

A new species of *Xestochironomus* Sublette & Wirth, 1972 from Cuba (Diptera, Chironomidae)

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Xestochironomus naranjoi n. sp. is described and figured based on males collected in Granma Province in eastern Cuba. The new species groups with *X. nebulosus* Sublette & Wirth, 1972 from Puerto Rico as it has a spatulate anal point, hooked superior volsella, forked gonostylus and brown halteres. The two species can be separated as the fork in the gonostylus is deeper in *X. naranjoi* and sitting more apically than in *X. nebulosus*, and on the color pattern as *X. nebulosus* has mid femur brown, mid tibia mostly yellowish, and much of abdominal tergite VIII brown; in *X. naranjoi* mid femur is yellowish with apical 1/3 brown, mid tibia yellowish with proximal 1/3 pale brown, and abdominal tergite VIII is all yellowish.

Key words: Diptera, Chironomidae, Chironominae, *Xestochironomus naranjoi* new species, Cuba, Neotropical Region.

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Introduction

Sublette (1967) erected the genus *Insulanus* to accommodate *Chironomus* (*Stenochironomus*) *furcata* Johannsen, 1938 from Puerto Rico and Costa Rica. However, the name *Insulanus* was preoccupied and Sublette & Wirth (1972) introduced the name *Xestochironomus* as a replacement name and described an additional six new species from the Caribbean Islands. In his revision of the *Stenochironomus* complex Borkent (1984) added five new species from USA and Venezuela. Later, Sublette & Sasa (1994) described one new species from Guatemala; Andersen & Kristoffersen (1998) two new species

from Chile and Costa Rica, and Pinho & Souza (2013) two new species from Brazil.

Below we describe another new species from eastern Cuba. Morphologically the species is rather similar to *X. nebulosus* Sublette & Wirth, 1972 from Puerto Rico, but the two species can easily be separated on the color pattern, particularly on the legs and abdomen.

Material and Methods

The specimens were mounted in Euparal following the procedures outlined by Sæther (1969). The general morphology follows Sæther

(1980). Measurements are given as ranges.

The type material will be kept in the Department of Natural History, University Museum of Bergen, University of Bergen, Norway (ZMBN).

***Xestochironomus naranjoi* n. sp.**

(Figures 1–9)

Type material: *Holotype:* male, CUBA, Granma Province, Bartolomé Masó, Rancho Claro, Río Nagüas, Brazo Mayor, 20°04'03"N, 76°50'48"W, 560 m a.s.l., 16.VI.2015, light trap, leg. Orestes Bello Gonzalez (ZMBN). *Paratypes:* 2 males, as holotype (ZMBN).

Etymology: The species is named after the late Professor Dr. Juan Carlos Naranjo López, who taught aquatic insects to many Cuban researchers.

Diagnostic characters: The new species has a forked gonostylus, spatulate anal point, strongly hooked superior volsella and brown halteres. It can be distinguished from its congeners as the fork in the gonostylus is moderately deep and is sitting subapically in combination with the color pattern as mid femur is yellowish with apical $\frac{1}{3}$ brown, mid tibia yellowish with proximal $\frac{1}{3}$ pale brown, and abdominal tergite VIII all yellowish.

Description: *Male* ($n = 2-3$, except when stated otherwise). Total length 3.65–4.10 mm. Wing length 1.59–1.73 mm. Total length / wing length 2.30–2.37. Wing length / length of profemur 1.81–1.88.

Coloration. Head and palp yellowish. Thorax (Figure 2) yellowish with dark brown zigzag-shaped line posterior on scutum; scutellum yellowish brown, darker in anterior $\frac{1}{2}$; postnotum dark brown. Halter brown. Foreleg (Figure 3): femur yellowish with apical $\frac{1}{4}$ brown, tibia brown with pale yellowish ring proximally, all tarsi brown with pale yellowish rings proximally and apically. Mid leg (Figure 4): femur yellowish with apical $\frac{1}{3}$ brown, tibia yellowish with proximal $\frac{1}{3}$ pale brown, all tarsi yellowish. Hind leg: femur yellowish with apical $\frac{1}{3}$ brown, tibia yellowish with proximal $\frac{1}{3}$ brown, all tarsi yellowish. Wing (Figure 1) with brownish areas on brachiolum and arculus, crossvein R-M and FCu; membrane transparent, slightly darker along wing margin from apex of R_{4+5} to apex of An. Abdominal

segments as follows (Figure 5): tergite I yellowish; tergites II–V yellowish with dark brown lateral and posterior bands; tergite VI yellowish with dark brown lateral and posterior bands and with median brownish rectangular spot which is dark brown in anterior $\frac{1}{2}$, lighter brown in posterior $\frac{1}{2}$; tergite VII brown in anterior $\frac{2}{3}$ with dark brown, rectangular spot anteriomedially, posterior $\frac{1}{3}$ of segment yellowish; tergite VIII yellowish.

