set denticles. Seta 1-S usually in 7 pairs, 5 posterior pairs with each seta nearly twice as long as width of siphon at point of insertion, 2 anterior pairs with length less than width of siphon at point of insertion; seta 2-S inserted in membrane near base of anterolateral spiracular lobe, curved ventrally with slender curved secondary branch at basal fourth of curved side. *Segment X*: Saddle complete, without acus, with distinct spicules on dorsal and lateral areas at posterior end, spicules dorsal to seta 1-X stouter; length 0.28-0.32 mm, mean 0.29 mm, siphon/saddle index 3.34-3.87, mean 3.56. Seta 1-X usually with 3 or 4 branches, rarely with 5; 2-X with 1 long and 1 short branch; 3-X long, single; 4-X usually with 6 paired setae, infrequently with 5 on 1 or both sides, anterior setae (3 pairs) frequently with 4 or 5 branches (3-6), posterior setae (3 pairs) most often with 6 branches (5-7), all setae borne on grid, anterior end of grid narrowly attached to saddle. Anal papillae long and slender, gradually tapering to blunt tip; dorsal pair shorter than ventral pair, dorsal pair about 1.7 length of saddle, ventral pair about 2.3 length of saddle.

TYPE-DATA. Holotype male (Type no. 101412) with associated larval and pupal exuviae and genitalia on slides, and with the following collection data: BOLIVIA, Department of Santa Cruz, Province of Sandoval, Rincón Del Tigre, 17 May 1982, Coll. E.L. Peyton and D.R. Roberts, specimen no. 50-21, MEP accession number 922, collected as a larva from large swamp-marshy depression in forest at elevation of 232 m. Paratypes: 13 males, 29 females (2 males and 5 females, specimen nos. 50A-G; 8 males and 11 females with pupal exuviae, specimen nos. 50-102, -103, -105, -106, -107, -110, -112, -116, -118, -121, -123, -124, -125, -128, -130, -131, -133, -134, -135; 1 female with larval exuviae, specimen no. 50-132; 3 males and 12 females with larval and pupal exuviae, specimen nos. 50-14, -15, -16, -19, -20, -22, -23, -24, -25, -26, -29, -30, -31, -32, -34), 2 larval and 2 pupal exuviae without associated adults, specimen nos. 50-35, -36 and 13 fourth-instar larvae, specimen nos. 50a-m, with same data as holotype; 11 males, 12 females from 4 other collections with same data as holotype except as follows: 6 males and 3 females with pupal exuviae (specimen nos. 31-123, -124, -134, -135, -137, -138, -139, -140, -141), 13 May 1982, collected from small ground pool hidden by bushes; 1 male (specimen no. 40), 1 female with pupal exuviae (specimen no. 40-128) and 2 females with larval and pupal exuviae (specimen nos. 40-16, -17), 15 May 1982, collected from small swamp-marshy depression in deep forest; 1 female (specimen no. 44), 1 male with pupal exuviae (specimen no. 44-102), 1 male

with larval and pupal exuviae (specimen no. 44-11) and 2 fourth-instar larvae (specimen nos. 44a,b), 15 May 1982, collected from large swamp-marshy depression in forest; 1 male (specimen no. 45), 2 females with pupal exuviae (specimen nos. 45-112, -117) and 1 male and 3 females with larval and pupal exuviae (specimen nos. 45-10, -13, -18, -19), 15 May 1982, collected from medium swamp-marshy depression in forest. Preparations were made for the following paratypes: 9 males (specimen nos. 31-123, -137; 50A,B; 50-125, -131, -23, -29, -34) and 3 females (specimen nos. 31-138; 50E; 50-24) with genitalia on slides; 4 females (specimen nos. 31-140; 40-16; 50F; 50-22) with cibarial armature on slides; and 4 females (specimen nos. 50C; 50-107, -15, -16) coated with gold for scanning electron microscopy. The type-series consists of 41 females, 25 males, 57 pupal exuviae, 26 larval exuviae and 15 fourth-instar larvae. Four paratypes (2 females and 2 males, specimen nos. 45-19; 50-19, -20, -29) with associated pupal and larval exuviae and 2 fourth-instar larvae (specimen nos. 50a,i) deposited in the British Museum (Natural History), London. Holotype and remaining paratypes deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC.

**DISTRIBUTION.** *Culex glyptosalphinx* is probably widespread in southern South America. It was previously recorded from localities in Brazil, Paraguay and northern Argentina as an atypical form of *Cx. intricatus*. In addition to the type-locality in southeastern Bolivia, *Cx. glyptosalphinx* has been collected from the following localities:

**ARGENTINA** (Duret 1954). *Presidente Perón* (ex *Chaco*): Zapirán, 1♂; Ciervo Petizo, 1♂. *Corrientes*: Ramada Paso, 1♂.

