

**REDESCRIPTION OF *CULEX (MELANOCONION) LOPESI* SIRIVANAKARN
AND JAKOB 1979, WITH THE DESCRIPTION OF IMMATURE STAGES
(DIPTERA: CULICIDAE)¹**

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ABSTRACT. *Culex (Melanoconion) lopesi* Sirivanakarn and Jakob, 1979 from southern Brazil is described, including the adult, pupal and larval stages. Available data about known distribution and bionomics are presented.

INTRODUCTION

During research in the Ribeira Valley Region, southern São Paulo State, Brazil, several specimens of *Culex (Melanoconion) lopesi* Sirivanakarn and Jakob, 1979 were collected (Forattini et al. 1986). In addition, immature stages were obtained from natural breeding places. Since this species was described originally from four males from Iguape, São Paulo State, caught in CDC miniature light traps (Sirivanakarn and Jakob 1979), our material provided an opportunity to redescribe the species to include the immature stages and the adult female.

For the descriptions, the terminology utilized is that of Harbach and Knight (1980), except for the wing veins which follow Belkin (1962).

Culex (Melanoconion) lopesi Sirivanakarn and Jakob

Culex (Mel.) lopesi Sirivanakarn and Jakob, 1979: 139-143. Types: Holotype and paratypes, 3 males, Porto do Ribeira, Iguape County, S. Paulo State, Brazil, 17 March 1976, O.S. Lopes coll. and 1 male, Costão do Engenho, Iguape County, S. Paulo State, Brazil, 20 February, 1976, O.S. Lopes coll.

Adult. A medium dark species resembling *Culex ribeirensis* Forattini and Sallum, but differing in some details of the female, as well as in the male genitalia, larva and pupa.

Female. Body almost entirely covered with dark brownish-black scales. **Head:** Antenna dark, length about 2.37 mm; flagellum normal, whorls with 6 setae. Proboscis entirely dark-scaled, length 1.65-1.86 mm, mean 1.76 mm. Maxillary palpus entirely covered with dark scales, length 0.33-0.36 mm, mean 0.34 mm, about 0.19 length of proboscis. Vertex (Fig. 1) with narrow falcate scales, dark anteriorly, pale whitish posteriorly, a small patch of broad appressed dingy white scales laterally; forked scales numerous, dark; occipital region with some pale whitish falcate scales. **Cibar-**

ial armature (Figs. 1 and 3): Dorsal surface arched. Cibarial bar rather narrowish, weakly chitinized with posterior thin and irregular margin; about 11-15 cibarial teeth of gradually smaller size laterally, roughly triangular in lateral profile; cibarial teeth clearly lengthened and rod-shaped, borne on transverse bar and attached by a triangular expansion, posterior end finely serrate. Cibarial dome nearly pentagonal, concave cap formed entirely of superficial sharp pointed denticles. **Thorax:** Integument brown or dark brown. Scutum covered with very fine falcate scales (Fig. 1) of uniform size, dark brown color and bronzy sheen; scutal setae prominent, brownish black with golden or reddish sheen; acrostichal setae present. Scutellar scales similar to those of scutum; lateral lobes each with 3,4 large setae, median lobe with 6 long setae. Antepronotum without scales and with scattered dark setae. Postpronotum with narrow dark scales, similar to those of scutum; posterodorsal margin with 3-6 dark setae. Pleural setae golden brown, darker on prealar knob: 8-13 upper proepisternal, 6-8 prealar, 6-12 upper mesokatepisternal, 9-16 lower mesokatepisternal, 11-17 upper mesepimeral and 1 lower mesepimeral. Pleura with a small patch of whitish spatulate scales on lower posterior border of mesokatepisternum. **Wing** (Fig. 1): Length 3.13-3.79 mm, mean 3.56 mm; cell R_2 about 3.83 of R_{2+3} ; cell M_2 0.84 of cell R_2 ; subcosta intersects costa beyond furcation of R_{2+3} . **Dorsal scaling:** appressed spatulate scales on costa, subcosta, R_1 , R_{4+5} , distal 0.5 of M_{1+2} , M_{3+4} , Cu, Cu_1 , Cu_2 and 1A; linear plume scales on R_s , R_{2+3} , M, and proximal 0.5 of M_{1+2} ; inclined narrow spatulate scales on R_2 and R_3 ; remigium with appressed spatulate scales and 2,3 distal setae. **Ventral scaling:** appressed spatulate scales on costa, subcosta, R_s , R_{2+3} , R_2 , R_3 , M, proximal 0.5 of M_{1+2} ; linear plume scales on proximal 0.5 of R_1 , proximal 0.5 of R_{4+5} , Cu_1 , Cu_2 and middle of 1A; inclined, narrow spatulate scales on distal 0.5 of R_1 , distal 0.5 of R_{4+5} , distal 0.5 of M_{1+2} , M_{3+4} , and distally on 1A; Cu and proximal 0.5 of 1A without scales. **Halter:** Scabellum and ventral portion of pedicel pale; capitellum and dorsal portion of pedicel dark. **Legs:** Anterior surface of forecoxa dark-scaled; anterior surface of midcoxa with longitudinal patch of dark

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Fig. 1. *Culex (Mel.) lopesi* female. A - dorsal aspect of cibarial armature; B - detail of cibarial teeth from figure A; C - distal scaling of right wing (dorsal); D - distal scaling of left wing (ventral); E - detail of scutum showing acrostichal setae; F - dorsal aspect of head showing forked and falcate scales.