Antenna. Missing.

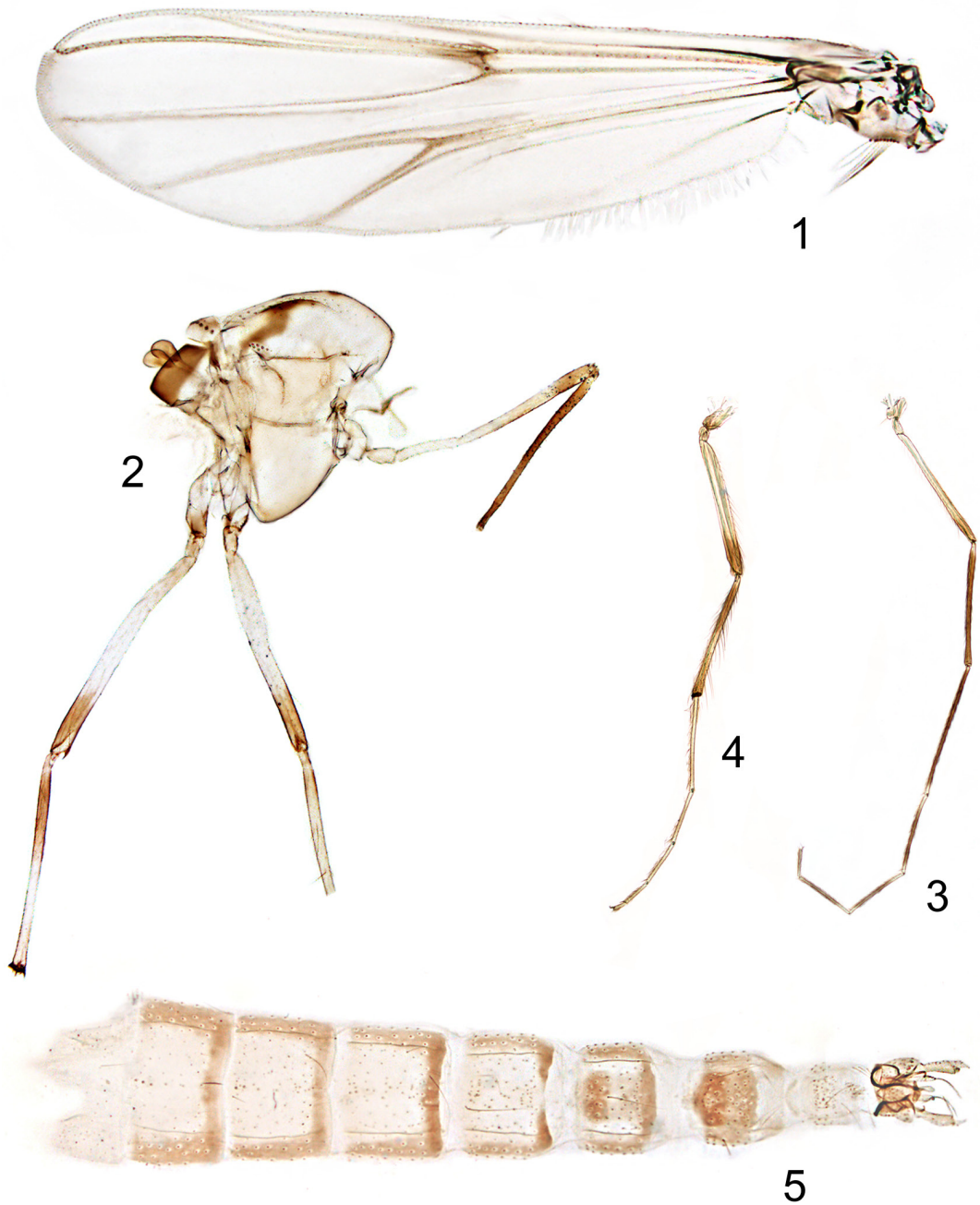
Head. Temporal setae 11–14. Clypeus with 15–19 setae. Tentorium 129–136 μm long. Palpomere lengths (in μm): 35–43; 55–59; 123–131; 144–154; 209–228. Third palpomere with 5–6 sensilla clavata, longest 18–21 μm long.

Thorax (Figure 2). Dorsocentrals 21–24, partly biserial; acrostichals 22–25; prealars 5. Scutellum with 16–21 setae, biserial.

Wing (Figure 1). Venarum ratio (VR) = 1.22–1.27. Brachiolum with 2–3 setae. R with 40–43 setae; R_1 with 42–50 setae; R_{4+5} with 66–86 setae; RM with 2–3 setae; M with 2–4 setae apically. Squama with 7–11 setae.

