

A New Species of *Culex* (*Melanoconion*)From Inland Southern Brazil (Diptera: Culicidae)<sup>1</sup>

by

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ABSTRACT. The male adult of *Culex* (*Melanoconion*) *spathulatus*, a new species from southern Brazil, South America, is described and illustrated. The characteristic morphologic aspects of the male genitalia make its identification certain.

Ongoing studies on mosquito behavior in São Paulo State, Southern Brazil, provided a species of *Culex* (*Melanoconion*) that, despite its rareness, proves to be very characteristic and different from previously described species. We take this opportunity to describe and name this new species.

For the description the terminology utilized is that of Harbach and Knight (1980), and for the gonostylus setae, Sirivanakarn and Belkin (1980).

*Culex* (*Melanoconion*) *spathulatus*, sp. n.

MALE. Small, body dark almost entirely clothed by dark reddish brown scales. Head: Antenna dark, strongly plumose with length about 1.5 mm. Maxillary palpus entirely dark, length about 1.7 mm, exceeding the proboscis tip by a little more than half the length of palpomere 5; palpomeres 4 and 5 with slender and short scattered setae and 1-2 longer setae on palpomere 5 tip; palpomere 3 with two slender setae on tip. Vertex with broad spatulate scales, grayish dorsally, dingy white laterally; forked scales small, dark posteriorly, pale anteriorly; occipital region with whitish falcate scales; ocular and interocular setae lengthy and dark. Thorax: Scutum integument reddish brown, entirely covered by fine narrow curved bronzy scales; scutal setae developed, dark and reddish shining; acrostichal setae absent. Scutellar scales similar to

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scutal scales; 3 lateral scutellar setae, 6 median scutellar setae. Antepronotum without scales, with scattered setae of different lengths. Postpronotum with scales similar to scutal scales; posterodorsal margin with 3-4 dark setae. Pleural sclerites with lighter color than scutum, with darker areas on proepisternum, prealar knob, postspiracular area and anterosuperior region of mesokatepisternum but without definite pattern. Pleura with small patch of spatulate whitish scales on postero ventral margin of mesokatepisternum; pleural setae dark brown, lighter and more slender on lower mesokatepisternum and upper mesepimeron regions. Pleural setae: 7-8 upper proepisternals, 5-6 prealars, 5-9 upper mesokatepisternals, 6-8 lower mesokatepisternals 4-6 upper mesepimerals and one lower mesepimeral. Wing: Mean length 2.1 mm; scales dark; cell  $R_2$  3.0 of  $R_{2+3}$ ; cell M 0.8 of cell  $R_2$ ; subcosta intersects costa beyond furcation of  $R_{2+3}$ . Dorsal scaling: appressed spatulate scales on costa, subcosta,  $R$ ,  $R_1$ ,  $R_{4+5}$ ,  $M_{3+4}$ ,  $mcu$ ,  $CuA$  and  $1A$ ; linear plume scales on  $R_5$ ,  $R_{2+3}$ ,  $M$ ,  $M_{1+2}$ , base  $R_2$  and  $R_3$ ; inclined, narrow spatulate scales on  $R_2$  and  $R_3$ , except basal portion; remigium with appressed spatulate scales and 2,3 strong distal setae. Ventral scaling: appressed spatulate scales on costa, subcosta,  $R_5$ ,  $R_{2+3}$ , 0.3 basal part of  $R_2$  and  $R_3$ ,  $M$ ,  $M_{1+2}$ , proximal 0.5 of  $R_1$  and of  $R_{4+5}$ ,  $M_{3+4}$ ,  $mcu$ ,  $CuA$  and on the middle of  $1A$ ;  $CuA$  before  $mcu$  and proximal 0.5 of  $1A$ , without scales; inclined, narrow spatulate scales on distal 0.5 of  $R_1$ ,  $R_2$ ,  $R_3$ , distal 0.5 of  $R_{4+5}$  and of  $M_1$ , and on  $M_2$ . Halter: Scabellum and ventral side of pedicel pale; capitellum and dorsal surface of pedicel dark. Legs: Anterior surface of forecoxa dark-scaled; anterior surfaces of mid- and hindcoxae with longitudinal patch of clear scales. Antero- and posteroventral surfaces of foretrochanter covered with dark scales, anteroventral surfaces of mid- and hindtrochanteres dark-scaled and posteroventral surface with pale scales. Fore- and midfemora covered mainly with dark scales, except the posterior surface of forefemur and posteroventral surface of midfemur which have a longitudinal stripe of yellowish scales; dorsal surface of hindfemur with dark stripe, ventral surface covered with pale scales. Tibiae and tarsi entirely dark scaled. Abdomen: Tergum I with small patch of dark scales on posteromedian surface; terga II-V dark scaled with small basolateral patches of white scales; tergum VIII (ventral in position) with deep V-shaped median posterior emargination, and several rows of long strong setae with many fine and smaller ones intermixed (Figure); sterna II-V dark, with small basolateral patches of pale scales. Genitalia (Figure): Tergal IX lobes small, column-shaped, apically converging tips and bearing slender setae. Gonocoxite stocky, nearly round, outer margin strongly convex, inner moderately convex; ventrolateral surface with dark strongly developed setae interlaced with smaller ones, scattered scales on ventrolateral surface base; mesal surface with some five rows of slender setae extending from base to beyond level of subapical lobe, another patch of smaller ones situated below this lobe; lateral surface with patch of long slender scattered setae (lateral setae patch) at region corresponding to level of subapical lobe; subapical lobe clearly divided, divisions clearly separated; proximal division with two columnar arms, basal arm shorter, each with long sinuous seta (setae a and b) inserted apically; distal division broad, with 8 apical setae represented by 1 long hooked seta (h), 1 short and 1 long saberlike setae (s), 1 narrow non-foliform seta (l), and 4 narrow appressed flat setae (f) nearly equal in size, distally enlarged;