**BRAZIL** (Duret and Barreto 1956). State of São Paulo, 4♂.

**PARAGUAY** (Duret 1969). *Alto Paraná*: río Acaray, 1♂. *Caaguazú*: Carayaó, 7♂; Cecilio Báez, 9♂; Coronel Oviedo, 2♂. *Guairá*: Villarrica, 2♂.

We have examined a single male of *glyptosalphinx* from Hernandarias, Department of Alto Paraná, Paraguay. This specimen was loaned to Dr. Sunthorn Sirivanakarn by Dr. J.P. Duret who labelled it as a questionable specimen of *intricatus*.

**BIONOMICS.** The type-series of *glyptosalphinx* is comprised of specimens collected as larvae from temporary or semipermanent bodies of stagnant, clear, fresh water with mud and/or organic matter on the bottom. One collection was made in a small, recently-flooded ground pool totally hidden by low bushes which allowed almost no light to reach the surface of the water. This pool contained some algae. Four other collections were made from small, medium or large swamp-marshy depressions containing submerged roots and leaves in most cases, and little (duckweed and green algae) or no aquatic vegetation. The depressions were located in forest. One of the collection sites was partially shaded; the others were deeply shaded.

**DISCUSSION.** *Culex glyptosalphinx* is named for the salient character of the pupal trumpet. The specific name is derived from the feminine Greek nouns *glyphis* (verbal stem *glyph-*, combining stem *glypt-*), meaning notch or groove (of an arrow), and *salpinx*, meaning trumpet or tube. Literally translated, *glyptosalphinx* means "notched trumpet." The name stands in apposition to the generic name of *Culex*.

The adult of *glyptosalphinx* bears a remarkable resemblance to that of *intrincatus*, differing in 2 features of the gonocoxite of the male genitalia (Fig. 3). In *glyptosalphinx*, the foliform seta (1) of the distal division of the subapical lobe is narrower and the lateral setal patch (lsp) has fewer, shorter setae.

Foote (1954) described the larva of *intrincatus* from a single exuviae "presumably associated with a male from Surinam." This specimen could not be located in the National Museum of Natural History (NMNH), Smithsonian Institution. Foote illustrated only the head and terminal abdominal segments of the larva. Based on his figure and description, the larva of *glyptosalphinx* appears to differ from that of *intrincatus* by (1) having setae 2- and 3-A nearer the apex of the antenna, (2) bearing comb scales with lateral fringes as well as an apical fringe and (3) possessing a larger number of finer denticles on the ventral margin of the pecten spines. The pupa of *intrincatus* is unknown.

Based on the striking similarity between *glyptosalphinx* and *intrincatus*, we infer that *glyptosalphinx* belongs to the *Intrincatus* Group of the *Melanoconion* Section in the classification of the subgenus *Melanoconion* proposed by Sirivanakarn (1983). In fact, *Cx. glyptosalphinx* is readily identified as a member of this group by using Sirivanakarn's male genitalia and larval keys. However, use of his pupal key identifies *glyptosalphinx* as a member of either the *Trifidus*, *Educator*, *Intrincatus/Bastigarius*, *Conspirator* or *Inhibitor/Evansae* Group. His adult key identifies this species as a member of the *Erraticus* Group. For *glyptosalphinx* to be identified as a member of the *Intrincatus* Group, it must be assumed that the adult of *glyptosalphinx* is without upper mesokatepisternal scales. Since it is possible that upper mesokatepisternal scales were previously overlooked in *intrincatus*, we examined the adult specimens of this species in the NMNH (9 males from Brazil, 1 male from Paraguay and the holotype male of *Culex cenus* Root, a recognized junior synonym of *intrincatus*). These specimens were all without upper mesokatepisternal scales; however, they were either largely denuded or in rather poor condition (the pin supporting the holotype of *cenus* protrudes through the upper part of the mesokatepisternum on either side of the thorax), so it is uncertain whether *intrincatus* possesses these scales. If the absence of upper mesokatepisternal scales is confirmed for *intrincatus*, then the applicability of this character in the recognition of species groups of *Melanoconion* must be reevaluated.