Legs (Figures 3–4). Spurs of mid tibia 54–61 μm long including 31–33 μm long comb, and 44–51 μm long including 28–31 μm long comb. Spurs of hind tibia 54–62 μm long including 33–37 μm long comb, and 42–44 μm long including 25–29 μm long comb. Width at apex of fore tibia 54–62 μm , of mid tibia 49–52 μm , of hind tibia 54–57 μm . Lengths (in μm) and proportions of legs in Table 1.

Hypopygium (Figures 6–9). Tergite IX with 11–14 strong, median setae and 8–10 weaker setae along posterior margin to each side of the anal point, several apparently on the ventral side. Anal tergite bands present. Laterosternite with 2–3 setae. Anal point spatulate, 62–75 μm long, 18(1) μm wide at base, 9(1) μm wide medially, 26–28 μm wide subapically. Phallapodeme 65–70 μm long. Transverse sternapodeme curved, 21–23 μm long. Gonocoxite 139–146 μm long. Superior volsella hooked, 69–76 μm long, with 1 strong lateral seta and 3–4 basal setae. Inferior volsella 97–105 μm long, with 7–10 dorsal setae and single, 116–132 μm long apical seta. Gonostylus bifid, 189–195 μm long, forked at 144–150 μm ; inner lobe clubbed, 16–18 μm long,

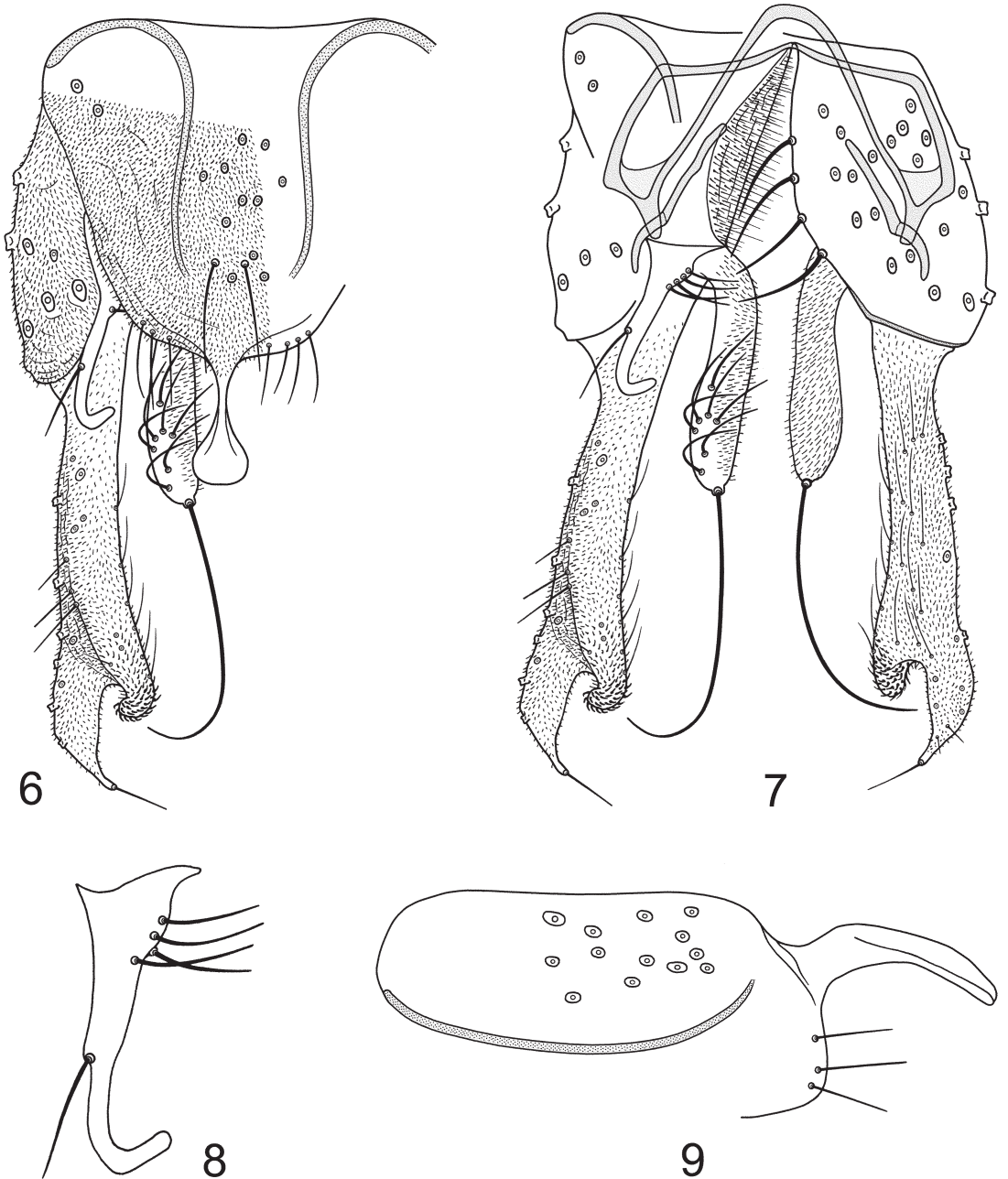


FIGURES 1–5. *Xestochironomus naranjoi* n. sp., male. 1. Wing. 2. Thorax. 3. Foreleg. 4. Mid leg. 5. Abdomen, dorsal view.

