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A new Neotropical species of *Oliveiriella* Wiedenbrug & Fittkau (Diptera: Chironomidae) from Argentina, with description of all its life stages

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The South American genus *Oliveiriella* is reported for the first time from Argentina. Description and diagnosis of all stages of a new species as well as the larva of *O. almeidai* are given.

Keywords: Argentina; first record; new species; *Oliveiriella*; Orthocladiinae

Introduction

Oliveira (1946) described *Spaniotoma* (*Stictocladius*) *almeidai*, including it in the subgenus *Stictocladius* Edwards (1931) mainly because of the wing markings. Spies and Reiss (1996) regarded *Stictocladius* as a genus, but listed *Spaniotoma* (*Stictocladius*) *almeidai* as an unplaced valid species in Orthocladiinae. Wiedenbrug and Fittkau (1997) considered that this species should be placed in a separate genus and described the pupal stage for the new combination *Oliveiriella almeidai*. Recently, the female of *Oliveiriella almeidai* has been redescribed (Paggi and Donato 2007). Wiedenbrug and Fittkau (1997) recognised a possible additional species in *Oliveiriella*, described from pupal exuviae from Venezuela as "Genus 5" by Roback and Coffman (1983).

In this paper we present the first larval description of the genus *Oliveiriella*. *Oliveiriella almeidai* is newly recorded from Argentina, and its larval stage is described. We also describe a new species, *Oliveiriella sanjavieri* from all the life stages, also from Argentina. Illustrations and diagnoses are presented for both treated species.

Materials and methods

The terminology and abbreviations used in the descriptions follow those of Sæther (1980). The specimens were mounted on slides in Euparal following the procedure outlined in Epler (2001). Measurements are given as range (and mean) of all available specimens in μm. All the material is deposited in Instituto–Fundación Miguel Lillo, Tucumán, Argentina (IFML).

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Taxonomy

Oliveiriella Wiedenbrug & Fittkau, 1997

Generic diagnosis

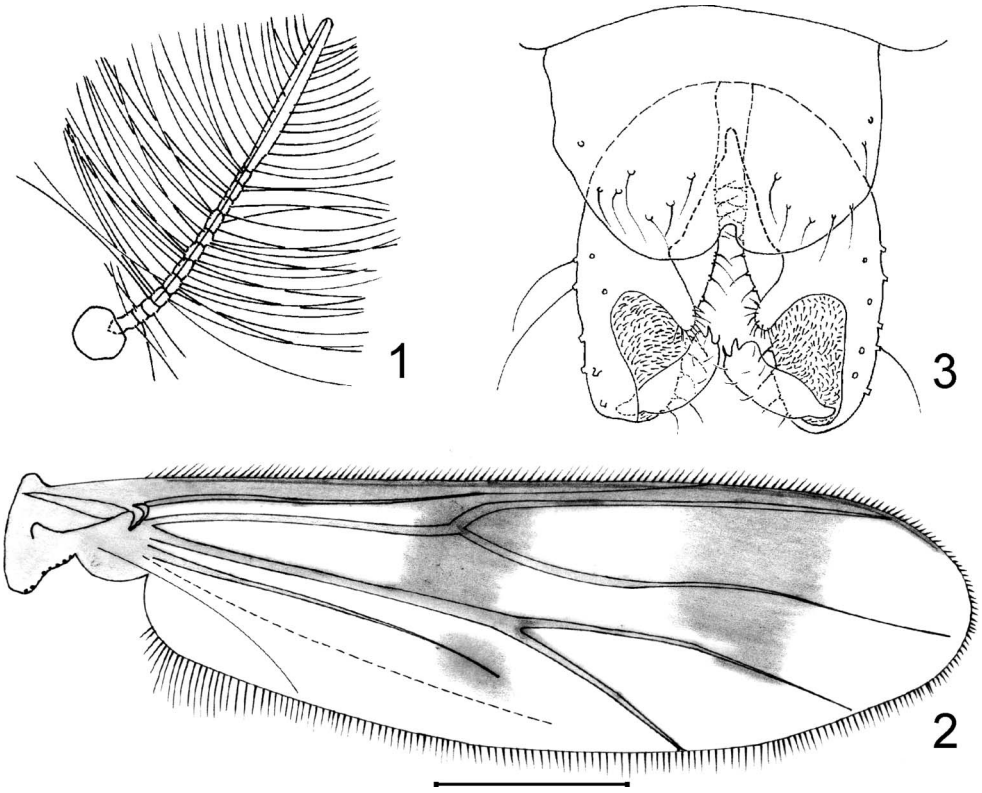
Adult male antenna with 13 flagellomeres (emended from Wiedenbrug and Fittkau, 1997).