We wish to comment on the character of the wing scales used by Sirivanakarn (1983) in his delimitation and recognition of groups of *Melanoconion* species. Sirivanakarn recognizes 3 classes of scales occurring on veins  $R_2$ ,  $R_3$  and  $R_{4+5}$ : (1) "narrow clavate" (= "long, narrow linear" or "linear"), (2) "broad clavate" (= "squamous") and (3) "broad ovate" (= "short, broad ovate"). We believe that his "narrow clavate" and "broad clavate" scales actually represent a single class of scales which are more accurately described as "narrow spatulate." These scales appear to be of different widths depending on posture. Under Sirivanakarn's system, the scales are classed as "broad clavate" when their surfaces appear to be nearly or completely flat; they are recognized as "narrow clavate" when they are curled or contorted (cf. Fig. 1E-G herein and Fig. 7A-D in Sirivanakarn 1983). It should also be noted that males have fewer scales on the wing than females. An inspection of the "broad ovate" scales (preferably "broad spatulate" scales) illustrated by

Sirivanakarn reveals that the wing of a male (with 2 rows of scales per vein) is shown in his figure 7E while the wing of a female (with 3 rows of scales per vein) is shown in his figure 7F. The left wing shown in his figure 7C is upside down.

#### Acknowledgments

We are grateful to W.L. Jakob, Division of Vector-Borne Viral Diseases, Centers for Disease Control, Ft. Collins, CO, and Ronald A. Ward and Thomas J. Zavortink, Department of Entomology, Walter Reed Army Institute of Research, Washington, DC, for reviewing the manuscript. Appreciation is expressed to George Steyskal, Systematics Entomology Laboratory, USDA, National Museum of Natural History, Washington, DC, for his assistance with Greek; to Heidi Wolf, Scanning Electron Microscope Lab, National Museum of Natural History, for taking the scanning electron micrographs; to Taina Litwak for preparing figures 2-5; and to Olimpia Areizaga for typing and preparing the manuscript for photoreproduction.

#### References Cited

- Duret, J.P. 1954. Las especies argentinas de *Culex* (*Melanoconion*) (Diptera-Culicidae). Rev. Soc. Entomol. Argent. 16:99-121.
- Duret, J.P. 1969. Contribucion al conocimiento de los *Culex* del Paraguay (Diptera-Culicidae). Rev. Soc. Entomol. Argent. 31:3-13.
- Duret, J.P. and M.P. Barreto. 1956. Notas sôbre Culícidas do estado de São Paulo, Brasil, com descrições de três novas espécies de *Culex* (Diptera, Culicidae). Rev. Bras. Entomol. 5:81-99.
- Foote, R.H. 1954. The larvae and pupae of the mosquitoes belonging to the *Culex* subgenera *Melanoconion* and *Mochlostyrax*. U. S. Dep. Agric. Tech. Bull. 1091. 126 pp.
- Harbach, R.E. and K.L. Knight. 1980. Taxonomists' glossary of mosquito anatomy. Plexus Publishing, Inc., Marlton, NJ. 415 pp.
- Peyton, E.L., D.R. Roberts, F.P. Pinheiro, R. Vargas and F. Balderama. 1983. Mosquito collections from a remote unstudied area of southeastern Bolivia. Mosq. Syst. 15:61-89.
- Peyton, E.L., R.E. Harbach and D.R. Roberts. 1984. *Culex* (*Melanocomion*) *serratumarge* (Diptera: Culicidae), a new occurrence record from Bolivia. Mosq. Syst. 16:183-184.
- Sirivanakarn, S. 1983. A review of the systematics and a proposed scheme of internal classification of the new world subgenus *Melanoconion* of *Culex* (Diptera, Culicidae). Mosq. Syst. 14:265-333.



Table 1. Number of branches for setae of the pupa of *Culex (Melanoconion) glyptosolpinx*.<sup>a</sup>

Seta no.	Cephalothorax CT	Abdominal segments										Paddle		
		I	II	III	IV	V	VI	VII	VIII	IX	P	P		
0	-	-	1	1	1	1	1	1	1	1	1	1	-	-
1	3-5(4) <sup>b</sup>	5-11(8)	14-31(20)	8-15(12)	7-12(8)	5-8(7)	3-6(4)	2-4(3)	1	1	1	1	1,2(1)	-
2	3-6(4)	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1-3(2)	1	1,2(2)	1,2(2)	4-6(4)	1-3(2)	1,2(2)	2,3(2)	1,2(2)	2,3(2)	2,3(2)	1-3(2)	-	-
4	1-3(2)	4-7(6)	2-5(3)	2-5(4)	2,3(2)	4-6(5)	2-4(3)	1,2(2)	2-4(3)	1,2(2)	1,2(2)	-	-	-
5	2-6(4)	2-6(4)	3-6(4)	5-8(6)	3-7(6)	2-4(3)	2,3(2)	1,2(1)	2,3(2)	1,2(1)	1,2(1)	-	-	-
6	1-3(2)	1	1	2-4(2)	2-5(3)	2-4(3)	2-5(3)	2-5(3)	2-5(3)	2-5(3)	2-5(3)	-	-	-
7	1,2(2)	1-3(2)	1-3(2)	3-6(5)	2-4(3)	3-6(4)	1	1	1	1	1	-	-	-
8	3-6(4)	-	-	2-5(3)	2,3(2)	2-4(2)	2,3(3)	2-5(3)	2,3(3)	2-5(3)	2-5(3)	-	-	-
9	1,2(2)	1,2(1)	1	1	1	1	1	1	1	1	1	3,4(3)	-	-
10	7-15(9)	<sup>a</sup>	-	1,2(2)	1,2(1)	1	1	1	1	1	1	1,2(1)	-	-
11	1,2(1)	1	-	1,2(1)	1,2(1)	1,2(1)	1,2(1)	1,2(1)	1,2(1)	1,2(1)	1,2(1)	1-3(2)	-	-
12	2-4(3)	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	1,2(1)	1	1	1	1	1	1	1	1	-	-

