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**ON THE IDENTITY OF CULEX (MELANOCONION) PORTESI
SENEVET & ABONNENC 1941**

(DIPTERA, CULICIDAE)

THOMAS H. G. AITKEN AND PEDRO GALINDO

ON THE IDENTITY OF *CULEX (MELANOCONION) PORTESI*
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(DIPTERA, CULICIDAE)¹

THOMAS H. G. AITKEN² and PEDRO GALINDO³

In 1941 Senevet and Abonnenc described as new a single male mosquito from French Guiana, giving it the name of *Culex (Melanoconion) portesi*. The type (no. 61,227Ab2) was deposited in the collection of the Parasitology Laboratory, Faculty of Medicine of Algiers, Pasteur Institute of Algeria. In 1945 Floch and Abonnenc described *Culex (Melanoconion) cayennensis* from a male (no. 286) collected at Cayenne, 17 January 1941. These authors list four paratypes (all males) as follows: (1) no. 285, Cayenne, 17-I-1940, (2) no number, Cayenne, 26-II-1940, (3) no. 561, Bief (Comté), 28-III-1941 and (4)

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no number, Bief (Comté), 26-III-1941. All specimens were deposited in the collection of the Pasteur Institute of Guiana and Inini Territory.⁴ Subsequently in 1947, Floch and Abomenc synonymized *cayennensis* with *portesi*, pointing out that they had been unaware of the earlier description [which appeared during the war when communications were poor]. Lane (1951) synonymized these two names under *Culex* (*Melanoconion*) *vomerifer* Komp, a species previously known only from Panama.

In the course of arbovirus field investigations in the West Indian island of Trinidad, a species of *Melanoconion* was encountered which was not readily identifiable and was given the temporary field designation of *Culex* sp. No. 9 (Note: females could be recognized by the thoracic color patterns in fresh specimens). A few females were originally taken in human bait collections (January 1958) at Rio Grande Forest in the northeastern part of the island. Subsequently the species was found to be very abundant in Bush Bush Forest, an island in the Nariva Swamp on the east coast. A few collections have also been made in the Arena Forest, Fort Read and along the "Long Stretch" near Guaico. Attention was drawn to this mosquito when night trapping operations, involving the use of white mice as bait, demonstrated that it was a dominant species in the Bush Bush collections. Furthermore, it soon became evident that this species was a frequent carrier of several viruses commonly encountered in Bush Bush Forest (Aitken, *et al.*, 1963, 1964; Galindo, 1963, 1964; Worth, 1963, 1964).

When males of *Culex* sp. No. 9 first became available, it was thought the species was new but closely related to *Culex vomerifer*. Subsequently attention was drawn to the synonyms of *vomerifer*, namely *portesi* and *cayennensis*. Correspondence with Professor Georges Senevet elicited the information that the type of *Culex portesi* could not be found. It was then decided to collect fresh specimens in French Guiana and study the collections at the Pasteur Institute in Cayenne. Dr. Hervé Floch, Director of the Institute, wrote that only males of *portesi* and *cayennensis* had been collected (close to Cayenne), and they were rare; both of these "species" were known from the same general area. The type locality for both species may be considered to be Montagne Tigre and Cabassou, two forested granitic domes surrounded by swamps and low-lying areas about 2-3 miles southeast of Cayenne. One of the authors (THGA) and two assistants spent from 27 January to 9 February 1965 in Cayenne collecting mosquitoes in the type locality as well as elsewhere. Utilizing chick- and mouse-baited portable traps (Worth and Jonkers, 1962) and a small battery-operated light trap (Sudia and Chamberlain 1962), many nocturnally-active

⁴ Specimen No. 285 is now in the U.S. National Museum (A. Stone in litt.).

