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DESCRIPTIONS OF TWO NEW SPECIES OF *CULEX* (*LOPHOCERAOMYIA*) WITH NOTES ON THREE OTHER SPECIES FROM THE PAPUAN SUBREGION (DIPTERA: CULICIDAE)[1]

By **Sunthorn Sirivanakarn**[2]

Abstract: Two new species, *Culex* (*Lophoceraomyia*) *submarginalis* and *C.* (*L.*) *castaneus* from New Guinea, are described; the record of *C. cubitatus* Colless is confirmed; a new record of *C. solomonis* (Edwards) from the Mollucas is given and *C. caeruleus* King & Hoogstraal is synonymized with *C. digoelensis* Brug.

This paper is a supplement to my revision of *Culex*, subgenus *Lophoceraomyia*, in New Guinea and Bismarck Archipelago (Sirivanakarn 1968). In that paper, I recognized and described 33 species, most of which were based on the study of material accumulated at the Bernice P. Bishop Museum, Honolulu. However, in recent years while working on the subgenus at the Southeast Asia Mosquito Project, Smithsonian Institution, I have examined additional specimens including some types at the U. S. National Museum as well as specimens which were loaned to the Southeast Asia Mosquito Project by the Institut voor Tropische Hygiene, Amsterdam, Holland and the School of Public Health and Tropical Medicine, Sydney, Australia. This study has revealed 2 undescribed species, confirmed the record from New Guinea of *C. cubitatus* Colless, provided a new record of *C. solomonis* (Edwards) from the Mollucas and shown that *C. caeruleus* King & Hoogstraal is a synonym of *C. digoelensis* Brug.

Culex (Lophoceraomyia) submarginalis, n. sp.

FIG. 1–5

Type data: Holotype ♂ (APO 322) with slide of antenna and genitalia (SEAMP 71/431), Gusika, Finschafen, Madang, NE New Guinea, 26.IV.1944, E. S. Ross (USNM). Paratypes: 1 ♂ (APO 322) with slide of antenna and genitalia (SEAMP 71/433), same data as holotype (BISHOP); 2 ♂♂ (APO 322) with slides of antennae and genitalia (SEAMP 71/423, 71/430), same data as holotype (USNM).

Description: ♂: Small, brownish species; extremely similar to *C. fraudatrix* in general facies, palpal, labial and antennal characters; differing from it as follows: *Antenna* (FIG. 1): F-5 with relatively smaller fan-shaped tuft of about 16 modified scales, 8–10 most dorsal scales dark, broad and pointed apically, followed laterally by 6–8 scales of decreasing length; the latter all straight, not curved or wavy as in *fraudatrix*, basal 1/2 dark and broad, distal 1/2 pale and narrow. *Genitalia* (FIG. 2–5): Extremely similar to *C. fraudatrix*, differing chiefly as follows: *Sidepiece* (FIG. 2): Inner tergal surface with 5–6 strong submarginal setae, all apparently flattened, in irregular row more or less parallel to tergomesal margin. *Subapical lobe:* Proximal division with stronger and longer basal ventral seta and 3 subequal rods, 2 of which are curved and hooked apically, 1 straight and truncate apically; distal division with a stronger external basal seta, 1 narrower acuminate external leaflet, 3 stronger, bladelike and 2 fine hairlike accessory setae and 1 club-shaped internal leaflet. *Phallosome* (FIG. 4): Dorsal beaklike process of lateral plate more slender, rather longer and terminating in a sharp point.

♀, larva and pupa: Unknown.

Bionomics: The breeding sites of *C. submarginalis* are not known but are probably ground pools as in other members of the *fraudatrix* group. The adult males were collected in association with numerous specimens of *C. fraudatrix* in a lowland area along the northeastern coastline of New Guinea.

Systematics: Four males of *submarginalis* were discovered among the numerous specimens of *C. fraudatrix* in a collection by E. S. Ross from Gusika, Finschafen, Madang, NE New Guinea. They were misidentified as *fraudatrix* in the reference collection of the U. S. National Museum. However, examination of the male genitalia indicates that they are distinct from the latter and other closely related species. In Sirivanakarn (1968: 88–91), this species would key to couplet 19(18) (*fraudatrix* complex) which comprises *collessi*, *rajaneeae*, *atracus*, *shilfgaardei* and *fraudatrix*. It can readily be distinguished from all of the mentioned species by the presence of an irregular row of 5–6 strong submarginal setae on the sidepiece and by the slight differences in the setae of the subapical lobe of the male genitalia as described above.

Distribution: Known only from the type locality. Material examined: 4 ♂♂.

Culex (Lophoceraomyia) castaneus, n. sp.