<sup>a</sup> Based on counts made on the holotype and 9 paratypes.

<sup>b</sup> Range (mode).

<sup>c</sup> Alveolus (= a) only.

Table 2. Number of branches for setae of the fourth-instar larva of *Culex (Melanoconion) glyptocephalus*.<sup>a</sup>

Seta no.	Head		Thorax			Abdominal segments									
	C	P	M	T	I	II	III	IV	V	VI	VII	VIII	X		
0	a <sup>b</sup>	8-19(13) <sup>c</sup>	-	-	-	1	1	1	1	1	1	1	1	-	
1	1	1	2-4(3)	1-3(2)	1-3(3)	1-3(2)	3-6(4)	4-7(4)	4-7(5)	1-5(4)	5-9(6)	4-6(5)	3-5(3)		
2	-	1	2-5(3)	2-4(3)	1,2(1)	1,2(1)	1	1	1	1	1	1,2(1)	2		
3	-	1-3(2)	1	4-6(4)	2-4(3)	1-3(2)	1,2(1)	1-3(2)	1	2,3(2)	2,3(2)	6-9(6)	1		
4	1,2(1)	1,2(2)	3,4(3)	2-6(4)	7-11(8)	5-9(6)	2,3(2)	1-3(2)	4-7(5)	1	1	1	3-7(6)		
5	1,2(1)	1	1	1,2(1)	2-4(3)	1,2(1)	1,2(2)	1-3(2)	1-3(2)	1-3(2)	2,3(2)	3-6(4)	-		
6	1	1	1	1	2	1,2(2)	3,4(3)	3,4(3)	2-4(3)	2,3(3)	6-12(9)	1a-S,	4-8(6)		
7	6-9(8)	3,4(3)	1	5-7(5)	1	4-7(5)	5-10(5)	4-8(5)	4-7(5)	1,2(2)	1,2(1)	1b-S,	5-10(6)		
8	2-6(4)	2	4-6(4)	8-10(8)	-	1,2(1)	2,3(2)	2	2	2,3(2)	3-6(5)	1c-S,	2-4(3)		
9	3-6(5)	1,2(1)	3,4(4)	4-6(5)	2-5(3)	1	1	1	1	1	2,3(2)	1d-S,	5-8(6)		
10	2-5(4)	1	1	1	1	1	1	1	1	1	1,2(2)	1e-S,	5-8(7)		
11	2-4(2)	3-6(4)	1-3(2)	1-3(2)	2-5(2)	2	2,3(2)	1-3(2)	1,2(2)	1-3(2)	2-4(2)	1f-S,	4-7(5)		
12	4,5(5)	1	1	1	2-4(2)	1,2(2)	1-3(2)	1,2(1)	1	1	1	1g-S,	2-4(3)		
13	2-4(2)	-	12-23(18)	5-10(7)	1-4(3)	8-15(10)	2-4(3)	2-4(3)	2,3(2)	15-30(23)	3-6(4)	2-S,	2		
14	2-4(3)	2,3(2)	8-13(11)	-	-	-	1	1	1	1	1	1	-		
15	6-10(6)	-	-	-	-	-	-	-	-	-	-	-	-		

<sup>a</sup> Based on counts made on the holotype and 9 paratypes.<sup>b</sup> Alveolus (= a) only?<sup>c</sup> Range (mode).