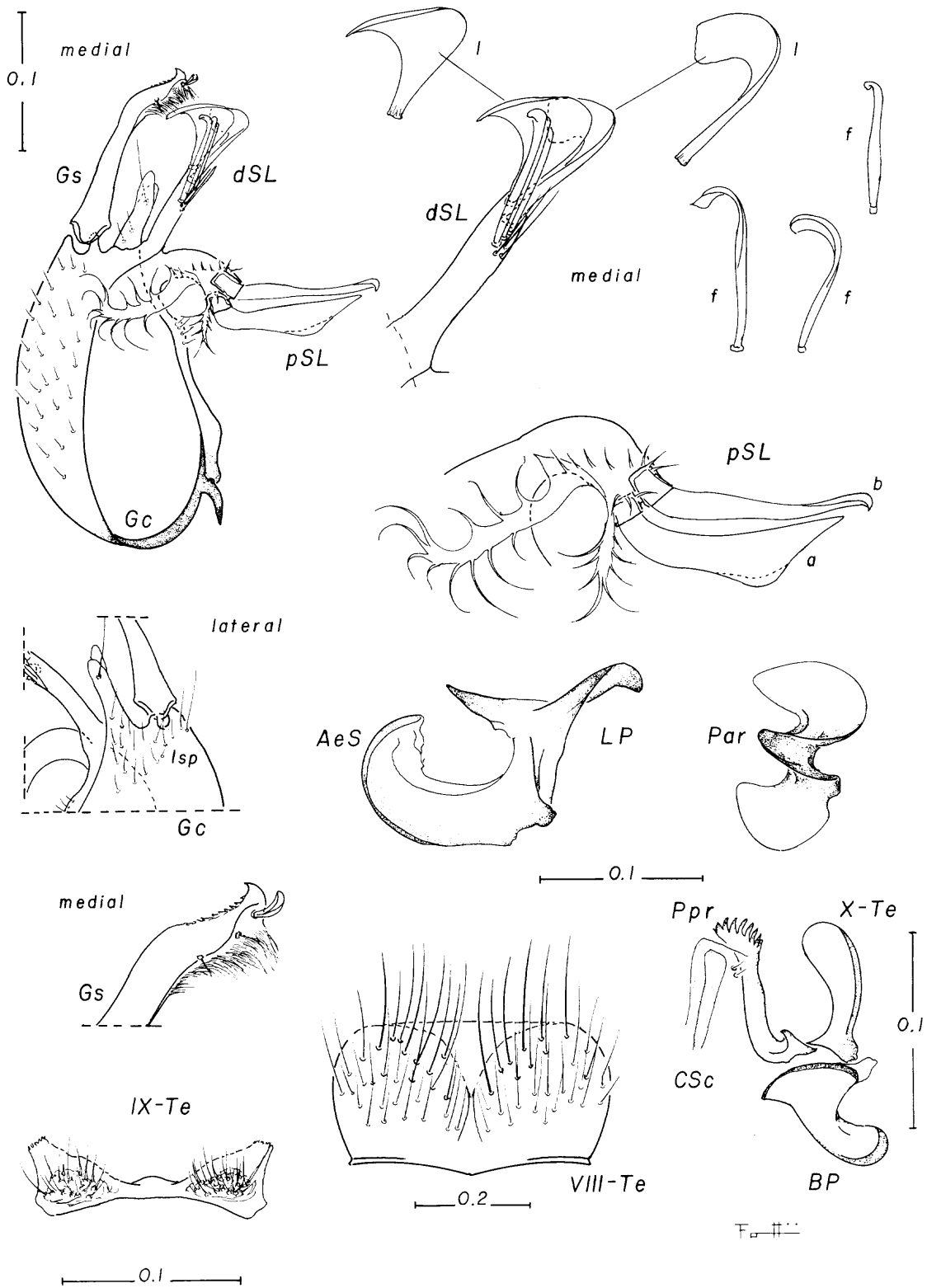


Fig. 2. *Cx. (Mel.) lopesi*. Male genitalia. a - seta a of pSL; AeS - aedeagal sclerite; b - seta b of pSL; BP - basal piece; CSc - cercal sclerite; dSL - distal division of subapical lobe; f - flat seta of dSL (= foliform); Gc - gonocoxite; Gs - gonostylus; l - leaf; lsp - lateral setal patch; LP - lateral plate; Par - paramere; Ppr - paraproct; pSL - proximal division of subapical lobe; VIII-Te - tergum VIII; IX-Te - tergum IX; X-Te - tergum X (= basolateral sclerotization).