FIG. 6–11

Type data: Holotype ♂ (APO 322) with slide of antenna and genitalia (SEAMP 71/424), Gusika, Finschafen, Madang, NE New Guinea, 26.IV.1944, H. S. Ross (USNM).

Description: ♂: Small, brownish species; extremely similar to *C. pseudorubithoracis* and *C. selacekae* in external, palpal and

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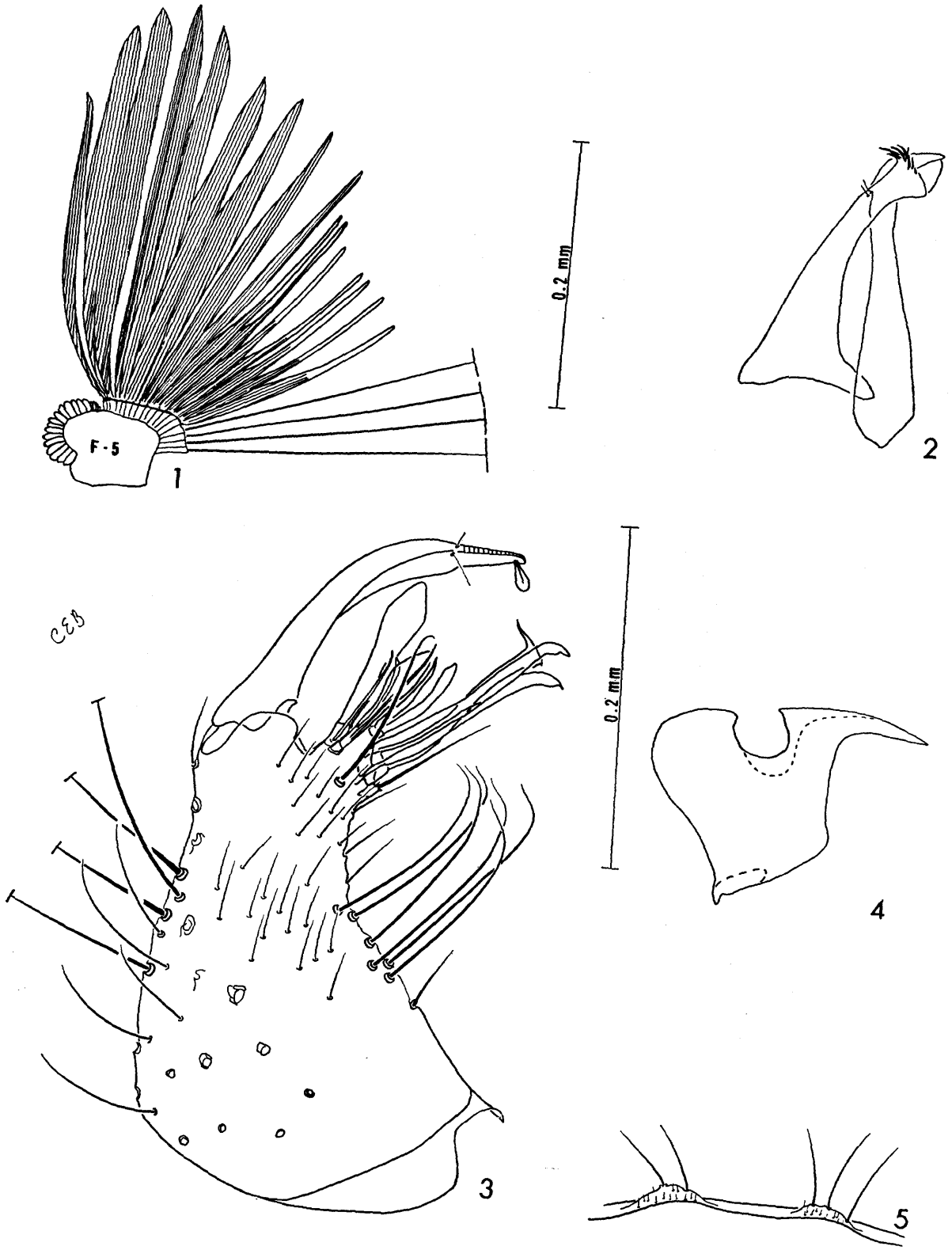

FIG. 1–5. *Culex* (*Lophoceraomyia*) *submarginalis*. (1) Modified tuft of antennal flagellomere 5. (2) Proctiger. (3) Sidepiece and clasper. (4) Lateral plate of phallosome. (5) Tergal lobe of abdominal segment IX.