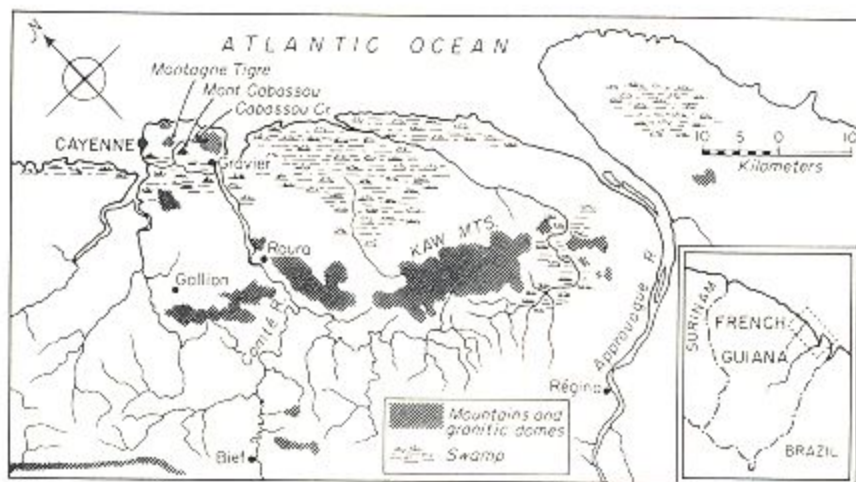


Fig. 1. Collection localities in French Guiana.

adult mosquitoes were collected, and dominant among these was the desired species.

Thus it has been possible to study fresh topotypic material of the *portesi-cayennensis* concept as well as to examine specimens in the Pasteur Institute's entomological collection. The latter consisted of 13 slides of male terminalia (a few with the associated adult) labelled *Culex portesi* and five slides labelled *Culex cayennensis*. The type of *cayennensis* was not found. Pasteur Institute specimens examined were as follows (see Fig. 1 for localities):

Culex portesi

1. Approuague, XII-1944
2. Gallion, 5-I-1948
3. Gallion, 7-I-1948
4. Gallion, 7-I-1948
5. Montagne Tigre, 24-III-1954, P. Fauran coll. et det.
6. Gravier, 10-III-1955
7. Montagne Tigre, 27-X-1956, P. Fauran coll. et det.
8. Gallion, 2-II-1957
9. Comté, 4-II-1957, E. Verrin
10. No. 419, Roura, 15-X-1959, P. Fauran coll. et det.
11. Gallion, 28-IX-1960 (en sous-bois), P. Fauran coll. et det.
12. No. 484, Montagne Tigre, 13-X-1960, P. Fauran coll. et det.
13. Gallion, 20-X-1960 (en sous-bois), P. Fauran coll. et det.

Culex cayennensis

1. Cayenne, 26-II-1940 Paratype
2. Bief (Comté), 26-III-1941 Paratype

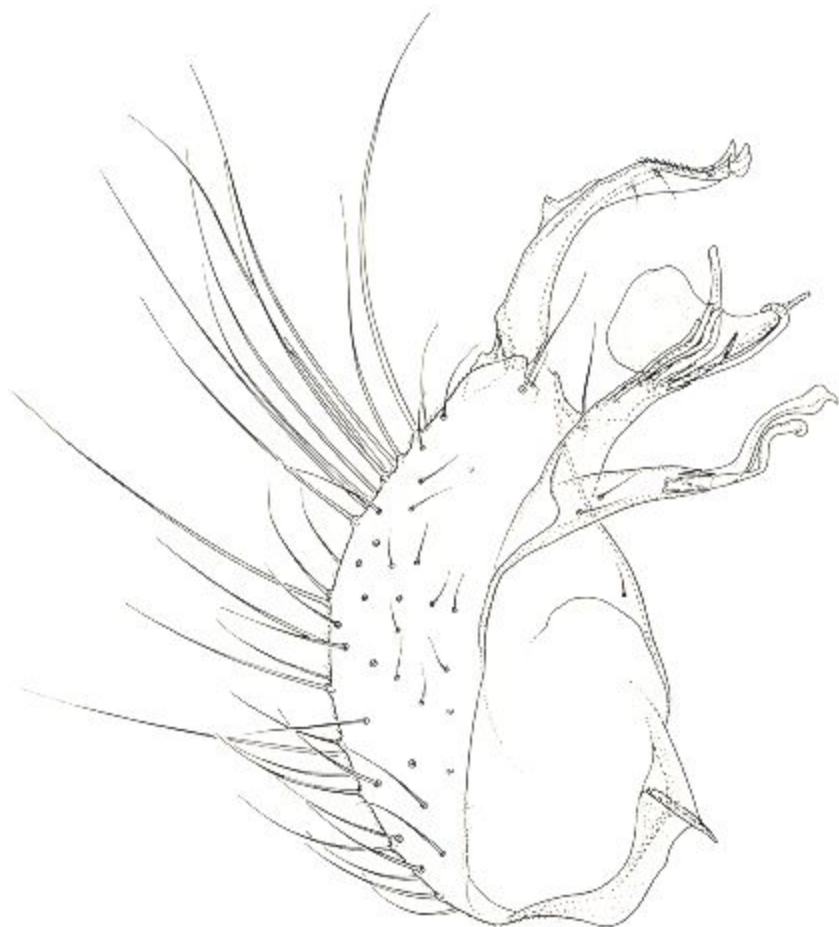


Fig. 2. *Culex (Melanoconion) portesi* S. & A. Male terminalia—basistyle and dististyle. (Ex Pool LPA, Petit Bush Bush Swamp, Trinidad, W.I., 6-13/VI/62—1, T. H. G. Aitken, Coll.)