scales; anterior surface of hindcoxa with longitudinal patch of nearly colorless scales. Antero- and posteroventral surfaces of foretrochanter dark-scaled; anteroventral surface of midtrochanter dark-scaled, posteroventral surface pale-scaled; anteroventral surface of hindtrochanter pale- or 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 mainly with dingy pale scales; hindfemur mainly pale-scaled, with dorsal line of dark scales distally expanded covering the anterior and posterior surfaces at apex. Tibiae and tarsi dark-scaled. *Abdomen*: Tergum I with median posterior patch of dark scales; terga II, VIII mostly dark-scaled with a small number of basolateral pale scales; terga III-VII dark-scaled with basolateral patches of white scales, sometimes becoming basal pale bands of various breadth on terga III-VI. Sterna II-VII basally with pale scales, distally with dark ones; sternum VIII without scales on middle, with small lateral patches of white scales. *Genitalia* (Fig. 3): Tergum IX narrowed in middle, with small flattened lobes bearing about 9 slender setae. Upper vaginal lip distinct and narrow; lower vaginal lip and insula indistinct, with about 12 clustered insular setae. Upper vaginal sclerite with inverted U-shape, thickened at base. Postgenital lobe short, rounded distally, with 11-17 setae on either side of midline, mostly on ventral surface.

Male. Like female except for following differences. *Head*: Antenna strongly plumose; length about 1.96 mm. Maxillary palpus entirely dark-scaled; length about 2.73 mm, exceeding the proboscis tip by distal 0.5 of palpomere 4 and all of palpomere 5; palpomeres 4 and 5 densely setose, palpomere 3 with strong setae distally. *Abdomen*: Tergum II mostly dark-scaled with a few white scales on basomedian area; terga III-VII with basal pale-scaled bands; tergum VIII with basolateral white patches, deep V-shaped median posterior emargination and bearing long bristles mixed with shorter slender setae (Fig. 2). Sterna with basal white bands, occasionally incomplete on anterior sterna; sternum VIII with basolateral white patches. *Genitalia* (Fig. 2): Tergum IX lobes small, almost triangular-shaped, connected by a bridge slightly curved apically and with length similar to the lobe size, bearing few slender and short setae forming a cluster in the basal region. Gonocoxite stocky, outer margin convex, inner moderately concave; ventrolateral setae strongly developed, mesal surface with small setae scattered from base to near gonostylus, lateral surface with small patch of slender and short setae (lsp) apically where there is a columnar process bearing a subapical slender seta, proximal part of ventrolateral surface with few scales; subapical lobe clearly divided, divisions distinctly separated; proximal division a stout arched stem, with 2 long robust apical setae and variably developed, hyaline, branched processes, seta a spatulate with distal triangular contour, b enlarged, slightly sinuous and apically hooked, and with hyaline branched

expansions basally; distal division columnar, distally with 2 developed tubercles bearing a total of 8 setae as follows: distal tubercle with a single broad curved foliform seta (l); proximal tubercle with a curved foliform seta (l), 3 narrow appressed setae (f) and 3 short slender setae. Gonostylus slender, curved, distally widened where the mesal surface bears a characteristic fringe of delicate spicules along the apical dorsal margin, crest moderately wrinkled, short, extending from ventral surface to strongly curved apical snout; gonostylar claw short, having curled appearance. Phallosome with lateral plate and aedeagal sclerite of equal length; aedeagal sclerite broad and strongly curved in lateral view, anterior margin thickened, broadly fused to base of lateral plate; distal margin of lateral plate laterally curved with ventral and lateral processes developed, ventral one pronounced and peaked, lateral process longer, spoon-shaped, blunt and directed dorsolaterally, dorsal process stout, basal to lateral plate; paramere and basal plate nearly triangular in outline, with blunt extremities. Proctiger elongate; paraproct stout, distally rather enlarged, basally articulated with basal plate and posterolateral margin of tergum X, crown with about 9 short, rectangular simple blades; cercal sclerite narrow, long, lightly sclerotized, larger basally, 2,3 small cercal setae; tergum X rectangular, concavoconvex.

Pupa (Fig. 3). General chaetotaxy as figured; range and modal number of branches in Table 1. *Cephalothorax*: Moderately pigmented. Setae 1,5,8-CT frequently with 3 branches (2-5); 2-CT frequently with 5 branches (4-6); 3,4,7,11,12-CT normally double; 6,9-CT double; 10-CT usually with 4 branches (3-6). *Trumpet*: Moderately tanned; slender, cylindrical; index 11:00-13.17, mean 12.06; tracheoid area darker, extending almost 0.5 from base; pinna small, about 0.08 of trumpet length. *Abdomen*: Lightly to strongly pigmented, anterior margins of terga darker, particularly of terga II-V; length 1.85-3.11 mm, mean 2.51mm. Seta 1-III-V multiple; 2-III-V mesal to seta 1, 2-VI,VII lateral to seta 1; 3-I usually double, occasionally single, 3-II,III double; 5-III-VI shorter than length of following tergum, 5-IV,V with 4-6 branches, 5-VI frequently triple, occasionally with 4 branches; 6-III,IV frequently single, occasionally double, 6-V,VI normally double, rarely single; 9-VII relatively short, single or double; 9-VIII double, occasionally triple, inserted at posterolateral angle of tergum. *Genital lobe*: Lightly pigmented in female, darker in male; length 0.13-0.14 mm in female, 0.28-0.32 mm in male. *Paddle*: Lightly pigmented, midrib and buttress darker; midrib developed except at apex; buttress strong only at base; margins smooth; length 0.59-0.84 mm, mean 0.74 mm, width 0.35-0.51 mm, mean 0.46 mm, index 1.43-1.83, mean 1.62. Seta 1-P single; 2-P shorter than 1-P, single.