tergomesal border with two moderately salient tubercles, the proximal cone-shaped bearing approximately four pairs of straight stout setae along its length, these decreasing in size from the apex to base of tubercle, distal tubercle united to wrinkled longitudinal fold, with a single apically inserted broad spatulate seta (p), apically inserted. Gonostylus large and stout, distinctly widened and curved distally, with serrated crest extending along outer margin to just before the apical snout-like tip; gonostylar claw (a) spur-like distally sharpened; seta b very large, with spiny lateral spicules apically, seta c smaller thorn-like. Phallosome with lateral plates and aedeagal sclerites equivalent in size and length, separated by a weakly sclerotized area, giving an U appearance in lateral view; lateral plate with apically developed quadrangular shaped process with clearly developed denticles along its distal margin, ventral process straight, long and laterally bent, lateral process shorter, tapered and pointed at apex, the dorsal stout and situated at base of lateral plate; aedeagal sclerite straight, arched in lateral view; paramere and basal plate roughly rectangular shaped, with blunt ends. Proctiger elongate; paraproct distally narrowed and basally expanded where it articulates with basal plate and the posterolateral margin of the tergum X, crown with 9-14 flat rectangular simple blade-like spicules; cercal sclerite narrow, elongate, lightly sclerotized, 2-4 small cercal setae inserted just below crown; tergum X nearly rectangular, concavo-convex, with a deep emargination on the ventral surface.

**MATERIAL EXAMINED.** A total of 3 specimens were examined. Holotype: Male collected in the Santa Helena Farm, São João da Boa Vista County, S. Paulo State, Brazil, between 1800-0600 hrs. of 23/24.II.1983, Coll. O. P. Forattini et al. This adult was collected from "New Jersey" type light trap, and is deposited in the Entomological Collection of the Department of Epidemiology, School of Public Health, University of S. Paulo, Brazil (FSP-USP), (n. E-7169). Paratypes: 2 males from the same locality collected by the same technique, nights of 9/10.XI.1982 and 23/24.III.1983. One male deposited in the FSP-USP (n. E-7170). The other male deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.

**DISTRIBUTION AND BIONOMICS.** *Culex spathulatus* seems to be a rare species, presently known from only the type-locality in Southern Brazil. Nothing is known about its bionomics.

**DISCUSSION.** *Culex spathulatus* is named for a peculiar character of the male genitalia, i.e., a remarkable large spatula-shaped seta inserted lateral to the distal division of the gonocoxite subapical lobe. The description of this species, although based on only three male specimens, clearly points out the unique and very distinctive aspects of its male genitalia.

The adult of *spathulatus* should be included in the Inhibitor Group of the Melanoconion Section of Sirivanakarn (1982), based on the male genitalia morphologic characters of the aedeagal lateral plate, with the lateral and ventral processes both well developed and at nearly the same level, and the median apical process quadrangular-shaped and with a dentate margin. Beside

this, the aedeagal sclerite is long, narrow and curved. Notwithstanding, this species bears others morphologic characters of the male genitalia that easily differentiate it from all the others included in that group. It may be distinguished by bearing two moderately developed tubercles on the tergomesal border of the gonocoxite, the proximal one cone-shaped with approximately four pairs of long setae and the distal one with a very broad spatulate seta. In addition, the tergum IX lobes separate it easily from the Egcymon subgroup species which have sack-shaped lobes with conspicuous apically set strong setae, while in *spathulatus* the lobes are slender columnar shaped, slightly distally convergent and with fine scattered setae.

The general shape and structure of the gonostylus places this species near to *mulrennani* from the Mulrennani subgroup. However, that resemblance may be coincidental, as b seta of *spathulatus* is much more developed, foliate, lengthy and apically subdivided into several spine-like spicules. Beside this, the tergum IX lobes and the subapical lobe of the gonocoxite of *mulrennani*, as figured and described by Rozeboom and Komp (1950), provides additional distinguishing characters.

Our discussion here is based on the Sirivanakarn (1982) classification system of groups and subgroups in the subgenus *Melanoconion*. Nevertheless, *spathulatus* presents several morphologic characters that resemble other species, i.e., the Peccator Group which includes *peccator*, *abominator* and *anips*, because of the globose or obovoid gonocoxite shape. In addition, the weakly pilosity of the 4th and 5th palpomeres resemble those of *trifidus*. Regardless, the characteristics described above make the differentiation of *spathulatus* very sure.

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## ABBREVIATIONS USED

a	=	seta <u>a</u> of pSL; seta <u>a</u> of Gs
AeS	=	aedeagal sclerite
b	=	seta <u>b</u> of pSL; seta <u>b</u> of Gs
BP	=	basal piece
c	=	seta c of Gs
CSc	=	cercal sclerite
dSL	=	distal division of subapical lobe
f	=	flat seta of dSL
Gc	=	gonocoxite
Gs	=	gonostylus
h	=	hooked seta of dSL
l	=	leaf
LP	=	lateral plate
p	=	spatulate seta of Gc
Par	=	paramere
Ppr	=	paraproct
pSL	=	proximal division of subapical lobe
s	=	saberlike seta of dSL
VIII-Te	=	tergum VIII
IX-Te	=	tergum IX

*Cx.(Mel.) spathulatus*

