

A New Species of *Culex (Melanoconion)*
from Southern Brazil (Diptera: Culicidae)¹

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ABSTRACT. *Culex (Melanoconion) lopesi*, a new species from Municipio Iguape, Estado São Paulo, southern Brazil is recognized. The adult male, the only known stage of this species, is described and its genitalia are illustrated.

INTRODUCTION

In the course of investigating an epidemic presumably due to a new arbovirus of the flavivirus group (Rocio), several thousand mosquitoes collected in southern coastal Brazil were sent to the Vector-Borne Diseases Division, Center for Disease Control (CDC), Fort Collins, Colorado for identification and virus testing. The mosquitoes were collected by Dr. Oscar de Souza Lopes, Instituto Adolfo Lutz, São Paulo, Brazil and initial identification of the specimens was made by the junior author. A large sample of *Culex (Melanoconion)* specimens, which included adult males and associated genitalia slides, were subsequently referred to the senior author for taxonomic confirmation and determination. The material pertinent to this report was collected at Porto do Ribeira and Costão do Eugenio, Municipio Iguape, in São Paulo state, southern Brazil in February and March, 1976.

This material was found to contain specimens of 6 or more *Melanoconion* species. These species were identified on the basis of the male genitalia as figured in a review of the subgenus by Rozeboom and Komp (1950) and Lane (1953), and other papers by Duret (1953), Aitken and Galindo (1966), and Galindo (1969). The following species were identified: *epanastasis* Dyar, *vomerifer* Komp, *misionensis* Duret, *intrincatus* Brethes and *educator* Dyar and Knab. Included also were 4 additional males that could not be identified with any known member of the subgenus. These specimens are, in general, characteristic of the subgenus *Melanoconion* as defined by Belkin, Heinemann and Page (1970). The male genitalia are distinctive in several features. The clasper and the subapical lobe bear some resemblance to species in the subgenus *Carrollia* and the lateral plate of the phallosome is not unlike species of the subgenus *Anoedioporpa*. Our study indicates, however, that it should be recognized as a new species of the subgenus *Melanoconion*.

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We take pleasure in naming the new species in honor of Dr. Oscar de Souza Lopes. The terminology of our description follows Berlin (1969), Belkin, Heinemann and Page (1970) and Valencia (1973). The descriptive terms introduced here for the processes developed on the distal portion of the lateral plate of the aedeagus of the male phallosome, namely: apical tergal process and apical sternal process, are self-explanatory. We attempt, in the description, to homologize these features with those of Valencia (1973).

The holotype and 3 paratypes are deposited in the U. S. National Museum (USNM), Smithsonian Institution.

Culex (Melanoconion) lopesi n. sp.
(Fig. 1)

MALE. Wing: 3.0 mm. Forefemur: 1.6 mm. Proboscis: 1.9 mm. Medium sized, general coloration brownish without conspicuous characteristic ornamentation on palpus, proboscis, thorax and legs; abdominal tergites with complete or incomplete basal pale bands. *Head*: Decumbent scales numerous, narrow, linear or crescent-shaped, all pale whitish or yellowish, covering a broad central area of vertex; broad appressed scales restricted to sides of eyes, all whitish or bluish white, forming a distinct lateral patch; erect scales numerous, all dark brown. Palpus and proboscis entirely dark scaled; palpus exceeding proboscis by 1.5 of the length of segment 5; segment 3 with 6 weak setae in apical 0.1; segments 4 and 5 weakly plumose with several weak and short setae; proboscis uniformly thick. Antenna strongly plumose. *Thorax*: Mesonotal integument brownish, scales (mostly rubbed off) narrow, dark brown; acrostichal setae on disc not developed. *Aprn* and *ppn* dark brown. Pleuron paler or same color as mesonotum, with or without indefinite dark areas on *ppl*, *psp*, anterior lower *stp*, upper corner of *stp* and lower *mep*; scale patches on all pleural sclerites absent (or probably rubbed off); one lower *mep* seta present. *Legs*: All legs dark scaled and without any distinctive ornamentation. *Wing*: Scales on all wing veins moderately dense and entirely dark; scales on R_2 , R_3 and R_{4+5} broad ovate, with rounded or truncate apical margin. *Abdomen*: Tergites II-VII with complete basal pale bands or with broad basolateral pale spots not extending dorsad to form complete bands.