Larva (Fig. 4). General aspect of chaetotaxy as figured; range and modal number of branches in Table 2. *Head*: Wider than long; length 0.75-0.78 mm, mean 0.77 mm, width 1.09-1.16 mm, mean 1.11 mm; moderately pigmented,

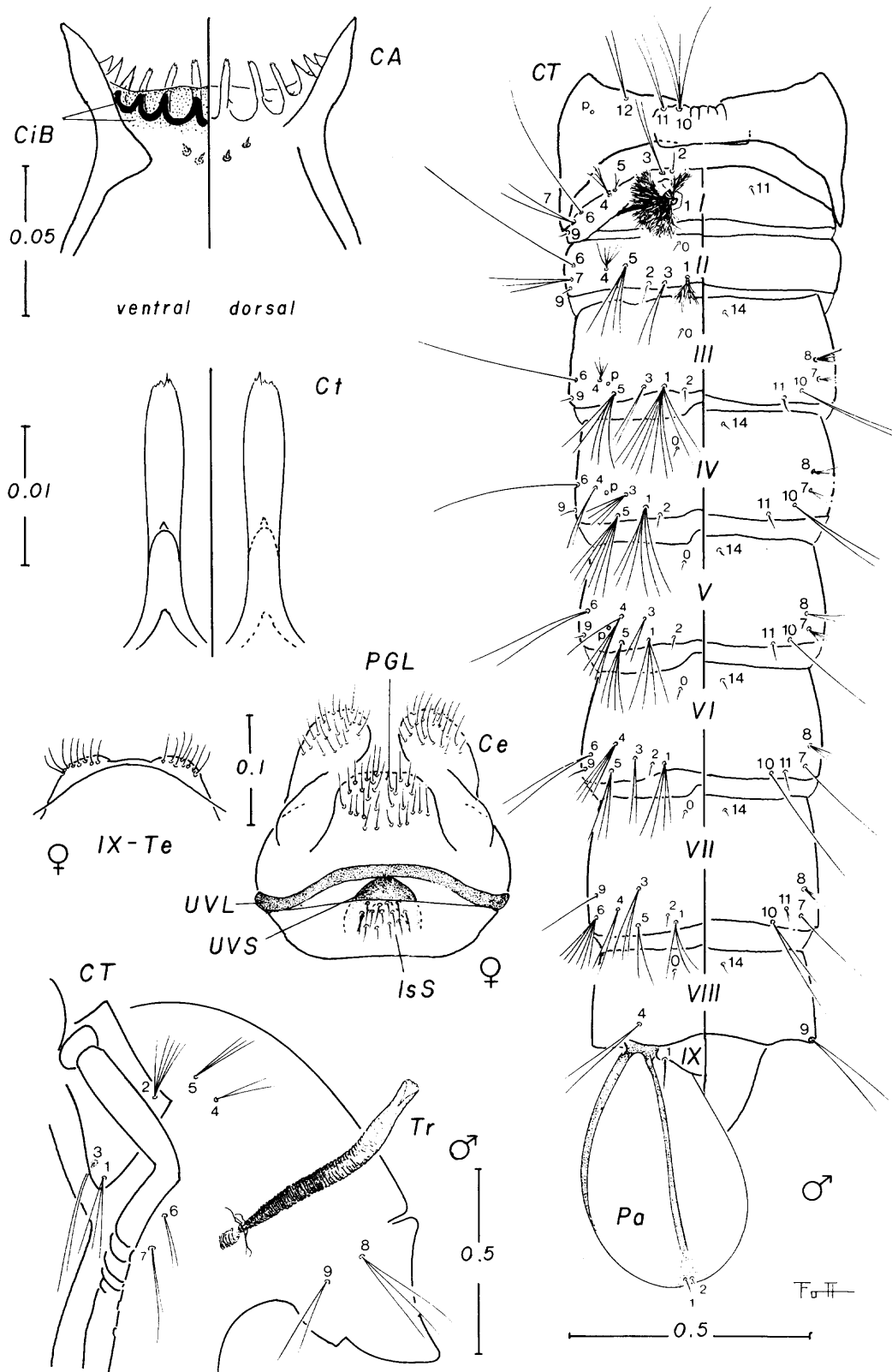


Fig. 3. *Cx. (Mel.) lopesi*. Female and pupa. CA - cibarial armature; Ce - cercus; CiB - cibarial bar; Ct - cibarial tooth; CT - cephalothorax; IsS - insular seta; Pa - paddle; PGL - postgenital lobe; Tr - trumpet; UVL - upper vaginal lip; UVS - upper vaginal sclerite; I-IX - abdominal segments; IX-Te - tergum IX.

