

**REDESCRIPTION OF  
CULEX (MELANOCONION) INADMIRABILIS DYAR  
AND SYNONYMY OF  
CULEX (MELANOCONION) MISTURA KOMP AND ROZEBOOM  
(DIPTERA: CULICIDAE)<sup>1</sup>**

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**ABSTRACT.** *Culex (Melanoconion) mistura* Komp and Rozeboom is synonymized with *Culex (Melanoconion) inadmirabilis* Dyar. The adult, pupal, and larval stages of *Cx. inadmirabilis* are redescribed and illustrated. Available data about distribution and bionomics are presented.

### INTRODUCTION

Species of the *Culex* Linnaeus subgenus *Melanoconion* Theobald were tentatively identified during epidemiological research carried out in the Ribeira Valley, São Paulo State, Brazil. Among them, *Culex (Melanoconion) inadmirabilis* Dyar was recognized, and its larval and pupal stages were obtained. So the opportunity to make the redescription of the species appeared and a new synonymy was established.

### TAXONOMIC TREATMENT

#### *Culex (Melanoconion) inadmirabilis* Dyar

1928. *Culex (Mochlostyrax) inadmirabilis* Dyar, 1928:297 (♂). Type locality: São Paulo, Brazil (NMNH).

1951. *Culex (Melanoconion) mistura* Komp and Rozeboom, 1951:124 (♂, ♀, L). Type locality: Laguna de la Palmita, Villavicencio, Meta, Colombia (NMNH). **NEW SYNONYMY.**

*Culex (Melanoconion) inadmirabilis* of Rozeboom and Komp (1950:91); Lane

(1953:477); Belkin, Schick and Heinemann (1971:24; info. on type); Sirivanakarn (1983:279).

*Culex (Melanoconion) mistura* of Foote (1954:69); Belkin, Schick and Heinemann (1965:9; info. on type); Sirivanakarn (1978:479; 1983:279).

A small dark brown species resembling *Cx. educator* Dyar and Knab, but differing in details of the female, male genitalia, larva, and pupa.

**Female.** Body almost entirely covered with dark brownish-black scales. **Head:** Antenna dark, length about 1.80 mm; flagellum normal, whorls with 6 setae. Proboscis entirely dark-scaled, length 1.55–1.64 mm, mean 1.59 mm. Maxillary palpus entirely covered with dark scales, length 0.26–0.30 mm, mean 0.28 mm, about 0.17 length of proboscis. Vertex (Fig. 1C,D) with broad spatulate scales, dark dorsally, dingy white laterally; forked scales dark; occipital region with some pale whitish falcate scales. **Cibarium** (Figs. 1A,B; 2): Cibarium length about 210 μm; cibarial bar concave, dorsal surface and posterior margin smooth; about 8 curved teeth; tooth length about 23 μm; line of origin distinct, irregular, teeth attached to cibarial bar, apically free from enclosure, distal margin irregularly serrated; hollow area of teeth large, nearly triangular. Posterior hard palate nearly rect-

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Fig. 1. *Culex (Mel.) inadmirabilis*, female. A,B, Dorsal aspect of cibarial armature; C,D, dorsal scaling of head; E, lateral aspect of thorax showing presence of upper mesokatepisternal scales; F, dorsal scaling on distal portion of right wing; G, ventral scaling on distal portion of right wing.

angular in outline; dorsal apodeme not evident; hyaline area between cibarial dome and posterior hard palate smooth; cibarial

dome nearly pentagonal, concavo-convex, surface with long, triangular, sharply pointed, posteriorly directed denticles. Palatal setae