MALE GENITALIA (Fig. 1). *Segment VIII*: Tergite VIII deeply emarginate on median caudal margin. *Segment IX*: Lobe of IX tergite small, moundlike, with an irregular row of 7-9 weak, short setae. *Sidepiece*: Slender, conical, about 0.25 mm in length; a few scales present on outer tergal surface near base; several weak and strong setae largely restricted to lateral tergal surface; inner tergal surface with 2 long setae at about middle and several short, weak setae laterad of subapical lobe; upper tergomesal margin ventrad of subapical lobe strongly excavate, forming a distinct rounded pit and with a row of short, weak setae proximad. *Subapical Lobe*: As figured; proximal and distal divisions prominent, elongate, columnar; accessory division developed, distad of or adjacent to base of distal division, apparently not homologous with accessory division in *Carrollia* (see Valencia 1973; Figs. 30, 34); proximal division projecting basomesad, its base with a peculiar multibranching hair-like spicule projecting into the rounded pit ventrad; its apex bears 2 dark

curved rods (*a, b*) and one long sinuous filament; base of rods *a* and *b* with a row of 6,7 minute setae; distal division bears on its apex 2 broad heart-shaped leaves, one flattened, apically hooked seta and 2 strong spinelike setae.

Clasper: Preapical portion with a dense tuft of numerous hairlike spicules on ventral surface; subapical crest poorly developed; seta *a* (or spiniform) distally flat and apically blunt; setae *b, c* minute, subequal. *Phallosome*: Lateral plates of aedeagus connected by a broad lower tergal bridge; upper tergal bridge not developed or absent; lateral plate in lateral aspect with a broad, apically rounded basal hook projecting sternad, distal portion with a strong apical sternal process (= sternal spine of Valencia 1973, Figs. 16,22) and a longer and larger apical tergal process (= caudal process of Valencia 1973, Figs. 22,34), latter simple, apically blunt or pointed, divergent laterad in tergal view.

Proctiger: Crown well developed, with a comblike row of 10-12 flat spicules; paraproct and cercal sclerite narrow; cercal setae 3, minute; basolateral sclerotization broad, long, distally tapered into a point.

TYPE-DATA. *Holotype* male with slide of genitalia (No. 78/187), Porto do Ribeira, Iguape, São Paulo, BRAZIL, caught in CDC miniature light trap, 17 March 1976, Oscar de Souza Lopes, coll. (USNM #76,133) *Paratypes*: Two males with slides of genitalia (No. 78/184, 050477-15), same data as holotype (USNM); 1 male with slide of genitalia (No. 040577-8), Costão do Eugênio, Iguape, 20 February 1976, other data same as holotype (USNM).

DISTRIBUTION. Known only from Iguape, southern Brazil.

TAXONOMIC DISCUSSION. This species is perhaps one of the most unusual in the subgenus *Melanoconion*. It shares the following features with most members of the subgenus: (1) the long male palpus, (2) the broad scales on wing veins R_2 , R_3 and R_{4+5} , (3) the absence of acrostichal setae on the mesonotal disc and (4) the absence of conspicuous ornamentation on the palpus, proboscis, thorax and legs. The numerous narrow decumbent scales on the vertex of the head and the general facies are similar to *epanastasis* in the *spissipes* or *taeniopus* group as defined by Galindo (1969), but the male genitalia are distinct and can be readily separated from all members of that group by several characters as described and illustrated. Among the most distinctive features of the male genitalia of *lopesi* are: the development of a preapical tuft of numerous hairlike spicules on the ventral surface of the clasper, the development of the accessory division of the subapical lobe, which resembles certain members of *Carrollia*, the leaves of the distal division and the presence of a peculiar rounded pit at base of the proximal division of the subapical lobe. In the phallosome, the broad sclerotization of the basal hook and the development of the apical tergal and apical sternal processes of the lateral plate of the aedeagus somewhat resemble that of *paganus* Evans (See Lane 1953:395) in *Anoedioporpa*, as well as those of *epanastasis* and other related forms in the *taeniopus* group of *Melanoconion*. The bizarre combination of characters of the male genitalia of typical *Melanoconion*, *Carrollia* and *Anoedioporpa*, as exhibited by *lopesi* appears to be very significant in indicating the relationships between or among these complex subgenera of Neotropical *Culex*.