3. No. 561, Bief (Comté), 28-III-1941 Paratype (actually *Culex vomerifer*)
4. Approuague, 7-II-1944
5. Approuague (Régina), 10-II-1945

Study of the above material together with topotypic specimens collected in January–February 1965 confirms that *Culex portesi* and *Culex cayennensis* are the same species; *portesi*, being the older name, takes precedence. Specimens of *Culex* sp. No. 9 from Trinidad are the same as those from French Guiana, hence should be called *Culex portesi*. A reappraisal of the descriptions as well as study of fresh material indicates that *Culex portesi* and *Culex vomerifer* are distinct species. A

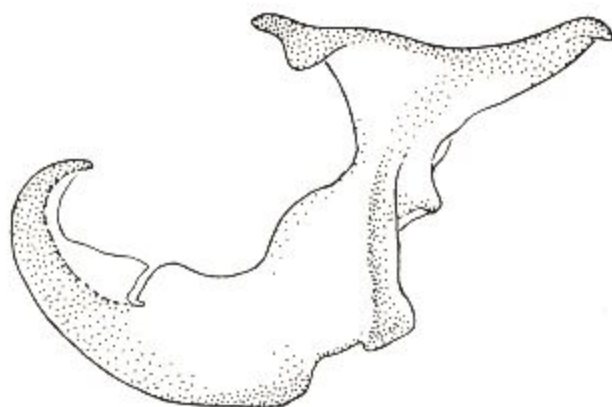


Fig. 3. *Culex (Melanoconion) portesi* S. & A. Male terminalia-phallosome. (Ex Pool LPA, Petit Bush Bush Swamp, Trinidad, W.I., 6-13/VI/62-1, T. H. G. Aitken, Coll.)

redescription of *Culex portesi*, based on specimens from French Guiana (Cabassou, 31 Jan.-1 Feb. 1965, T. H. G. Aitken, A. Guerra and R. Martinez) together with revised synonymy follows:

Culex (Melanoconion) portesi Senevet & Abonnenc

Culex (Melanoconion) portesi Senevet & Abonnenc, 1941, 19:41

Culex (Melanoconion) cayennensis Floch & Abonnenc, 1945, 112:4

Culex (Melanoconion) cayennensis Floch & Abonnenc, 1947, 146:6 (syn.)

Culex species No. 9, Trinidad Regional Virus Laboratory Annual Reports, 1958+

Culex (Melanoconion) sp. No. 9, Aitken, Jonkers & Worth, 1963, 11:74

Culex n. sp. (sp. No. 9, Trinidad), Galindo, 1963, 11:84

Culex sp. No. 9, Worth, 1963, 11:112

Culex (Melanoconion) species, Aitken, Jonkers & Worth, 1964, 3:156

Culex n. sp. (Trinidad), Galindo, 1964, 3:159

Culex sp. No. 9, Worth, 1964, 3:167

Culex species No. 9, Jonkers, Spence & Aitken, 1965, 26:759

Culex No. 9 of Trinidad, Toda and Shope, 1965, 208:304

MALE—Head: Antennae densely long black plumose, shorter than proboscis and palpi. Proboscis and palpi dark, clothed with iridescent black scales. Proboscis longer than fore femora. Palpi exceeding length of proboscis by slightly less than the length of the last two segments. Occiput with narrow appressed pale scales and black erect forked scales dorsally and with broad appressed pale scales laterally.