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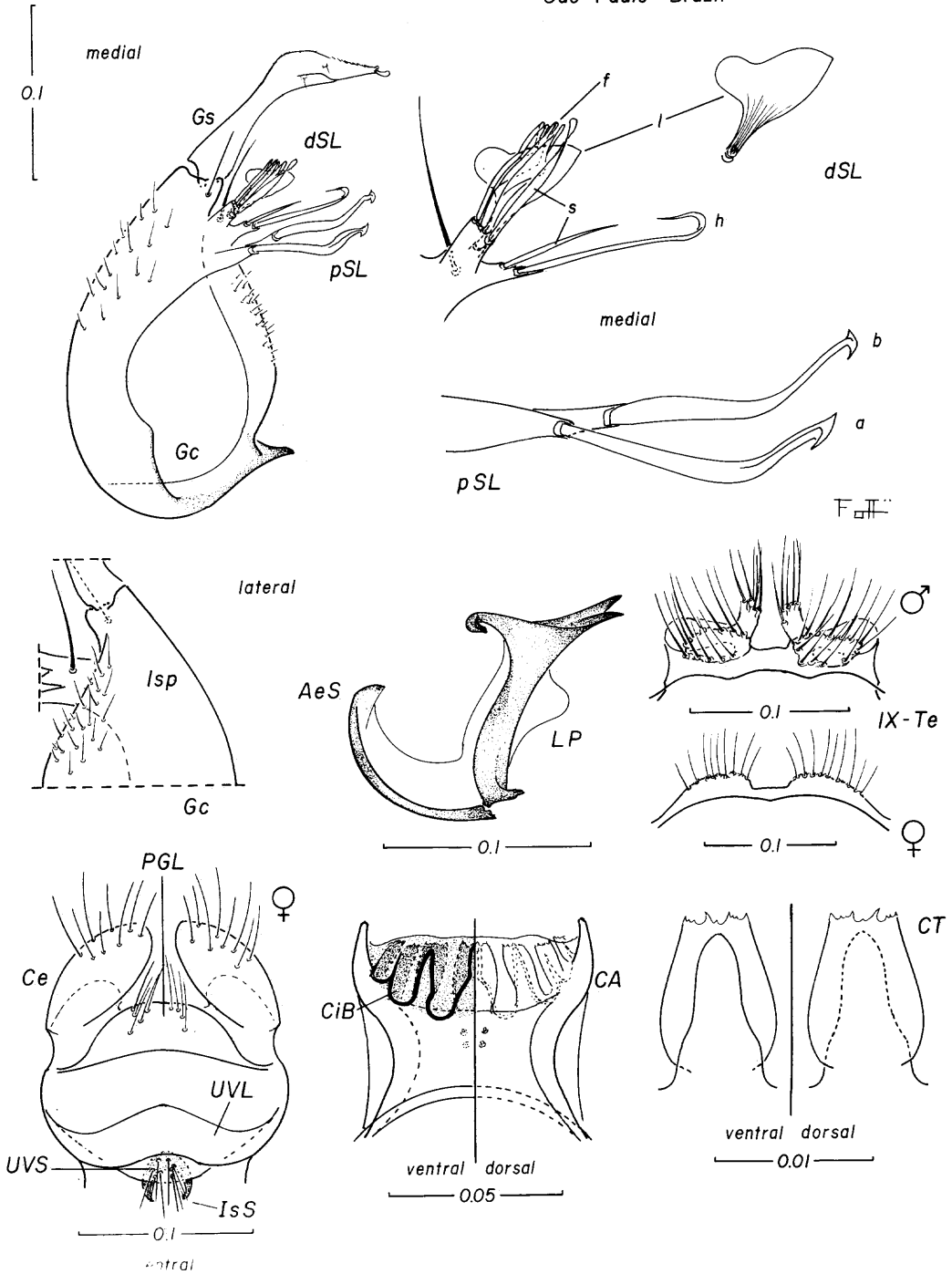


Fig. 2. *Culex (Mel.) inadmirabilis*, female and male genitalia. a = seta a of pSL, AeS = aedeagal sclerite, b = seta b of pSL, CA = cibarial armature, Ce = cercus, CiB = cibarial bar, CT = cibarial tooth, dSL = distal division of subapical lobe, f = flat seta of dSL, Gc = gonocoxite, Gs = gonostylus, h = hooked seta of dSL, IsS = insular seta, l = leaf seta of dSL, LP = lateral plate, lsp = lateral setal patch, PGL = postgenital lobe, pSL = proximal division of subapical lobe, s = saberlike seta of dSL, UVL = upper vaginal lip, UVS = upper vaginal sclerite, IX-Te = tergum IX. Scales in mm.

situated on lateral edges of anterior hard palate, 2 on each side. Sensilla trichodea arranged in linear series of 2,3 single setae on each side. *Thorax* (Fig. 1E): Integument dark brown to black. Scutum covered with very fine falcate scales of uniform size and color, brownish black with reddish reflections, occasionally with some light golden scales on prescutellar area. Scutal setae prominent brownish black with reddish sheen, acrostichal setae absent. Scutellar scales similar to those of scutum, occasionally these mixed with some light golden scales on median lobe; lateral lobes each with 4,5 large setae, median lobe with 6 long setae. Anteprenotum without scales, with scattered dark setae. Postpronotum with narrow dark scales, similar to those of scutum; posterolateral margin with 4,5 dark setae. Pleural setae brown to golden brown, lighter on lower mesokatepisternum and on upper mesepimeron, darker on prealar knob: 13–22 upper proepisternal, 3–7 prealar, 6–9 upper mesokatepisternal, 9–16 lower mesokatepisternal, 5–11 upper mesepimeral and 1,2 lower mesepimeral. Pleura with scales on mesokatepisternum only, usually with whitish spatulate scales on upper corner, these occasionally absent, and a small patch of white spatulate scales on lower posterior border. *Wing* (Fig. 1F,G): Length 2.61–2.76 mm, mean 2.70 mm; cell  $R_2$  about 3.8 of  $R_{2+3}$ ; cell  $M_2$  0.9 of cell  $R_2$ ; subcosta intersects costa at level of  $R_{2+3}$  furcation. Dorsal scaling: appressed spatulate scales on costa, subcosta,  $R$ ,  $R_1$ ,  $R_{4+5}$ , distal 0.7 of  $M_{1+2}$ ,  $M_{3+4}$ ,  $Cu$ ,  $Cu_1$ ,  $Cu_2$ , and proximal 0.5 of 1A; linear plume scales on  $R_s$ ,  $R_{2+3}$ , proximal 0.5 of  $R_2$ , proximal 0.5 of  $R_3$ ,  $M$ , proximal 0.3 of  $M_{1+2}$ , and distal 0.5 of 1A; inclined, narrow spatulate scales on distal 0.5 of  $R_2$  and distal 0.5 of  $R_3$ . Ventral scaling: appressed spatulate scales on costa, subcosta,  $R_s$ ,  $R_{2+3}$ , proximally on  $R_2$ , proximally on  $R_3$ ,  $M$ , proximally on  $M_{1+2}$ ; linear plume scales on proximal 0.5 of  $R_1$ , proximal 0.7 of  $R_{4+5}$ ,  $M_{3+4}$ ,  $Cu_1$ ,  $Cu_2$ , and on middle of 1A; inclined, narrow spatulate scales on distal 0.5 of  $R_1$ , distal 0.8 of  $R_2$ , distal 0.8 of  $R_3$ , distal 0.3 of  $R_{4+5}$ , distal 0.7 of  $M_{2+2}$ , and distally on 1A;  $Cu$  and proximal 0.4 of 1A without