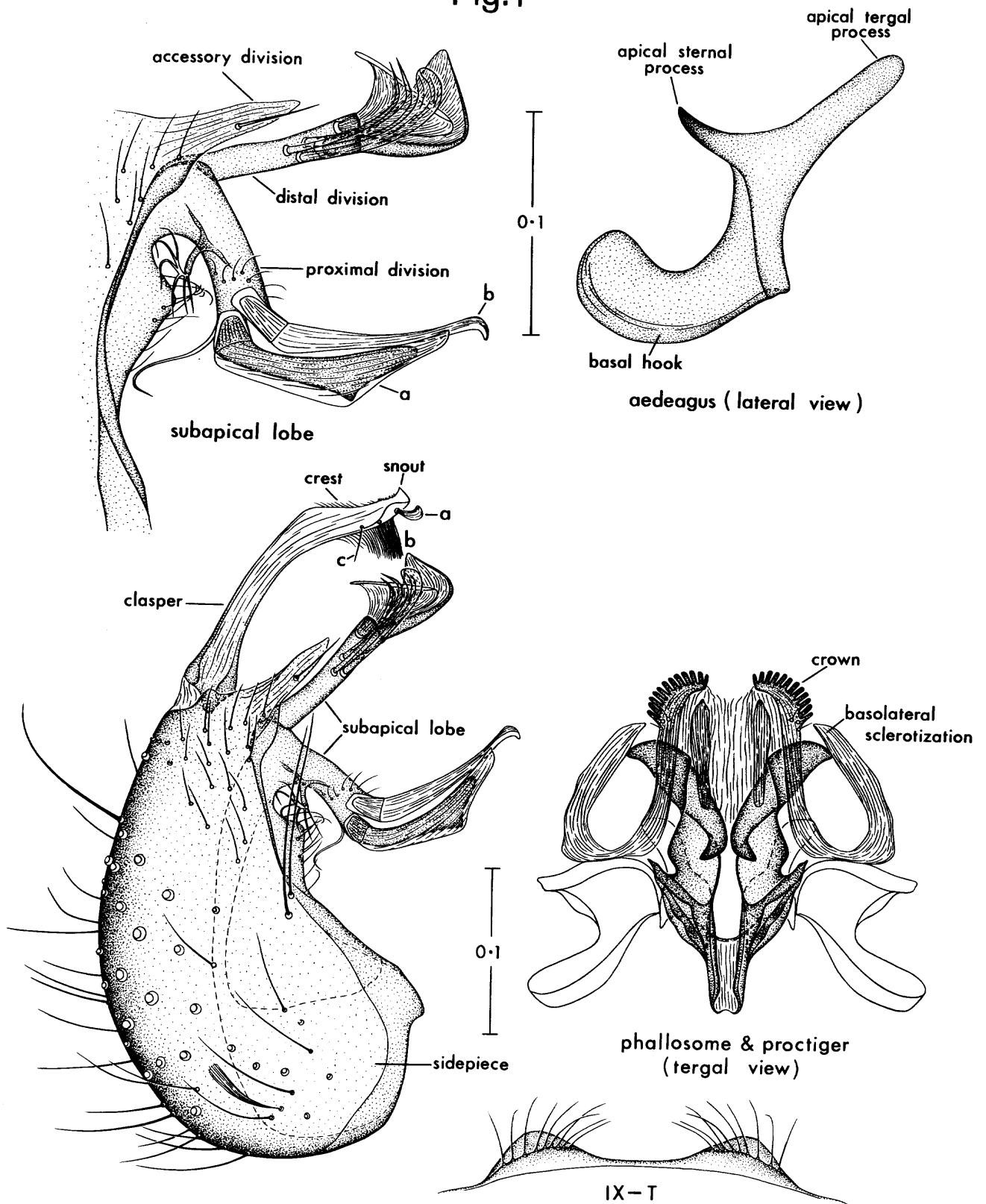
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LITERATURE CITED

- Aitken, T. H. G. and P. Galindo. 1966. On the identity of *Culex (Melanoconion) portesi* Senevet & Abonnenc 1941. Proc. Entomol. Soc. Wash. 68:198-208.
- 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.
- Berlin, O. G. W. 1969. Mosquito studies (Diptera, Culicidae). XVIII. The subgenus *Micraedes* of *Culex*. Contrib. Am. Entomol. Inst. (Ann Arbor) 5(1):21-63.
- Duret, J. P. 1953. Las especies argentinas de *Culex (Melanoconion)* (Diptera-Culicidae). Rev. Soc. Entomol. Argent. 16:67-76.
- Galindo, P. 1969. Notes on the systematics of *Culex (Melanoconion) taeniopus* Dyar and Knab and related species, gathered during arbovirus investigations in Panama. Mosq. Syst. Newsl. 1:82-9.
- Lane, J. 1953. Neotropical Culicidae. Vol. 1. Univ. São Paulo, São Paulo, 548 p.
- Rozeboom, L. E. and W. H. W. Komp. 1950. A review of the species of *Culex* of the subgenus *Melanoconion* (Diptera, Culicidae). Ann. Entomol. Soc. Am. 43:75-114.
- Valencia, J. D. 1973. Mosquito studies (Diptera, Culicidae) XXXI. A revision of the subgenus *Carrollia* of *Culex*. Contrib. Am. Entomol. Inst. (Ann Arbor) 9(4):1-134.

Fig.1



Culex (Melanoconion) lopesi
Porto do Ribeiro, Iguape, Brazil

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