**Fig. 1.** *Culex (Melanoconion) glyptosalpinx*, female. A, Posterodorsal aspect of head. B, Falcate scales of scutum (upper right) and postpronotum. C, lateral aspect (left side) of thorax. D, Upper mesokatepisternal scales. E-G, Dorsal scaling of right wing (E, Dorsal aspect of distal veins; F, Oblique view of distal veins; G, Enlargement of veins  $R_1$  and  $R_2$  seen in F). Notice the variable appearance of the spatulate scales on veins  $R_1$  and  $R_2$  (compare E with F and G).

#### Abbreviations Used in Figures 2-5

a	- seta <i>a</i> of pSL
A	- antenna
AeS	- aedeagal sclerite (= basal hook of authors)
b	- seta <i>b</i> of pSL
BP	- basal piece
C	- cranium
Ce	- cercus
CS	- comb scale
CSe	- cercal seta
CSc	- cercal sclerite
CT	- cephalothorax; cibarial teeth
Dm	- dorsomentum
dSL	- distal division of subapical lobe
f	- flat seta of dSL (= foliform of authors)
Gc	- gonocoxite
GC	- gonostylar claw
Gs	- gonostylus
h	- hooked seta of dSL (= hook of authors)
IsS	- insular seta
l	- foliform seta of dSL (= leaf of authors)
lsp	- lateral setal patch
LP	- lateral plate
M	- mesothorax
p	- puncture
P	- paddle; prothorax
Par	- paramere
PGL	- postgenital lobe
PH	- phallosome
PpC	- paraproct crown
Ppr	- paraproct
PS	- pecten spine
pSL	- proximal division of subapical lobe
rs	- rudimentary spiracle
s	- saberlike seta of dSL (= saber of authors)
T	- metathorax
UVL	- upper vaginal lip
UVS	- upper vaginal sclerite
I-IX	- abdominal segments
IX-Te	- tergum IX
IX-TL	- ninth tergal lobe
X-Te	- tergum X (= basolateral sclerotization of authors)