scales. *Halter*: Scabellum and ventral portion of pedicel pale; capitellum and dorsal portion of pedicel dark. *Legs*: Dark-scaled except for usual pale scales of femora. Fore- and mid-femora 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 over whole of anterior and posterior surfaces at apex. Tibiae and tarsi 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 dark-scaled medially, white-scaled laterally. Sterna II–VII mainly dark-scaled, with basolateral white patches; sternum VIII with a few dark scales medially and posterolaterally and white scales basolaterally. *Genitalia* (Fig. 2): Tergum IX narrowed in middle, with small lobes bearing 6–10 slender setae. Upper vaginal lip distinct and narrow; lower vaginal lip and insula indistinct, with about 8,9 clustered insular setae. Upper vaginal sclerite with inverted U-shape, thickened at base. Postgenital lobe short, trapezoidal distally, concave at distal margin, with 5–8 setae on either side of midline, mostly on ventral surface.

**Male.** Like female except for the following differences. *Head*: Antenna strongly verticillate, length about 1.56 mm. Maxillary palpus entirely dark-scaled, length about 2.20 mm, exceeding proboscis tip by distal 0.5 of palpomere 4 and palpomere 5; palpomeres 4 and 5 densely setose, palpomere 3 with 6–9 strong setae distally. *Abdomen*: Tergum II entirely dark-scaled or with a few white scales on basolateral areas. Terga III–VII dark-scaled with basolateral white patches; tergum VIII (ventral) dark-scaled, with lateral white patches and deep V-shaped median posterior emargination and bearing long bristles mixed with shorter setae. Sterna mostly dark-scaled with basolateral white patches; sternum VIII (dorsal) with basolateral white patches. *Genitalia* (Fig. 2): Tergum IX lobes as figured. Gonocoxite stocky, outer margin convex, inner slightly convex; ventrolateral setae strongly developed, mesal surface with small setae ex-

tending from base to level of subapical lobe, lateral surface with patch of long sparse setae (lsp) at level of subapical lobe, proximal part of ventrolateral surface with scales; subapical lobe clearly divided, divisions distinctly separated; proximal division with 2 arms, basal arm arising as a short arm at base of column, each with one long apical sinuous seta (setae *a* and *b*); distal division broad, subdivided into 2 short arms, inner arm with one hooked seta (*h*) and one moderately long saberlike seta (*s*); outer arm with 1 long saberlike seta (*s*), 1 wide asymmetrical striated foliform seta (*l*) inserted on a developed lateral tubercle, 4 appressed flat setae (*f*), and 1 long flexible seta inserted in middle of lateral surface. Gonostylus slender, curved, widened distally on lateral side, with slightly wrinkled crest before apical snout on ventral surface; gonostylar claw short, leaf-like, broadest apically. Phallosome with lateral plates and aedeagal sclerites of equal length; aedeagal sclerite narrow and curved in lateral view, anterior margin thickened and sclerotized, dorsal end united to base of lateral plate; distal part of lateral plate with apical, ventral, and lateral processes, apical process small, triangular, pointed or with 2–4 small teeth at apex, ventral process developed and curved laterally, lateral process shorter, slender, and directed dorsolaterally; base of lateral plate with dorsal process stout and basally continuous with thickened margin of aedeagal sclerite; aedeagal sclerites not connected by dorsal aedeagal bridge. Proctiger elongate; paraproct narrow distally, expanded basally, crown with row of 7–9 simple blades; cercal sclerite narrow, long, expanded basally; 1–4 small cercal setae; tergum X large, somewhat round, concavo-convex.