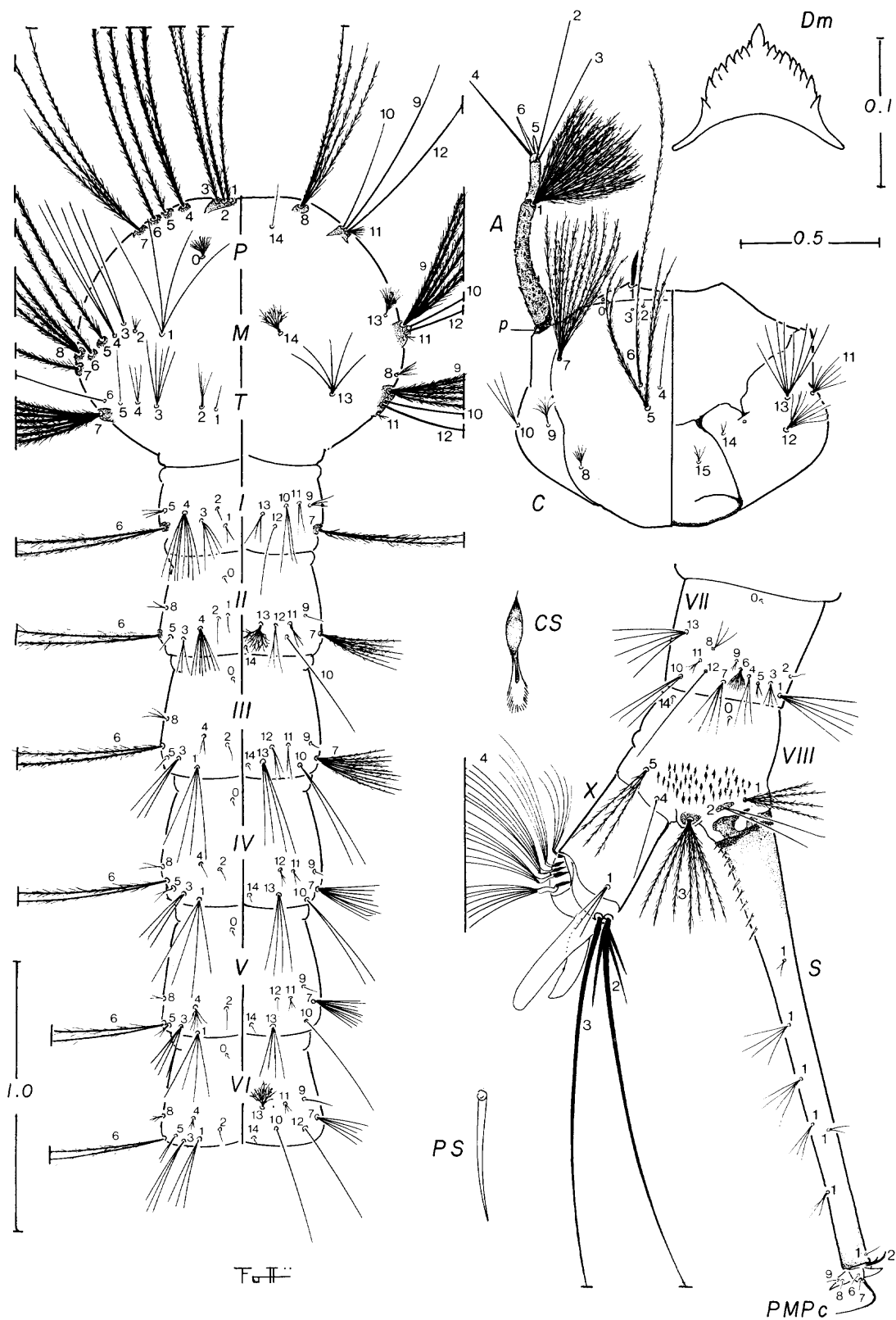


Fig. 4. *Cx. (Mel.) lopesi*. Larva. A - antenna; C - cranium; CS - comb scale; Dm - dorsosentum; M - mesothorax; p - puncture; P - prothorax; PMPc - posterior median process; PS - pecten spine; S - siphon; T - metathorax; I-X - abdominal segments.

Table 1. Number of branches for setae of the pupa of *Culex (Melanoconion) lopezi*.^a

N.	Cephalothorax	Abdominal segments									Paddle	
	CT	I	II	III	IV	V	VI	VII	VIII	IX	P	
0	-	-	1,2(1)	1	1	1	1	1	1	1	-	-
1	2-4(3) ^b	4-8(6)	>15	8-12(9)	5-10(7)	4-6(4)	2-4(3)	2-4(3)	-	1	1	
2	4-6(5)	1	1	1	1	1	1	1	-	-	1	
3	1-4(2)	1,2(2)	2	2	3-8(4)	1-3(2)	1-3(2)	2,3(3)	-	-	-	
4	2,3(2)	3-7(5)	3-6(5)	3-6(4)	2,3(2)	5-7(6)	2-4(3)	1,2(2)	2	-	-	
5	3-5(3)	2-4(3)	3-6(4)	3-7(5)	4-6(6)	4-6(5)	3,4(3)	2-4(2)	-	-	-	
6	2	1	1	1,2(1)	1,2(1)	1,2(2)	1,2(2)	5-9(6)	-	-	-	
7	2-4(2)	2,3(2)	2,3(3)	4,5	2,3(2)	3-6(5)	1	1	-	-	-	
8	2-4(3)	-	-	5-11(8)	4-6(5)	2-5(2)	2-4(3)	2-5(4)	-	-	-	
9	2	1,2(1)	1	1	1	1	1	1,2	2,3(2)	-	-	
10	3-6(4)	- ^c	-	2	1-3(2)	1	1	1,2(2)	-	-	-	
11	2,3(2)	1	-	1	1	1	1,2(1)	1,2(2)	-	-	-	
12	2,3(2)	-	-	-	-	-	-	-	-	-	-	
13	-	-	-	-	-	-	-	-	-	-	-	
14	-	-	-	1	1	1	1	1	1	-	-	

^aBased on counts made on 10 exuviae.