Thorax: Mesonotum dark brown, almost blackish; scales black; posterior dorso-central, supra-alar and scutellar bristles black, very long. Scutellum blackish, with sparse black scales and long black setae confined to the lobes. Pleura with propleuron, sternopleuron (excluding prealar knob), meron, mesepimeron, metameron, metapleuron, lateral margins of postnotum, coxae and trochanters pale,

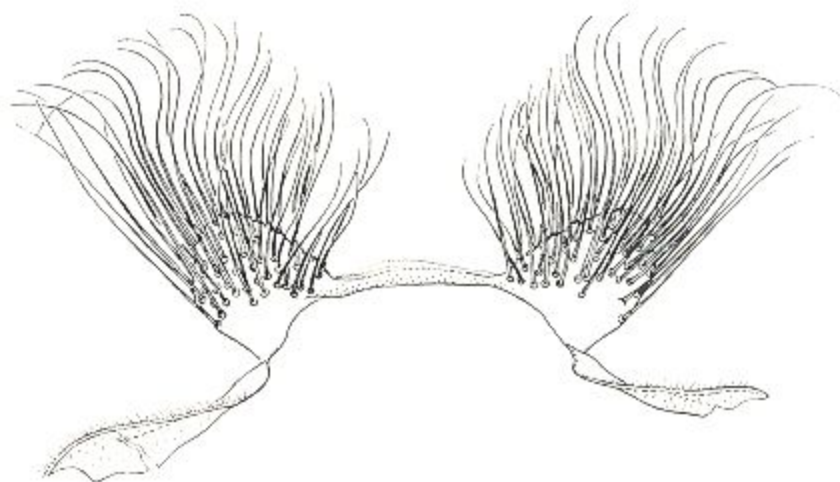


Fig. 4. *Culex (Melanoconion) portesi* S. & A. Male terminalia-ninth tergite. (Ex Pool LPA, Petit Bush Bush Swamp, Trinidad, W.I., 6-13/VI/62-1, T. H. G. Aitken, Coll.)

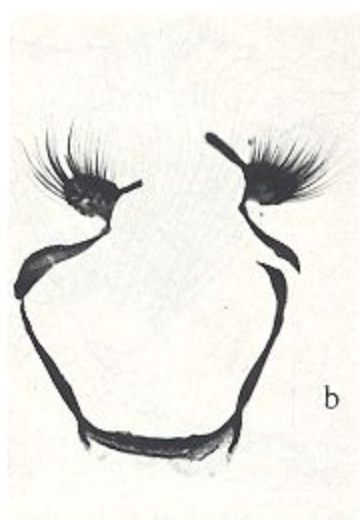
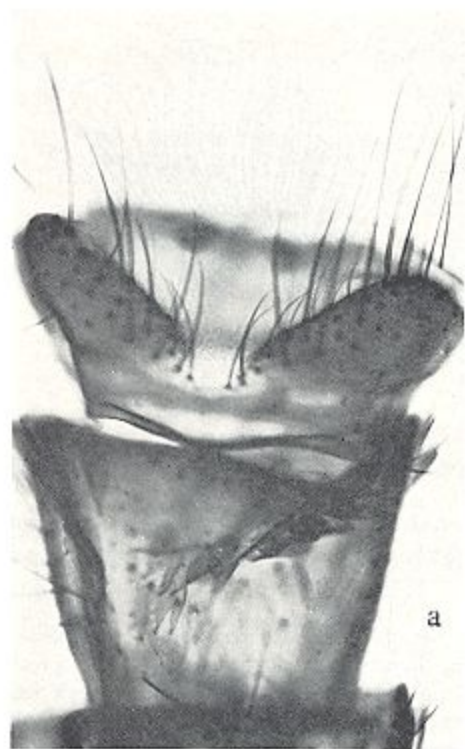
straw color, contrasting sharply with blackish color of mesonotum, anterior and posterior (dorsal portion) pronotum, paratergite, postspiracular area, prealar knob of sternopleuron, scutellum and postnotum (mesially); a line of dark setae along posterior margin of sternopleuron with a small patch of pale scales midway; a conspicuous dark seta on mesepimeron. Haltere stem pale, knob dark. Wings dark scaled. Legs (other than coxae and trochanters) dark, somewhat paler scaled on inner aspects of femora.

Abdomen: Tergites black-scaled with basal white bands ($\frac{1}{4}$ - $\frac{1}{3}$ length of tergite) on tergites II to VII; sternites similar. Basistyles pale. Size, circa 2.9 mm. (thorax-abdomen).

Terminalia: As figured (Figs. 2-4). Dististyle with a membranous, pointed spur before middle. Outer arm of subapical lobe columnar, with the usual six appendages seen in most species of *Melanoconion*, plus a broad, clear leaf with pigmented lower border. Main body (inner plate) of phallosome T-shaped (skript T). Lobes of ninth tergite prominent, rounded, set moderately apart from each other and clothed with numerous (50+), long, curved setae (the lateral ones longer). Eighth tergite with deep "V"-shaped cleft narrowing anteriorly, involving almost entire length of tergite and bearing long setae along its margins.