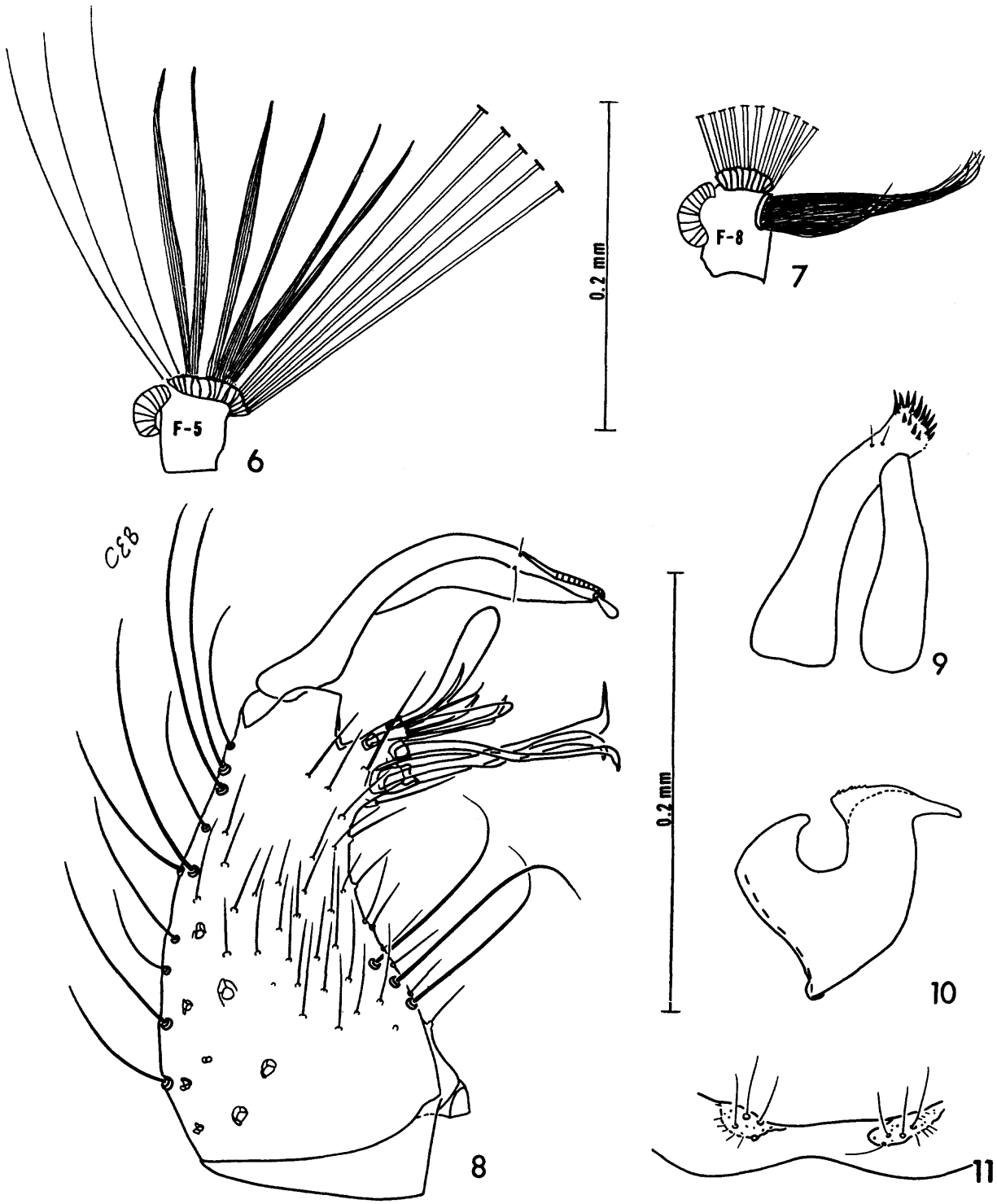

FIG. 6–11. *Culex* (*Lophoceraomyia*) *castaneus*. (6) Modified tuft of antennal flagellomere 5. (7) Modified tuft of antennal flagellomere 8. (8) Sidepiece and clasper. (9) Proctiger. (10) Lateral plate of phallosome. (11) Tergal lobes of abdominal segment IX.

labial characters, differing from them as follows: *Antenna* (FIG. 6, 7): F-5 with a small tuft of about 6 very narrow, dark, pointed scales which are subequal in length, about as long as the combined length of the next 3 flagellomeres, preceded dorsally by 3 longer fine hairs; F-8 with a very thick and dark tuft of fused setae, not in form of a J (FIG. 7); F-9 with 1 long bladelike scale laterally; F-10 with 2 dark strong, bristlelike setae. *Genitalia* (FIG. 8–11): As figured, very similar to *C. fraudatrix*, but differing from *pseudorubithoracis* and *selacekae* as follows: *Sidepiece* (FIG. 8): Inner tergal surface with 3 submarginal setae, closely spaced, arranged in line or in form of a triangle. *Subapical lobe:* Proximal division with 3 usual rodlike setae and a weak basal seta ventral of rods; distal division with 1 external basal seta, 1 small narrow external leaflet, 3–4 narrow bladelike accessory setae and 1 club-shaped internal leaflet. *Phallosome* (FIG. 10): Dorsal beaklike process of lateral plate rather short and slender, posterior dorsal surface lightly denticulated. *Proctiger* (FIG. 9): Apical crown small, paraproct narrow, ribbonlike, without lobe or expansion on sternal margin; 2 cercal setae present, minute and rather inconspicuous.