Fig.1

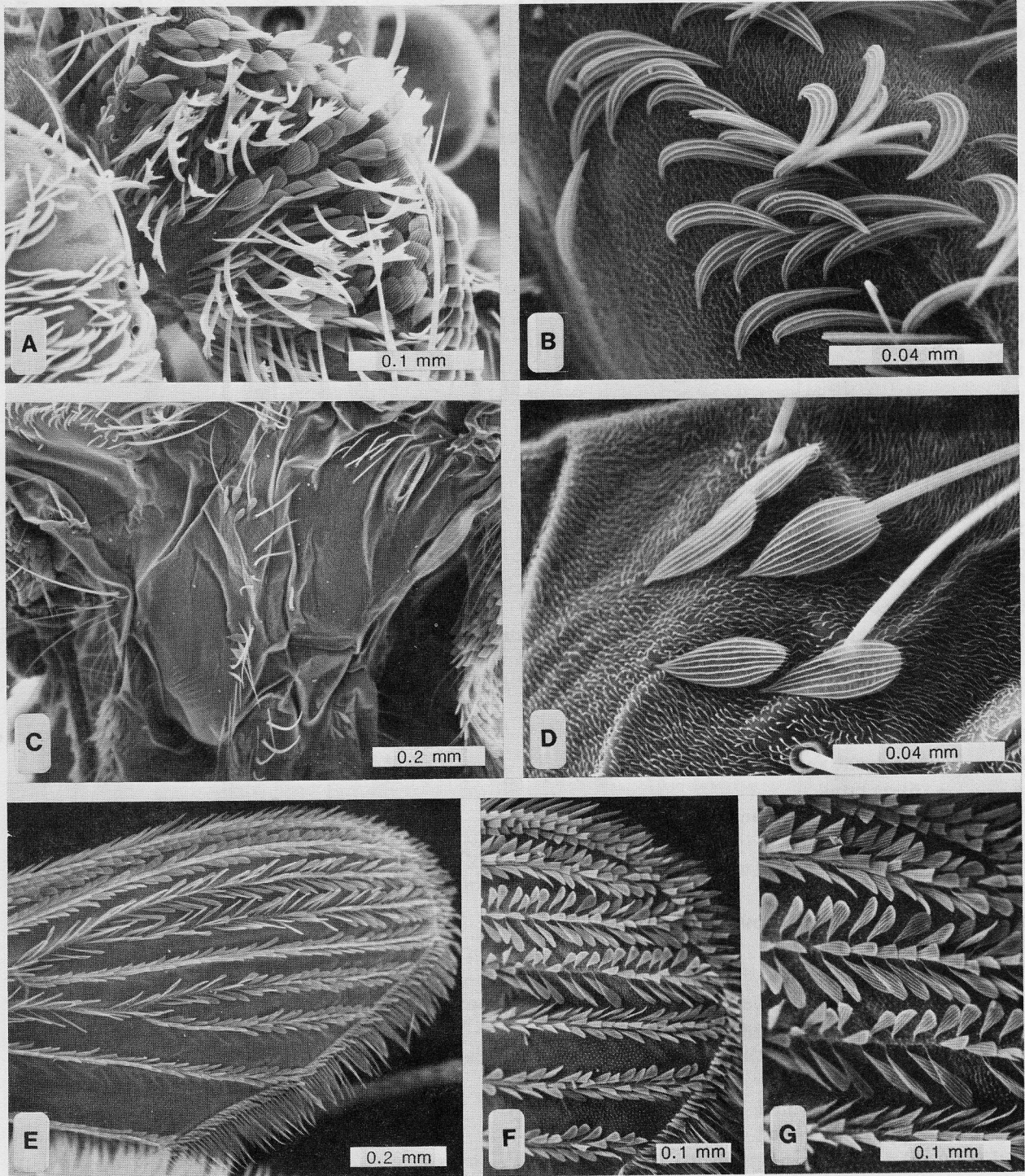


Fig. 2

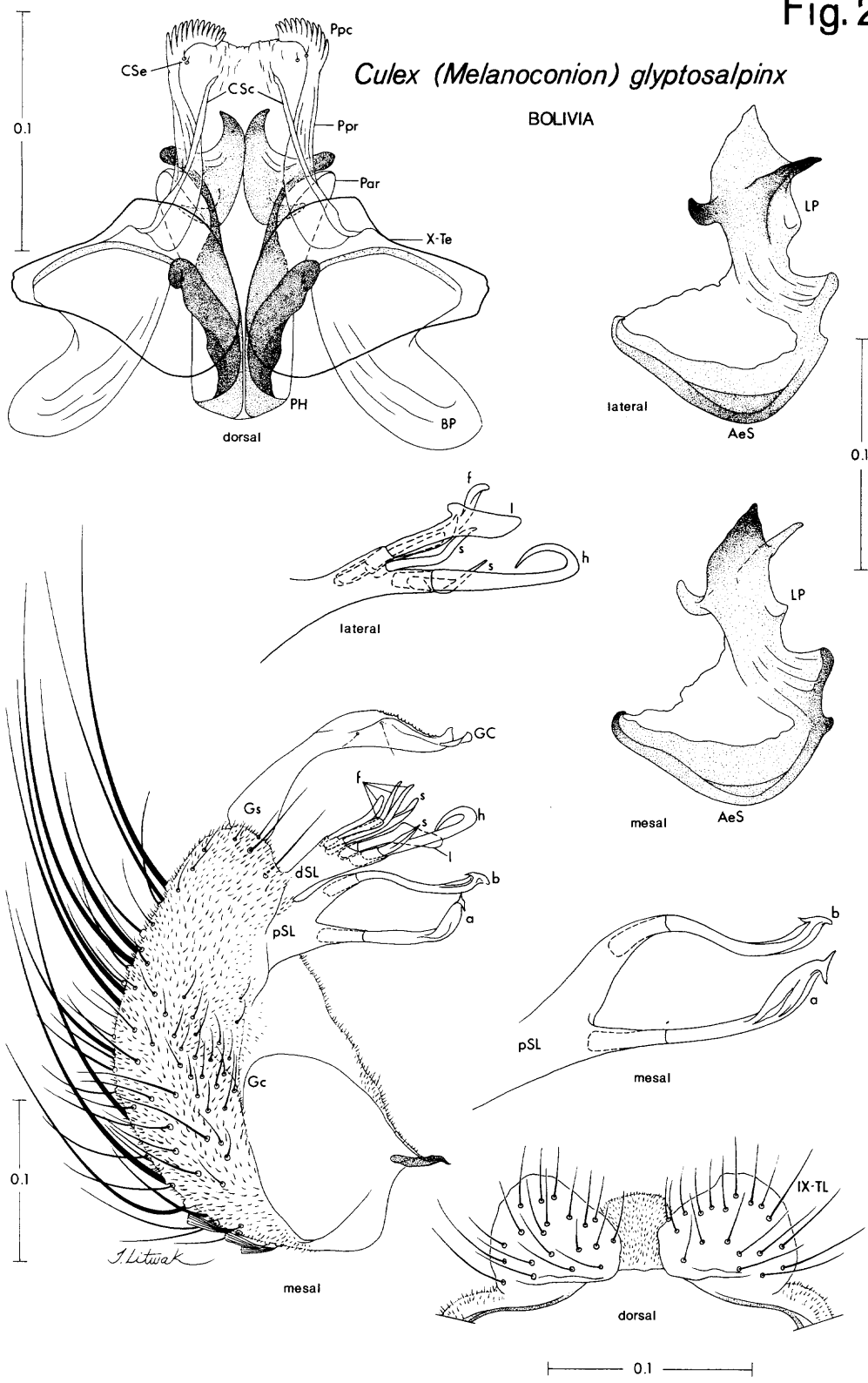