head with coarse microtrichia; lateral lobe curved, tapering, 45–51 μm long, with 23–25 μm long apical seta. Hypopygium ratio (HR) = 0.75–0.78. Hypopygium value (HV) = 1.90–2.14.

Female and immatures. Unknown.

Distribution: The specimens were collected at 560 m a.s.l. at a first order stream in a well preserved area in the Sierra Maestra Mountains in



FIGURES 6–9. *Xestochironomus naranjoi* n. sp., male. **6.** Hypopygium, dorsal view. **7.** Hypopygium with anal point and tergite IX removed, dorsal aspect to the left and ventral aspect to the right. **8.** Superior volsella. **9.** Tergite IX and anal point, lateral view.

eastern Cuba. The stream is a contributory to the River Nagüas, which runs to the north in the Sierra Maestra Mountains. The streambed consists of

boulders and cobbles and the stream is shaded by riparian vegetation. The specimens were collected at nightfall between 7:00 and 11:00 pm on a white

TABLE 1. Lengths (in μm) and proportions of legs of *Xestochironomus naranjoi* n. sp., male (n = 2–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
p1	882–891	842–858	891–989	531–588	441–482	409–441
p2	809–882	694–760	507–523	229–237	155–180	90–106
p3	931–964	825–899	605–694	367–376	310–327	163–196
	ta ₅	LR	BV	SV	BR	
p1	147–163	1.05–1.06	1.69–1.70	1.94–1.95	2.38–2.54	
p2	41–49	0.68–0.72	3.82–3.84	2.97–3.19	4.72–5.29	
p3	49–57	0.73–0.77	2.65–2.70	2.68–2.91	3.50–3.71	

sheet using two 20 W light bulbs with white light.

Discussion

In the recent key to the adult males of *Xestochironomus* (Pinho & Souza 2013), *X. naranjoi* n. sp. will key to *X. furcatus* (Johannsen, 1938) if the gonostylus is regarded as markedly forked, with deep concavity between thumb-like lobes and abdomen having dark cross-bands. If the gonostylus is regarded as slightly forked and abdomen having dark cross-bands, the new species will key to *X. nebulosus* Sublette & Wirth, 1972.

Morphologically the new species is rather similar to *X. nebulosus* as it has a spatulate anal point and hooked superior volsella. However, based on Sublette & Wirth (1972: fig. 16) in *X. nebulosus* the fork in the gonostylus appears to be more shallow than in the new species and placed more proximally; the ratio of the length of the gonostylus from base to apex of mesal lobe / total length of gonostylus is 1.38 in *X. nebulosus* while it is only 1.08 in *X. naranjoi* n. sp. Further, the color pattern differs markedly between the two species, particularly the pattern on the legs and abdomen. According to Sublette & Wirth (1972) *X. nebulosus* has yellowish legs with fore and mid femur and extreme base and apex of hind femur brown; mid tibia all pale and fore and hind tibiae brown except extreme base on foreleg and narrow base and broad apex of hind leg. In *X. naranjoi* n. sp. fore femur is yellowish with apical $\frac{1}{4}$ brown, mid- and hind leg with femur yellowish with apical $\frac{1}{3}$ brown; fore tibia is all brown, mid- and hind tibiae are yellowish with proximal $\frac{1}{3}$ brown. In *X. nebulosus* the abdomen is yellowish

with narrow segmental bands on tergites I–V, in addition tergite IV has lateral brown bands; and much of tergites VI and VIII are brown. In *X. naranjoi* n. sp. tergites I and VIII are all yellowish, tergites II–V have dark brown lateral and posterior bands and much of tergites VI–VII are brown. In addition, the wing seems to differ, as the wing in *X. nebulosus* is grayish hyaline with three prominent brownish cloudy areas: 1) on basal arculus and along base of radius, 2) on crossvein R-M and along R₁, appearing again on posterior fork; and 3) along wing margin between apices of veins R₄₊₅ and M₃₊₄. The wing in *X. naranjoi* n. sp. also has brownish areas but they seem to be much less prominent than in *X. nebulosus*.

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