**Pupa** (Fig. 3). General chaetotaxy as figured; range and modal number of branches in Table 1. *Cephalothorax*: Lightly tanned, legs, scutum, and metathorax darker. *Trumpet*: Moderately tanned, cylindrical, index 4.26–5.95, mean 5.06; tracheoid area darker, extending almost 0.4 from base; pinna large, about 0.4 of trumpet length. *Abdomen*: Lightly tanned, anterior margin of terga darker, particularly of terga II–IV; length 1.91–2.45

mm, mean 2.25 mm. As an anomaly, seta 13-III with 5 small branches and 13-IV with 3 small branches (observed in 2 specimens). *Genital lobe*: Moderately pigmented in female, darker in male; length about 0.12–0.15 mm in female, 0.25–0.27 mm in male. *Paddle*: Lightly pigmented, midrib and buttress darker, midrib developed except at apex; buttress strong only at base; margins smooth, length 0.65–0.77 mm, mean 0.70 mm, width 0.39–0.52 mm, mean 0.46 mm, index 1.40–1.68, mean 1.52. Seta 1-P simple; 2-P shorter than 1-P, simple.

**Larva** (Fig. 4). General chaetotaxy as figured; range and modal number of branches in Table 2. *Head*: Wider than long, length 0.64–0.70 mm, mean 0.67 mm, width 1.04–1.10 mm, mean 1.08 mm; lightly to moderately pigmented, area of lateralia around eyes lighter, indefinite dark spots on posterior parts of dorsal apotome and lateralia. Dorsosomum with a large median tooth and 4, 5 smaller teeth on either side. Antennal length 0.62–0.66 mm, mean 0.63 mm; antenna lightly pigmented, with dark ring at base. Seta 1-A 0.7 from base of antenna, with 23–27 aciculate branches; setae 2,3-A apical in position. Antennal puncture distinct. A ventral hyaline gill-like pouch at base of antenna. Setae 2,3-C absent; 5-C with simple branches; 6-C long, sparsely aciculate, often single, rarely double. *Thorax*: Integument hyaline, covered with spicules, these more evident laterally; pro-, meso-, and metathoracic segments without bands or patches of black pigment granules under integument. Seta 1-M moderately developed, with short aciculae apically; 1-T sparsely aciculate apically; 13-T well developed, multibranched, aciculate. Seta 1-T smaller than 1-M and 13-T. *Abdomen*: Integument hyaline, with inconspicuous spicules, these more evident on posterior segments; segments without bands of black pigment granules under integument. Seta 1-I,II small, with simple branches, 1-III-V well developed, multibranched, sparsely aciculate. Seta 6-I,II long, double, branches unequally developed, 6-III-VI of nearly equal development, aciculate. Seta 13-III-V well developed, with short aciculae. Comb with

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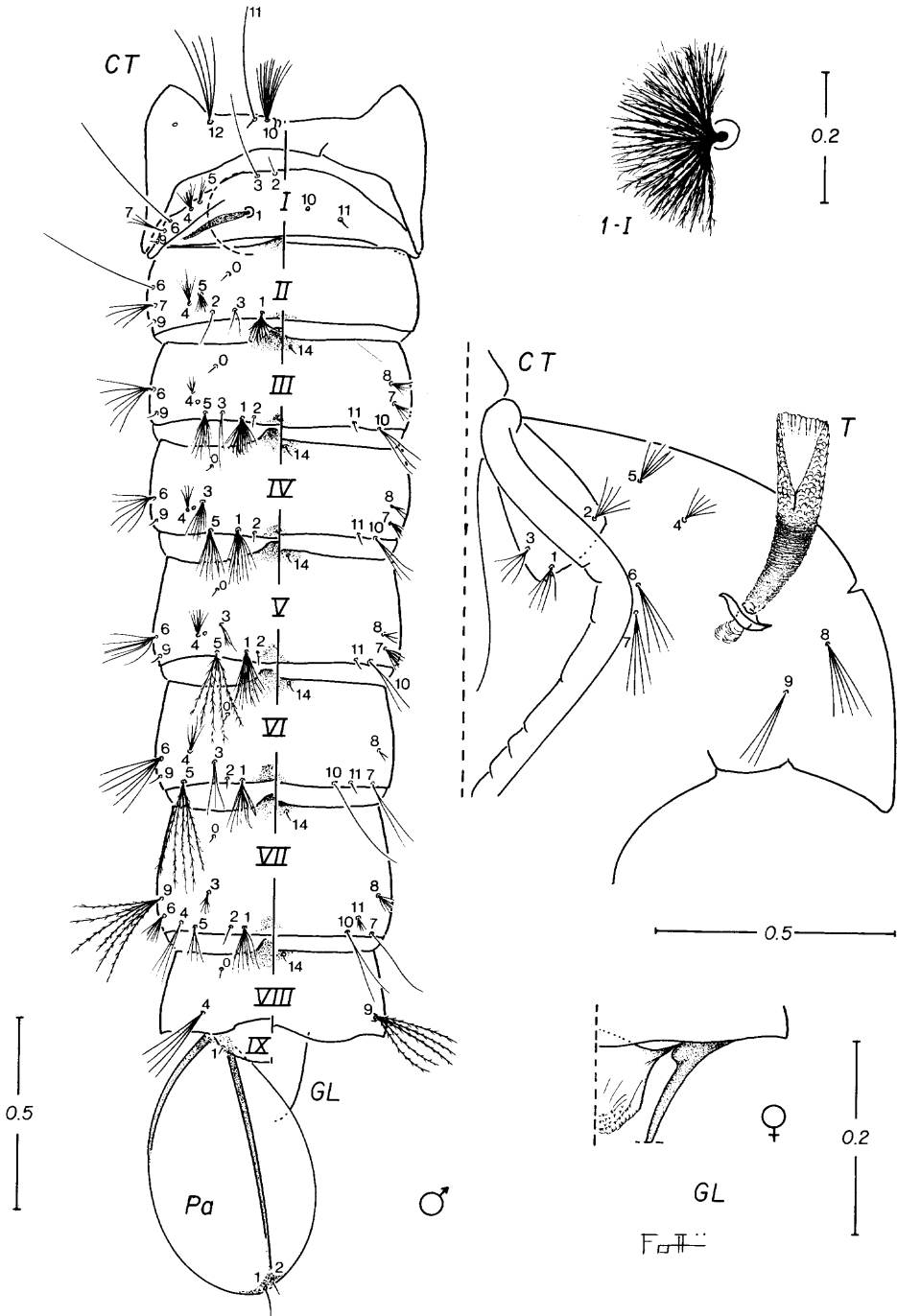