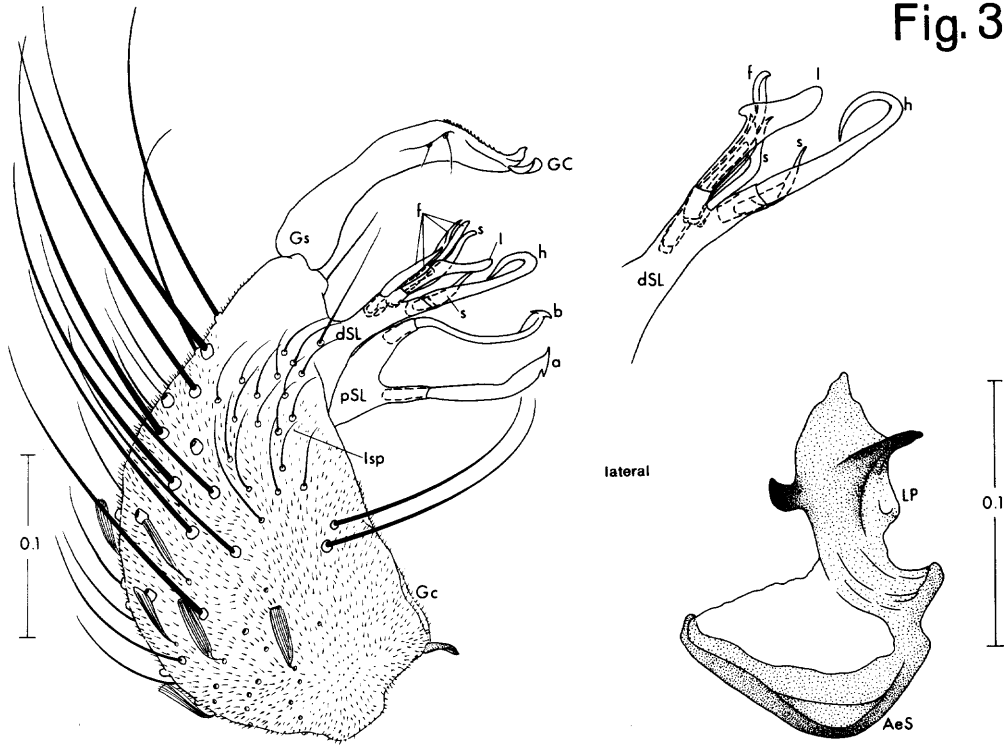
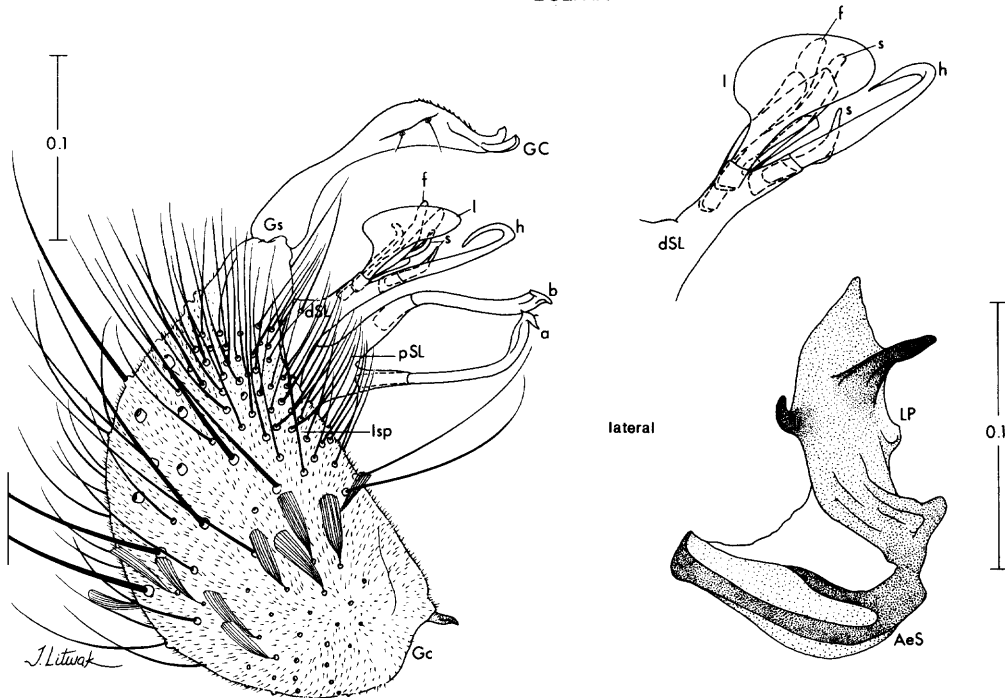