FEMALE—Similar to male. **Head:** Antenna subequal to proboscis, sparsely short setose. Palpi about twice length of clypeus, dark scaled. Proboscis slightly longer than fore femora. **Thorax:** Sternopleuron scale patch slightly more conspicuous. **Abdomen:** Pale scales of tergites limited to lateral margins. Size, circa 2.7 mm. (thorax-abdomen).

Taxonomic discussion—On the basis of male terminalia characters, *Culex portesi* is most closely related to *Culex (Melanoconion) vomer-*



ifer Komp (1932). Similarities include the shape of the dististyle including the membranous, pointed spur before the middle, the shape of the basistyle and its appendages, the T-shape of the main body of the phallosome and the V-shaped cleft in the distal margin of the 8th tergite. Differentiation is possible by the lobes of the 9th tergite which in *portesi* are large (longer than broad) and clothed with numerous, long (longer than the lobe), curved setae, whereas in *vomerifer* the lobes are small and inconspicuous (wider than long) and clothed with about 6-9 short, curved setae (the lateral ones longer). The rich pilosity of the 9th tergite has been quite well illustrated in the original descriptions of *Culex portesi* and *Culex cayennensis* but appears to have been overlooked by Lane (1951). Rozeboom and Komp (1950) incorrectly describe and figure the lobes of the 9th tergite of *portesi* as conical rather than rounded. Moreover their figure of the phallosome (borrowed from Floch and Abonnenc's illustration of *cayennensis*) as well as its description in the key (dichotomy 62) is incorrect as the original describers did not dissect out properly the phallosome so that it could be viewed in a lateral position.

Photographs of male terminalia of *Culex portesi* from French Guiana, Trinidad and Belém, Brazil are presented in Figures 5 and 6 for comparison with *Culex vomerifer* from Panama and Trinidad. It is noteworthy that one of the paratypes of *Culex cayennensis* [specimen No. 561, Bief (Comté), 28-III-1941] is actually *Culex vomerifer* (Figure 6), the 9th tergite lobes showing it to be referable to this species rather than to *cayennensis*. Thus we have indisputable evidence establishing the presence of both *portesi* and *vomerifer* in French Guiana.

Adults of these two species are readily separated by the markings on the pleura (Fig. 7). In *portesi* the sternopleuron (ventrally) and mesepimeron are pale-colored with no dark markings, whereas in *vomerifer* there are conspicuous dark spots on both these sclerites. Moreover the postnotum in *vomerifer* is more extensively dark, the propleuron is dark and there is a spot on the fore coxa.

Breeding habits—In Trinidad the larvae of *Culex portesi* have been found mainly in ground water of densely shaded swamp forests, in holes beneath or between the roots of heavily buttressed trees, amongst dead leaves along swamp margins or in shallow, leaf-choked forest ground pools.

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Fig. 5. Male terminalia preparations of *Culex portesi*. (a-c) Cabassou, Fr. Guiana, 31 Jan. 1965, (a) showing "V"-shaped cleft of 8th segment, (b) 9th segment with lobes, (c) phallosome (inner plate), (d-e) Trinidad Virus Lab. colony, 14 May 1965, (d) 9th segment lobes, (e) phallosome, (f-g) Belém, Brazil, March 1965, (f) 9th segment lobes, (g) phallosome.