Fig. 3. *Culex (Mel.) inadmirabilis*, pupa. CT = cephalothorax, GL = genital lobe, Pa = paddle, T = trumpet, I-IX = abdominal segments. Scales in mm.

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

Seta no.	Cephalo-thorax		Abdominal segments										Paddle	
	CT		I	II	III	IV	V	VI	VII	VIII	IX	P		
0	—		—	1	1	1	1	1	1	1	1	1	—	
1	4-6(5) <sup>2</sup>	13-24(19)	5-10(7)	1,2(1)	11-17(16)	11-15(13)	11-14(13)	8-12(10)	6-9(8)	—	—	—	1	
2	5-7(6)	1,2(1)	1	1,2(1)	1	1	1	1	1	—	—	—	1	
3	3-5(4)	1,2(2)	1,2(1)	1,2(2)	2,3(2)	5-9(7)	3-5(4)	2-4(3)	5-7(5)	—	—	—	—	
4	5,6(5)	7-9(8)	7-15(8,9)	7-9(8)	4-6(4,5)	2-4(3)	5-9(7)	4-9(5,6)	2-4(3)	3,4(4)	—	—	—	
5	6-10(7,8)	7-10(8)	2-5(3)	7-10(8)	7-11(10)	8-12(9)	4-9(6)	2-6(5)	3-6(4)	—	—	—	—	
6	2-4(3)	1	1	1	4-8(6)	5-8(6)	5-8(6)	5-7(7)	6-9(7)	—	—	—	—	
7	4,5(4)	3-5(4)	2-5(3)	3-5(4)	4-6(5)	4,5(5)	5-7(6)	1,2(2)	1,2(1)	—	—	—	—	
8	4-6(5)	—	—	—	4-6(5)	2-4(3)	2,3(3)	2-5(2,3)	4-8(6,7)	—	—	—	—	
9	2-4(3)	1	1	1	1	1	1	1	4-6(5)	5-7(5,6)	—	—	—	
10	8-11(10)	—	a <sup>3</sup>	—	2-4(3)	2-4(3)	1-3(2)	1-3(1)	2-4(3)	—	—	—	—	
11	1	—	1	—	1,2(1)	1,2(1)	1,2(1)	1-3(1)	2-4(3)	—	—	—	—	
12	3-5(4)	—	—	—	—	—	—	—	—	—	—	—	—	
13	—	—	—	—	—	—	—	—	—	—	—	—	—	
14	—	—	—	—	1	1	1	1	1	1	1	1	—	

<sup>1</sup> Based on counts made on the holotype and 10 other specimens.

<sup>2</sup> Range (mode).

<sup>3</sup> Alveolus (= a) only.