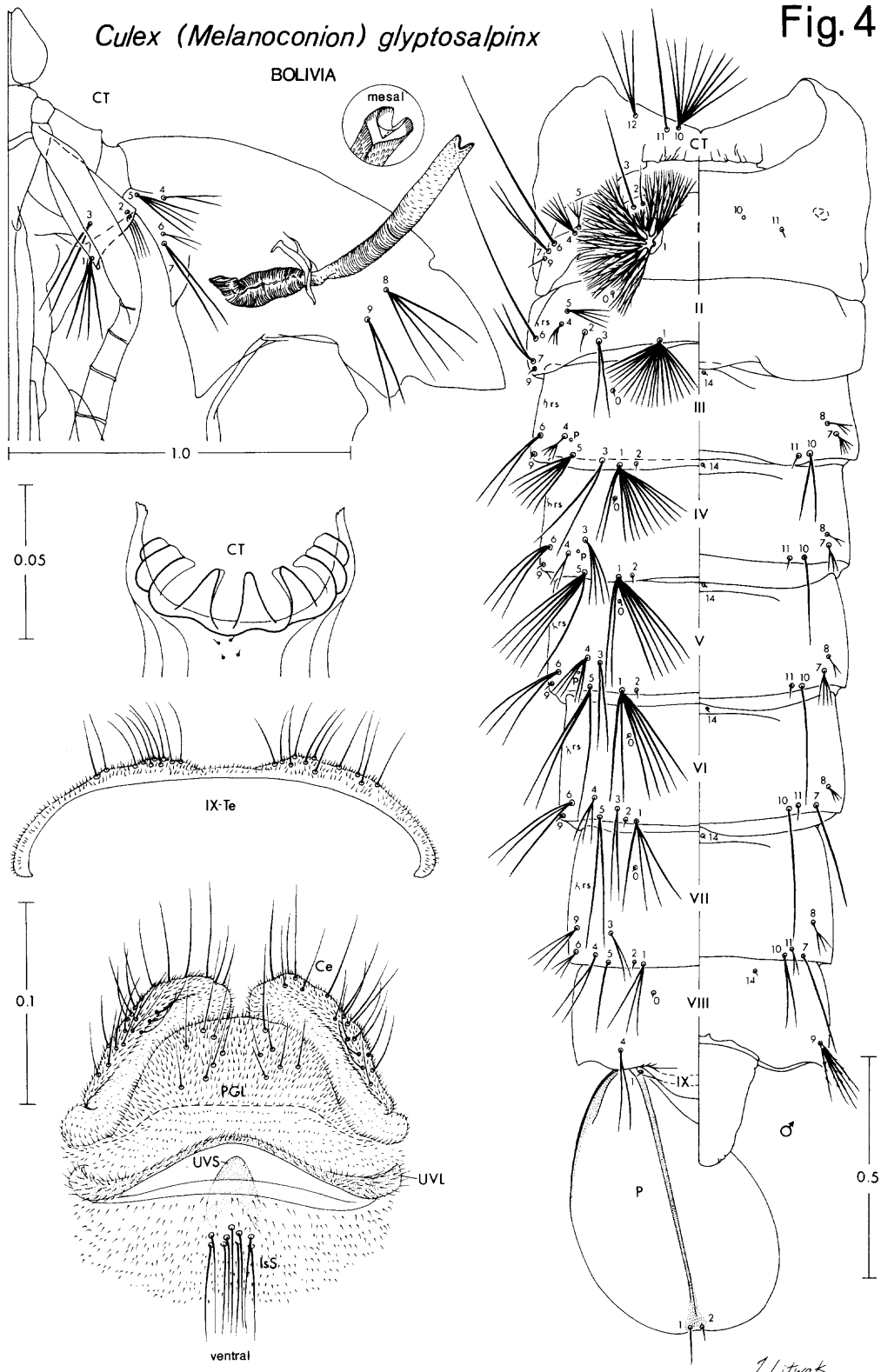
Fig. 3



*Culex (Melanoconion) glyptosalpinx*  
BOLIVIA



*Culex (Melanoconion) intricatus* Brèthes  
BRAZIL



*Culex (Melanoconion) glyptosalpinx*

Fig. 5