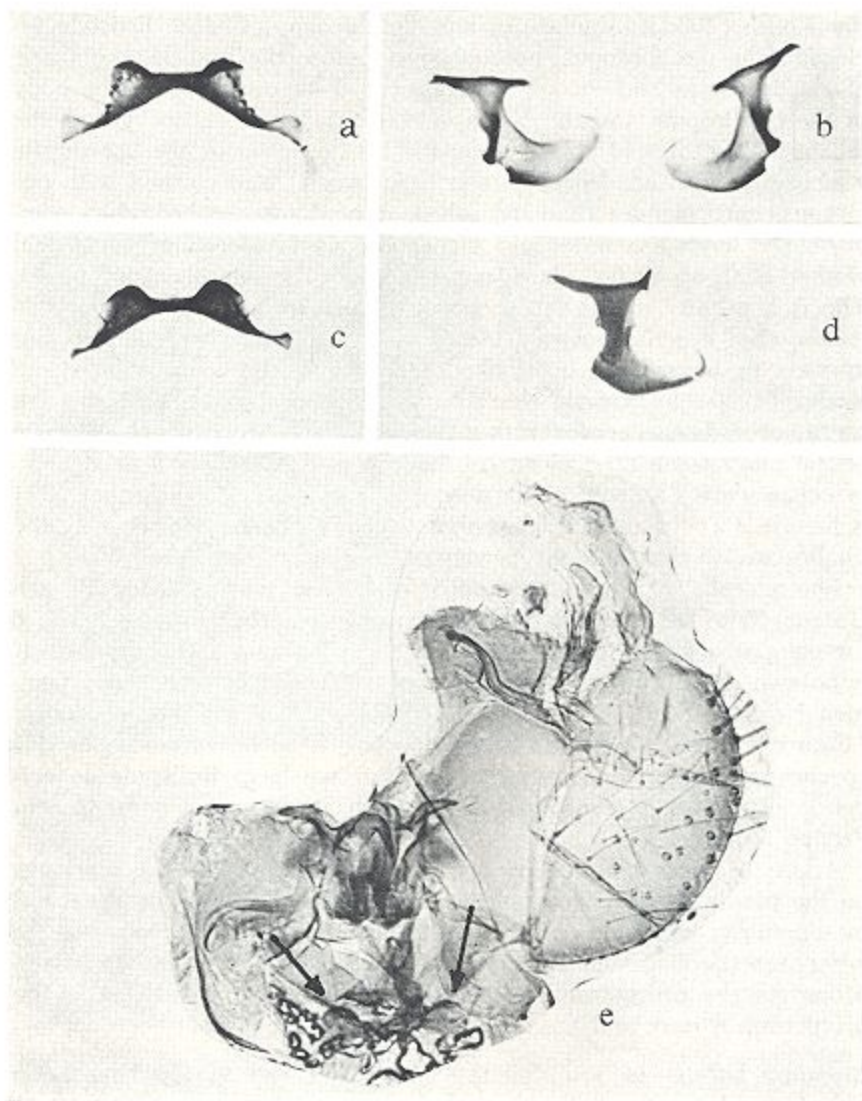


Fig. 6. Male terminalia preparations of *Culex vomerifer*. (a-b) Corgas Memorial Lab. colony, Panama, 6 May 1965 (a) 9th tergite lobes, (b) phallosome (left and right inner plates), (c-d) Vega de Oropouche, Trinidad, 2 Dec. 1958, (c) 9th tergite lobes, (d) phallosome, (e) Paratype preparation of *Culex* "cayennensis" (*vomerifer*), Bief (Comté), Fr. Guiana, No. 561, 28 March 1941, right basistyle, phallosome, 9th tergite lobes (arrows).



Culex vomerifer
Vega de Oropouche
Trinidad, W.I.
25 May 1965



Culex portesi
Nariva Swamp,
Trinidad, W.I.
4 October 1965

Fig. 7. Lateral view of thorax, showing markings.

Distribution—*Culex portesi* is a South American species occurring in greatest numbers along the northeastern coast of South America and Trinidad; specimens have been definitely identified from Trinidad, French Guiana and Belém (Instituto Agronomico do Norte Forest, March 1965, R. Shope), Brazil. *Culex vomerifer* is a mesoamerican species reaching highest densities along the Atlantic coast of Panama and Costa Rica⁵ but extending its range southeastward to Trinidad and the Guianas.

The writers are deeply grateful to Dr. Hervé Floch and his staff for the facilities and cooperation extended the investigators in French Guiana as well as for the loan of *Culex cayennensis* paratypes. Likewise thanks are extended Messrs. Ambrose Guerra and Raymond Martinez of the Trinidad Laboratory for their entomological assistance in French Guiana and Mr. Eustorgio Mendez of Gorgas Memorial Laboratory for the male genitalia drawings.

SUMMARY

Culex (Melanoconion) portesi Senevet and Abonnenc, originally described from French Guiana, is shown to be distinct from *Culex (Melanoconion) vomerifer* Komp with which it had been synonymized by Lane in 1951. *Culex portesi* is redescribed from fresh material collected in the type locality. Revised synonymy is presented. *Culex portesi* is presently known to occur in Trinidad, W.I., French Guiana

and Belém, Brazil, whereas *Culex vomerifer* is definitely known from French Guiana, Trinidad, Panama and Costa Rica.

⁵ Wachope, Limón Province, Costa Rica, 6/VIII/51, P. Galindo and H. Trapido, coll.

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