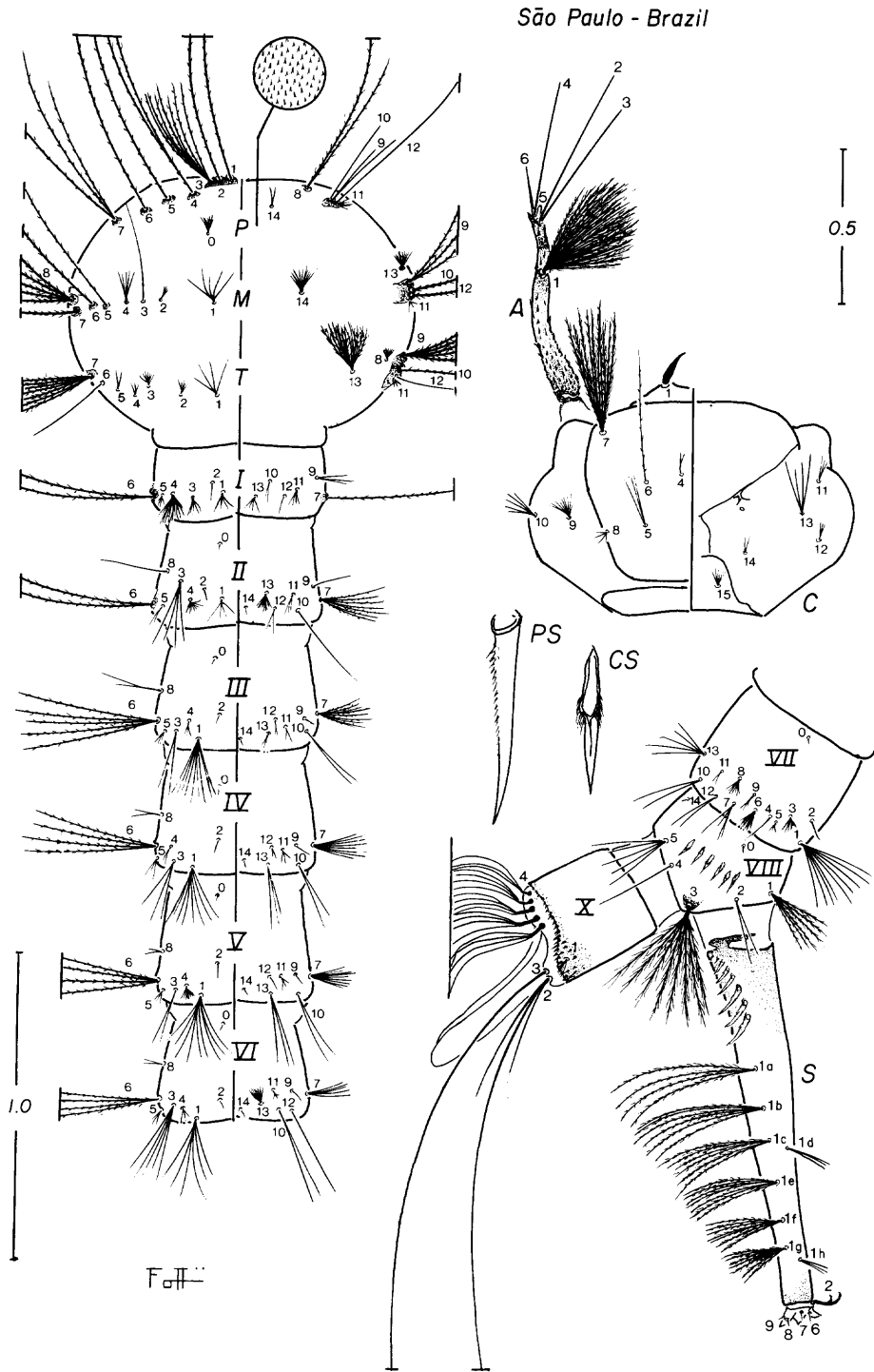


Fig. 4. *Culex (Mel.) inadmirabilis*, larva. A = antenna, C = cranium, CS = comb scale, M = mesothorax, P = prothorax, PS = pecten spine, S = siphon, T = metathorax, I-X = abdominal segments. Scales in mm.



**Table 2.** Number of branches for setae of the fourth-instar larva of *Culex (Melanoconion) inadmirabilis*.<sup>1</sup>

Seta no.	Head C	Thorax					Abdominal segments																		
		P	M	T	I	II	III	IV	V	VI	VII	VIII	X												
0	a <sup>2</sup>	14-25(14,16)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1	1	1	4-6(4,5)	3-5(4)	3-5(5)	2-5(4)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	—	1	3-7(5,6)	4-7(5)	1,2(1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	—	—	1	6-9(7)	4-6(4)	3-5(4)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1,2(1) <sup>3</sup>	2	4,5(5)	3-5(3)	12-15(14)	7-12(8)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	2-4(3)	1	1	2,3(2)	3-5(4)	1-3(2)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1,2(1)	1	1	1,2(1)	2	1-3(2)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	9-14(11)	1	1	5-7(6)	1	3-10(7)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	3-6(4)	2	4,5(5)	13-17(14,16)	—	1,2(1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	6-9(9)	1,2(2)	3,4(3)	4-7(5)	1-3(1,2)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	4,5(5)	1	1	1	1,2(1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	2-4(3)	4-8(5)	2-4(3)	2-5(3)	2-4(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)	2-6(3)
12	2-4(3)	1	1	1	2,3(3)	2-4(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)	2,3(2)
13	3-5(4)	—	nc <sup>5</sup>	11-17(14)	3,4(4)	14-28(17,18)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
14	2,3(2)	2,3(2)	nc	—	—	—	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	4-7(6)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

<sup>1</sup> Based on counts made on the holotype and 10 other specimens.  
<sup>2</sup> Alveolus (= a) only.  
<sup>3</sup> Range (mode).  
<sup>4</sup> Mode variable.  
<sup>5</sup> nc = not counted.