^bRange (mode).

^cAlveolus only.

area of lateralia around compound eyes lighter, poorly defined darker spots on posterior area of lateralia and dorsal apotome. Median labral plate dark, distinct dorsally, anterior margin concave between insertions of seta 1-C. Labiogula longer than broad; hypostomal suture complete, extending posteriorly from posterior tentorial pit to collar. Collar poorly developed, heavily pigmented. Dorsomentum with a large median tooth and 7,8 smaller teeth on either side. Seta 1-C spiniform, dark; 2-C very small; alveolus 3-C present only; 4-C moderately developed, usually single, occasionally double; 5-C well developed, frequently with 4 branches (3-5); 6-C long, single; 8,9-C similar, 8-C normally with 5 branches, 9-C usually with 6 branches; 10-C usually triple, occasionally with 2,4 branches; 13-C with 7,8 branches, inserted posterior to 11-C; 14,15-C similar in length, 14-C usually double, 15-C commonly with 4 branches. *Antenna*: Length 0.64-0.70 mm, mean 0.67 mm; heavily tanned, with dark ring at base. Scape developed; pedicel weak and hardly perceptible; part of flagellum proximal to seta 1-A curved with scattered spicules, distal part thinner, straight, with only a few aciculae lateral to seta 1-A; seta 1-A 0.76 from base; antennal puncture distinct. Seta 1-A developed, with 24-29 aciculate branches. *Thorax*: Integument hyaline, prothorax covered with tiny spicules, spicules more evident laterally; tubercles of large setae moderately pigmented, setae 1-3-P and 9-12-P,M,T inserted on common tubercles. *Prothorax*: Setae 1,2-P long, single, 1-P rarely double; 3-P about 0.5 length of 1,2-P, frequently double, occasionally

triple; 4-P double; 5,6-P single; 7-P usually triple, occasionally with 4 branches; 8-P usually with 4 branches. *Mesothorax*: Seta 1-M developed, with 1-3 branches; 2-M shorter than 1-M, usually triple; 5-M long, single. *Metathorax*: Seta 1-T small, usually double, occasionally single; 5-T frequently single; 13-T fanlike with 5,6 branches. *Abdomen*: Integument hyaline, entirely smooth, segment VIII with patches of tiny spicules, more evident near the comb scales, imparting a striated appearance; setae 6-I,II, 7-I and 2,3-VIII inserted on moderately pigmented tubercles. *Segments I-VI*: Seta 1-I,II small, 1-I commonly double, 1-II single, 1-III-V well developed, multiple, usually with 4 branches, 1-VI triple; 2-I,II small, single; 6-I,II long, double, 6-III-VI shorter, 6-III triple, 6-IV,VI frequently double, 6-V double; 7-I long, single, 7-II-V shorter, multiple, 7-III with 8-11 branches, 7-IV often with 9 branches (6-12), 7-V with 9-13 branches, 7-VI with 5 branches; 13-III-V well developed, often with 4 branches. *Segment VII*: Seta 1-VII well developed, usually with 5 branches; 4-VII commonly triple; 7-VII with 4-6 branches; 10-VII usually triple (2-4); 13-VII with 3-5 branches. *Segment VIII*: Comb with 45-64 scales, mean 57.3; scales arranged in 4 irregular rows, nearly forming triangle; scales long, normally fringed on sides and apex; smaller in anterior rows. *Siphon*: Index 8.05-9.67 (width measured at base), mean 8.86; moderately to strongly pigmented with basal ring and acus heavily pigmented, acus attached, long and slender on anterior side of attachment. Pecten of 9-13 spines, mean 10.42, in row at basal 0.20 of siphon, increasing in size distally, distal

Table 2. Number of branches for setae of the fourth-instar larva of *Culex (Melanoconion) lopesi*.^a