♀, larva and pupa: Unknown.

Bionomics: The single male specimen of *castaneus* was collected in association with numerous specimens of *C. fraudatrix*. The breeding habitat is not known but is probably ground pools as in other members of the *fraudatrix* group.

Systematics: This species is morphologically intermediate between members of the *fraudatrix* and *pseudorubithoracis* complexes and on the basis of the male characters, it keys to couplets 25(24) in Sirivanakarn (1968: 90–91). It can be separated from *pseudorubithoracis* and *selacekae* by the peculiar shape of the modified tuft of antennal flagellomere 8 and by several features of the genitalia as given above. The male genitalia of *castaneus* are nearly identical to those of *C. fraudatrix* from which it differs, however, in having a more slender and shorter beaklike process of the lateral plate of the phallosome. Although this species is known only from a single male, I believe it to be quite distinct from other known species. At present, I provisionally place this species in the *pseudorubithoracis* complex, pending study of the immature stages when they become available.

Distribution: Known only from the type locality. Material examined: 1 ♂.

Culex (Lophoceraomyia) cubitatus Colless

Culex (*Lophoceraomyia*) *cubitatus* Colless, 1965: 273–74.

In the earlier revision (Sirivanakarn 1968), I did not include *C. cubitatus* as a definite record from New Guinea largely because it was represented by a single male whose identity was difficult to confirm. This male was collected by F. H. Taylor from Vanimo, Sepik District, NE New Guinea and was later described by Colless (1959: 385) as sp. A-2 near *fraudatrix* before it was synonymized by him (Colless 1965: 273) with the Malayan form of *cubitatus*. In the current study of the Southeast Asian fauna, this species has been recorded from various parts of Malaysia (Malaya, Singapore and Borneo) and from the East as far as Mindanao, the Philippines and Ceram, Indonesia. On this basis, I am convinced that it is a widely-spread species extending its range into New Guinea. I have reconfirmed the status of the New Guinea specimen by comparing it with those from various parts of Southeast Asia and find them essentially similar, leaving no more doubt that the record of this species by Colless from New Guinea is correct.

Culex (Lophoceraomyia) solomonis (Edwards)

Culex (*Lophoceratomyia*) *fraudatrix* var. *solomonis* Edwards, 1929, in Paine & Edwards, 1929: 316.

Culex (*Lophoceraomyia*) *solomonis:* Belkin, 1962: 262–64.—Sirivanakarn, 1968: 175–77.

In addition to previous distribution records from the Solomon Islands (Belkin 1962) and New Guinea (Sirivanakarn 1968), *C. solomonis* is now also recorded from the Moluccas. This new record is based on the examination of 3 males (No. 70–68, 70–70, 80–70) collected by Dr H. de Rook from Ternate, Moluccas, dated 30.VIII.1929, in the collection of the Instituut voor Tropische Hygiene, Amsterdam, Holland. The Mollucan specimens differ slightly from those from the Solomons and New Guinea in having narrower and longer scales in the tuft of antennal flagellomere 5, but show no other differences.

Culex (Lophoceraomyia) digoelensis Brug

Culex (*Lophoceratomyia*) *digoelensis* Brug, 1932: 81–82.

Culex (*Lophoceraomyia*) *digoelensis:* King & Hoogstraal, 1955: 10–11.—Sirivanakarn, 1968: 101–05.

Culex (*Neoculex*) *caeruleus* King & Hoogstraal, 1947: 67–69.—considered as *Culex* (*Lophoceraomyia*) *caeruleus* by Sirivanakarn, 1971: 62–85. **New synonymy.**

The synonymy of *C. caeruleus* King & Hoogstraal, 1947 with *C. digoelensis* Brug, 1932 proposed above is based on the study of the specimens in the type series at the U. S. National Museum. These specimens consist of 1 slide of male genitalia, marked as holotype (the rest of the specimen was lost) and 1 male (the genitalia were lost), 3 larval skins, 1 whole larva and 2 correlated pupal and larval skins, all marked as paratypes. The male genitalia of the *caeruleus* holotype is essentially similar to that of *digoelensis* and so is the antenna of the male paratype which is badly molded. The larval and pupal stages, although not definitely associated with any of the above males, are indistinguishable

from *digoelensis*, leaving little doubt that they belong to the same species.

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