4–10 scales, these long, sharply pointed, normally fringed on sides; scales arranged in an irregular row. *Siphon*: Index 4.44–5.54, mean 4.97, lightly to moderately tanned, with darkened ring at base and occasionally near middle; acus attached, long and slender on anterior side of attachment. Pecten of 5–10 spines disposed in a row at basal third of siphon, increasing in size distally, distal spines large, strongly pointed; spines with proximal ventral edge fringed, distal ventral edge smooth. Seta 1–S usually in pairs (of 11 siphons examined, 9 with 8, 2 with 7.5), 6 posterior pairs with 3 proximal pairs nearly 4.0 and 3 distal pairs nearly 3.0 width of siphon at point of insertion; 2 anterior pairs with length nearly 2.0 width of siphon at point of insertion; seta 2-S inserted in membrane near base of anterolateral spiracular lobe, curved anteriorly with curved secondary branch at basal third of curved side. *Segment X*: Saddle complete, without acus and with distinct spicules on lateral area at posterior end; length 0.30–0.33 mm, mean 0.31 mm, siphon/saddle index 2.69–3.12, mean 2.89. Seta 2-X with 1 long and 1–4 short branches; 4-X usually with 5 paired setae, rarely with 4 on one side, anterior setae (3 pairs) frequently with 4 branches (3–5), posterior setae (2 pairs) most often with 3 branches (1–5). Anal papillae long and slender, dorsal pair shorter than ventral pair, dorsal pair about 1.5 length of saddle, ventral pair about 2.2 length of saddle.

**Diagnosis.** Adults of *Cx. inadmiraibilis* are characterized by the following features. *Adult*: Occasionally with light golden scales on prescutellar area (these usually brownish black), and sometimes golden scales mixed with dark ones on median scutellar lobe; usually with whitish spatulate scales on upper corner of mesokatepisternum, and with linear plume scales on dorsal surface of proximal 0.5 of wing veins  $R_2$  and  $R_3$ , and on ventral surface of  $M_{3+4}$ . *Male genitalia*: Ninth tergal lobes of characteristic shape (Fig. 2); distal division of subapical lobe of gonocoxite subdivided into 2 small arms, with a characteristic long, slender, flexible seta inserted near middle of column, and with 1 wide asymmetrical stri-

ated foliform seta (*l*); lateral setal patch with long setae; apical process of lateral plate very small, triangular; gonostylus of characteristic shape in lateral side. *Larva*: Abdominal integument with inconspicuous spicules. Comb with 4–10 long, pointed, laterally fringed scales arranged in a row; pecten with distal spines strongly enlarged and pointed; seta 2-S well developed with a large curved secondary branch; seta 4-X usually with 5 paired setae, with 1–5 branches. *Pupa*: Trumpet with pinna large and wide, about 0.4 trumpet length; seta 5-IV,V shorter than length of following tergum, aciculate; 9-VII,VIII aciculate.

**Material examined.** 33♂, 34♀, 28♂G, 54Pe, 34Le, 8 4th-instar larvae.

**Type material.** *Culex inadmiraibilis*: Holotype male with adult on pin and associated genitalia on a microscope slide, bearing the following collection data: BRAZIL, São Paulo, A. Lutz coll. (1546). The male genitalia are in poor condition, phallosome is not dissected, one gonocoxite and the corresponding gonostylus are damaged and the others are at the microslide border, making it difficult to see the structures. *Culex mistura*: Holotype male with adult on pin, the associated genitalia, larval and pupal exuviae on separate microscope slides, all in good condition, bearing the following collection data: COLOMBIA, Villavicencio, Int. del Meta, 5 Dec 1947, Rozeboom (377-14).

**Other material examined.** BRAZIL, São Paulo State, Cananéia County, Vilarinho Farm, 23 Nov 1988, A.C. Gomes coll. 3♀, 1♂, 4Pe, 4Le; 13 Nov 1989, 3♀, 3Pe, 3Le; 6 Jun 1983, E.X. Rabello coll. 1♂, 1♂G; Fonte Station, 10 Jan 1990, A.C. Gomes coll. 4♀; 18 Dec 1984, D. Natal coll. 1♂, 1♂G; 22 Jan 1985, 4♂, 4♂G; 24 Apr 1985, 1♂, 1♂G; 17 Jan 1984, E.X. Rabello coll. 3♂, 3Pe; 23 Feb 1984, 1♂, 1♂G, 1Pe, 1Le; 11 Apr 1985, 1♂, 1Pe, 1Le; Itapoa Station, 24 Mar 1981, 1♂, 1♂G; 7 Feb 1983, 1♂, 1♂G; Folha Larga Farm, 22 Mar 1983, 1♂, 1♂G; 17 May 1983, 1♂, 1♂G; 16 May 1984, D. Natal coll. 1♂, 1♂G; 20 Mar 1985, 2♂, 2♂G; 24 Apr 1985, 1♂, 1♂G; 18 Dec 1983, E.X. Rabello coll. 1♂, 1♂G, 1Pe, 1Le; 7 Mar 1988, A.C. Gomes coll. 1♀, 1Pe, 1Le; 9 Mar 1988, 1♀, 1Pe, 1Le; 10 Mar 1988, 3♀,

4♂, 7Pe, 7Le; 15 Mar 1988, 1♂, 1Pe, 1Le; 17 Mar 1988, 1♂, 1Pe, 1Le; 11 Apr 1988, 1♂, 1Pe, 1Le; 10 Mar 1988, 1♂, 1Pe, 1Le, 7 fourth-instar larvae; 14 Mar 1988, 1♀, 1Pe, 1Le; 18 Mar 1988, 1 fourth-instar larva; Pariquera-Açú County, Experimental Station, 5 Mar 1985, D. Natal coll. 1♂, 1♂G; Iguape, Iguape to Icapara Road km 25, 8 Feb 1989, Peyton and Wilkerson coll. 18♀, 8♂, 26Pe, 9Le (no. BR61).