Seta	Head		Thorax			Abdominal segments									
	N	C	P	M	T	I	II	III	IV	V	VI	VII	VIII	X	
0	- ^c		21-28(23)												
1	1	1	1,2(1)	1-3(3)	1,2(2)	1-3(2)	1	1	1	1	1	1	1	1	-
2	1	1	3-5(3)	3-5(3)	4,5(4)	1	1	3,4(4)	4,5(4)	3-5(4)	3	4,5(5)	3-5(4)	3-5(4)	3-5(3)
3	- ^c		2,3(2)	1,2(2)	4-6(5)	4-6(4)	3,4(3)	3-5(3)	4,5(4)	3	4,5(5)	3-5(4)	7,8(7)	7,8(7)	1
4	1,2(1) ^b	2	2,3(3)	2,3(3)	3-5(4)	13-21(16)	6-9(8)	2,3(2)	1	7-10(7)	2-4(3)	2,3(3)	1	1	2-9(5)
5	3-5(4)	1	1	1	1,2(1)	2-5(3)	1	1-3(1)	1-3(2)	2,3(2)	1-3(2)	3,4(3)	3,4(3)	3,4(3)	-
6	1	1	1	1	1	2	2	3	2-4(2)	2	1,2(2)	21-26(24)	1a-S,	2	2
7	10-13(11)	3-4(3)	1	1	7-10(9)	2	4-7(6)	8-11(10)	6-12(9)	9-13	4,5(5)	4-6(5)	1b-S,	3-5(3)	
8	4-6(5)	3-6(4)	3,4(3)	3,4(3)	5-10(7)	-	1,2(2)	2-4(3)	2,3(2)	2,3(2)	2-4(3)	4-7(6)	1c-S,	3	3
9	5-9(6)	1	4-7(6)	4-7(6)	5,6(6)	3,4(3)	1	1	1	2,3(2)	1	2-4(3)	1d-S,	2,3(2)	
10	2-4(3)	1	1	1	1	1	1	2	2	1	1,2(1)	2-4(3)	1e-S,	2,3(3)	
11	5-8(6)	5-7(6)	2,3(3)	2,3(3)	2-4(3)	2-4(2)	2,4(3)	2,3(2)	2,3(3)	2-4(3)	2-4(3)	2-4(3)	1f-S,	1	
12	8-12(10)	1	1	1	1	2-4(3)	3	2,3(3)	1	1	1	1	1g-S,	1	
13	7,8(8)	-	17-34(29) ^d	1	5,6(5)	2,3(3)	16-25(25) ^d	3,4(4)	3,4(4)	3-5(4)	n.c.	3-5(5)	2S,	2	
14	1,2(2)	1	18-22(22) ^d	1	-	-	1	1,2(1)	1	1	1,2(1)	-	1	-	
15	3-5(4)	-	-	-	-	-	-	-	-	-	-	-	-	-	

^aBased on counts made on 10 exuviae.^bRange (mode).^cAlveolus only.^dObserved in under 10 exuviae.^eThree modal numbers.

n.c. not counted.

ones more widely spaced; margin of spines smooth. Seta 1-S usually in 7 pairs (in 17 siphons examined, 9 with 7, 7 with 6.5, 1 with 6), 4 posterior pairs with 2 proximal pairs nearly 3.0 and 2 distal pairs nearly 2.0 width of siphon at point of insertion; 3 anterior pairs shorter than width of siphon at point of insertion; seta 2-S inserted in membrane near base of anterolateral spiracular lobe, anteriorly slightly curved with slender curved secondary branch inserted medially on curved side; posterior median process (PMPc) present as a slender lengthy filamentous projection. *Segment X*: Saddle complete, without acus and without spicules; length 0.36-0.40 mm, mean 0.38 mm, siphon/saddle index 4.16-4.58, mean 4.33. Seta 1-X usually triple (3-5); 2-X with 1 long and 1-3 short branches; 3-X long, single; 4-X usually with 6 paired setae, 3 anterior pairs commonly with 5 branches (3-8), 3 posterior pairs commonly with 8 branches (2-9), all setae borne on a grid, anterior end of grid attached to saddle. Anal papillae long and slender, dorsal pair shorter than ventral pair, dorsal pair about 1.2 length of saddle, ventral pair about 1.6 length of saddle.

MATERIAL EXAMINED

Eighty-three specimens (43 females, 29 males, 11 immature stages) as follows. *Females*: São Paulo State, Brazil: 12 with associated pupal and larval exuviae, 1 with associated pupal exuvia (Fonte Station, Itapitangui, Cananéia, X.82, VII.83, III.84, VII.87, X.88); 3 reared but associated pupal and larval exuviae lost (Iguape, III.84, 1; Fonte Station, Itapitangui, Cananéia, X.1988, 2); 27 collected as adults (Experimental Station, Pariquera-Açú, X.79, XII.79, I.80, V.80, VIII.80, I.81, VII.81, III.82, VI.82, VIII.82, 14; Pariquera-Açú County, XI.80, 1; Biguá Road, Iguape, XI.82, 2; Sitio Itapuã, Itapitangui, Cananéia, VII.80, IX.80, XI.80, I.81, II.81, III.82, IV.82, 9; Folha Larga Farm, Cananéia, IX.83, 1). *Males*: São Paulo State, Brazil: 3 with associated pupal and larval exuviae, (Biguá Road, Iguape, III.84, 1; Fonte Station, Itapitangui, Cananéia, 2); 2 with associated pupal exuviae (Fonte Station, Itapitangui, Cananéia, VII.83, XI.86); 6 reared but associated pupal and larval exuviae lost (Experimental Station, Pariquera-Açú, VII, 2; Fonte Station, Itapitangui, Cananéia, X.88, 4); 13 collected as adults (Experimental Station, Pariquera-Açú, X.79, XII.79, I.80, X.80, XI.80, V.85, 6; Biguá Road, Iguape, IX.82, 4; Folha Larga Farm, Cananéia, III.83, XI.85, 3); 3 collected as adult, but only genitalia remaining (Pariquera-Açú County, II.79, II.80, 2; Rocio, Iguape, XI.82, 1). Paraná State, Brazil: collected as adults, one of them with only genitalia remaining (Paranaguá, IV.77, E.Luz coll.). *Immature stages*: 8 collected as larvae (Fonte Station, Itapitangui, Cananéia, São Paulo State, Brazil, XI.86, VI.87); 3 larval exuviae with associated pupal exuviae (female) but no associated adult (Biguá Road, Iguape, III.84, 2; Fonte Station, Itapitangui, Cananéia, VII.87, 1).