**Distribution.** *Culex inadmirabilis* (as *Cx. inadmirabilis* or *Cx. mistura*) is recorded from the following countries: Panama, Venezuela, Colombia, French Guiana, and Brazil (Knight and Stone 1977, Knight 1978). In Brazil, it was found in localities situated in the Tropical Atlantic System such as Salesópolis, Boracéia (Heinemann and Belkin 1979), Cananêia, Iguape, and Pariquera-Açú (see Material Examined), all in São Paulo State.

**Bionomics.** *Culex inadmirabilis* has been collected in full sunlight along the margins of small lakes, ground pools, ponds in pasture, and a ditch next to a road. The water was permanent or temporary, always clear, fresh, with slow current or stagnant, without vegetation, or with abundant grassy vegetation.

## DISCUSSION

Dyar (1928) described *Cx. inadmirabilis* from a male from São Paulo, Brazil. Later, Rozeboom and Komp (1950) described *Cx. mistura* from a male, a female with associated larval and pupal skins, and a male from Meta, Colombia. As the male genitalia of the *Cx. inadmirabilis* type is in poor condition, and its larval and pupal exuviae were unknown, *Cx. mistura* was considered distinct from *Cx. inadmirabilis*. However, while processing mosquitoes from Ribeira Valley, São Paulo State, Brazil, males and females with associated larval and pupal exuviae were determined to be *Cx. inadmirabilis* or *Cx. mistura*. Later, when these specimens were compared with the types of *Cx. inadmirabilis* and *Cx. mistura*, special attention was given to the immature stages as well as to the male genitalia. It became evident that there were striking similarities between *Cx. inadmirabilis* and

*Cx. mistura*, so *Cx. mistura* is considered conspecific with *Cx. inadmirabilis*.

The adult of *Cx. inadmirabilis* is similar to those of the Educator Group of Sirivanakarn (1983), differing in some features of wing scaling. In *Cx. inadmirabilis*, there are linear plume scales on the dorsal surface of the proximal 0.5 of  $R_2$  and on the proximal 0.5 of  $R_3$ ; on the ventral surface there are linear plume scales on  $M_{3+4}$ . On the other hand, there are inclined, narrow spatulate scales on these veins in other species of the Educator Group.

Based on male genitalia, *Cx. inadmirabilis* can be identified easily by the tergum IX lobe (Fig. 2). It also differs in some features of the subapical lobe of the gonocoxite (Fig. 2). In *Cx. inadmirabilis* the distal division of the subapical lobe is subdivided into two small arms: the inner arm with one long hooked seta (*h*) and one short saberlike seta (*s*), the outer arm with one long saberlike seta (*s*), one wide asymmetrical foliform seta (*l*), four appressed flat setae (*f*), and one long, slender, flexible seta inserted near the middle of the distal division. The shape of the gonostylus on the lateral side (Fig. 2), the characteristic aspect of the distal portion of the lateral plate (Fig. 2), and the long setae of the lateral setal patch (*lsp*) can help to identify *Cx. inadmirabilis*.

The larva of *Cx. inadmirabilis* can be distinguished by the following features. Comb with four to ten long, strongly pointed, fringed scales, these arranged in an irregular row; distal pecten spines strongly enlarged and pointed; seta 2-S well developed, with a large curved submedian secondary branch; seta 4-X usually with five paired setae, rarely with four on one side, number of branches vary from one to five.

The pupa of *Cx. inadmirabilis* is easily identified by having the trumpet with a large and wide pinna; seta 5-IV,V aciculate and shorter than the following tergum and seta 9-VII,VIII conspicuously aciculate.

Based on Sirivanakarn's (1983) adult key, *Cx. inadmirabilis* is hardly identifiable as a member of the Educator Group, as the scales on the proximal 0.5 of the dorsal surface of

wing veins  $R_2$  and  $R_3$  are linear and not broadly spatulate as in members of that group. On the other hand, it can be identified as a member of the Educator Group by having upper mesokatepisternal scales; female cibarial teeth short, broad, and hollow; male palpus longer than proboscis, palpomeres 4 and 5 strongly plumose; and by the characteristic shape of the male lateral plate. In addition, by using Sirivanakarn's pupal key, *Cx. inadmirabilis* is recognized as a member of the Educator Group. However, using his larval key, *Cx. inadmirabilis* is identified as a member of the Saramaccensis Group by usually having seta 4-X in five pairs. So, it seems evident that wing scales and larval seta 4-X should be reconsidered in the recognition of *Melanoconion* species.

Finally, we wish to call attention to the presence of pupal seta 13-III which was observed on one side of a single specimen. Seta 13-IV was observed on both sides of another specimen.

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