Other specimen: *Cx. lopesi*, Paratype, 1 male (Porto do Ribeira, Iguape, São Paulo State, Brazil, O.S. Lopes coll. VII.76, S. Sirivanakarn and W.L. Jakob det. 1978, caught in CDC miniature light trap).

DISTRIBUTION AND BIONOMICS

Culex lopesi has been found only in the area of Ribeira Valley, São Paulo State, and the nearby region of Paraná State in southern Brazil, but it is possible that its distribution extends as far as that of the biogeographic dominion of the Tropical Atlantic System. Breeding places are scarcely known. The immature stages were found in small ground waters almost entirely covered with dense vegetation. Adults were collected in forest, a few on human bait and one with avian blood in the gut (Forattini et al. 1986, 1987; Gomes et al. 1987). More recently, a few specimens were collected in a peridomiciliary environment (Forattini et al. 1989).

DISCUSSION

In the original description, Sirivanakarn and Jakob (1979) refer to *Culex lopesi* as "perhaps one of the most unusual in the subgenus *Melanoconion*", but included, as a feature shared with most members of that subgenus, "the absence of acrostichal setae on the mesonotal disc". Nevertheless, *lopesi* does have acrostichal setae. These setae in *lopesi* and *spissipes* are arranged as a complete row, while in *sacchettae*, *vomerifer* and *portesi* they are limited to the posterior part of the acrostichal line (Forattini and Sallum 1989). Females of *spissipes* are easily distinguished from *lopesi* by the pattern of golden scales on the scutum and *portesi*, *sacchettae* and *vomerifer* are readily distinguished from this species by the pattern of dark spots present in the pleural integument (entirely dark in *lopesi*). Furthermore, *sacchettae* is recognized by having the tarsi with pale rings (dark-scaled in *lopesi*). Besides this, females of *lopesi* can be separated from the others by the structure of the cibarial armature which is characteristic of this species. The male genitalia show many distinctive features that were indicated in the original description (Sirivanakarn and Jakob 1979) and described in detail in the present description.

Comparing the characteristics of the immature stages of *lopesi* with those mentioned by Sirivanakarn (1982) for the *Spissipes* and *Jubifer* Groups, the main differing characters may be considered as follows: the larva of *lopesi* has seta 1-M with 1-3 branches and shorter than 5-M, while it is single, strong and as long as 5-M in *spissipes*. The pupa of *lopesi* has the pinna of trumpet narrow, including a slit about 0.2 total length of trumpet, as in *Cx. simulator* Dyar and Knab and *Cx. jubifer* Komp and Brown, but it may be distinguished by having seta 5-IV with 4-6 branches rather than double, it is distinguished from *spissipes* by having the

meatus uniformly cylindrical rather than expanded in the middle.

Regarding the immature stages of the Spissipes Section, the main distinguishing characters may now be considered as follows. The larva of *lopesi* has seta 7-I double; 2,3-A inserted subapically and 1-M large. In addition, the spines of the pecten are smooth and the posterior median process is long. The large seta 1-M is shared with *Cx. ocosa* Dyar and Knab and *Cx. ribeirensis* Forattini and Sallum, however, the double 7-I allows separation from *ocosa* where this seta is commonly single. These characters, the subapical insertion of 2,3-A, the large posteriormedian process and the smooth margin of the siphonal spines, separate *lopesi* not only from *ocosa* but also from *ribeirensis*. The smooth siphonal spines are present in *sacchettae* and *portesi*, but the small 1-M and the apical insertion of 2,3-A in these species separate them from *lopesi*. Regarding the pupa, *lopesi* is practically inseparable from *Cx. taeniopus* Dyar and Knab. Until proven otherwise, separation may be based on seta 1-III which has 8-12 branches in *lopesi* and only 5 in *taeniopus*. The pupa of *portesi*, *ribeirensis* and *sacchettae* may be distinguished from that of *lopesi* by characters of the trumpet and setae 4-I and 5-IV. In *lopesi*, the trumpet is cylindrical, the pinna is small, the index is 11.00-13.17 and the length of pinna, including slit, is about 0.2 total length of the trumpet. In *portesi* and *ribeirensis* the trumpet is funnel-shaped, the pinna is large, the trumpet indices are 4.4 and 6.3-7.7 respectively, and the length of the pinna, including the slit, is 0.5 total length of the trumpet. In *sacchettae* the trumpet is also cylindrical, but the trumpet index is 7.4-9.89. Seta 4-I is long in *portesi* while is short in *lopesi* and *ribeirensis*. Seta 5-IV is 4-6 branched in *lopesi* while it is 6-9 branched in *portesi* and *ribeirensis*.

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