Pupa with hook-like conjunctival spines (Figure 7). Anal setae short and spine-like, the anterior pair somewhat distanced from the two posterior pairs (Figure 10).

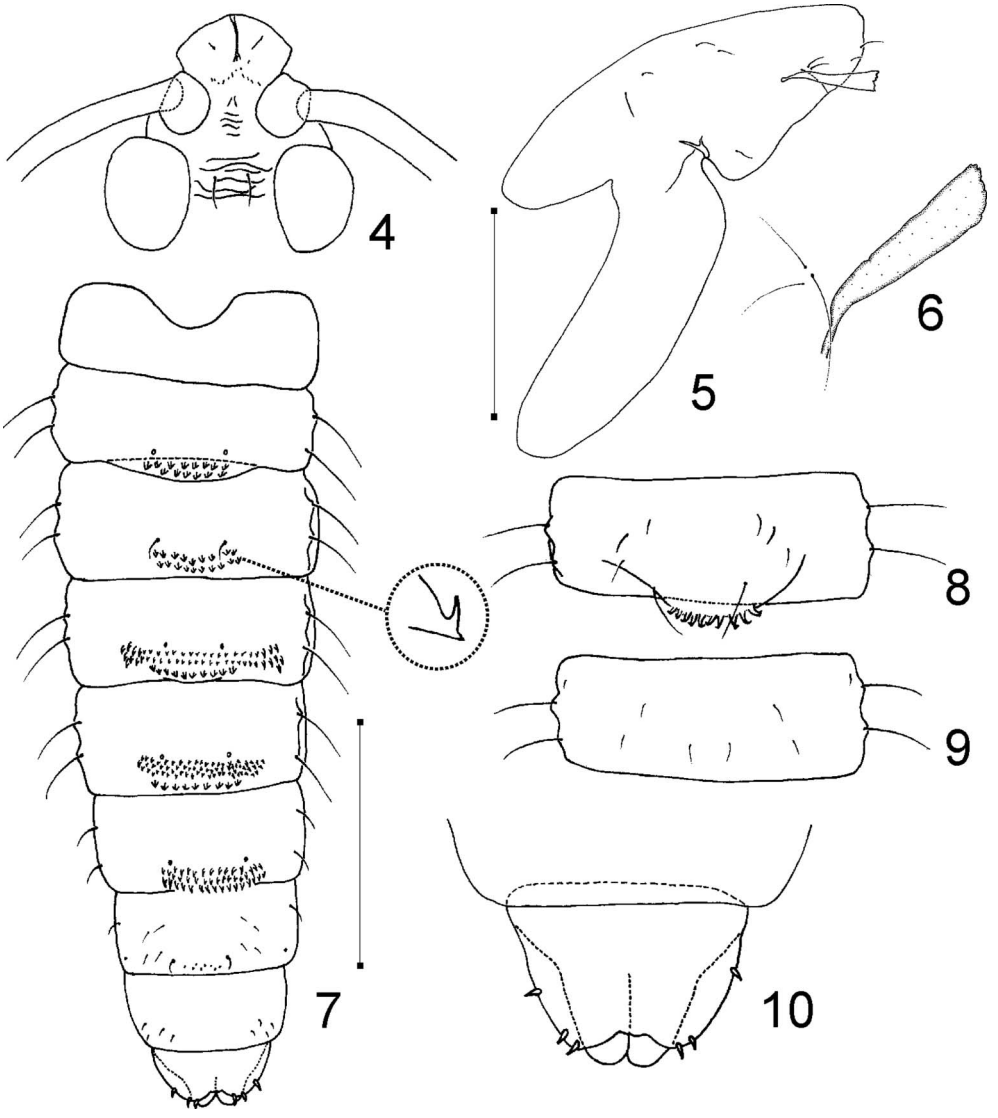
Larva (fourth instar). Head capsule slightly longer than wide. Antenna with five segments; segments consecutively shorter. S I bifid. Mentum with 13 teeth decreasing in size laterally; median tooth convex and wider than first lateral tooth. Setae submenti simple. Mandible with four inner teeth, sometimes with rugose outer margin. Seta interna present. Premandible simple. Abdominal setae simple. Posterior parapod claws yellow. Anal tubules much longer than posterior parapods.

Oliveiriella sanjavieri sp. nov. (Figures 1–15)

Type material. Holotype (IFML) ♂ adult from ARGENTINA, Tucumán, Valle de La Sala, San Javier stream, 26° 46′S, 65° 23′ W, 860 m a.s.l., 06.VI.2006, E. Tejerina. Allotype ♀ adult, same data

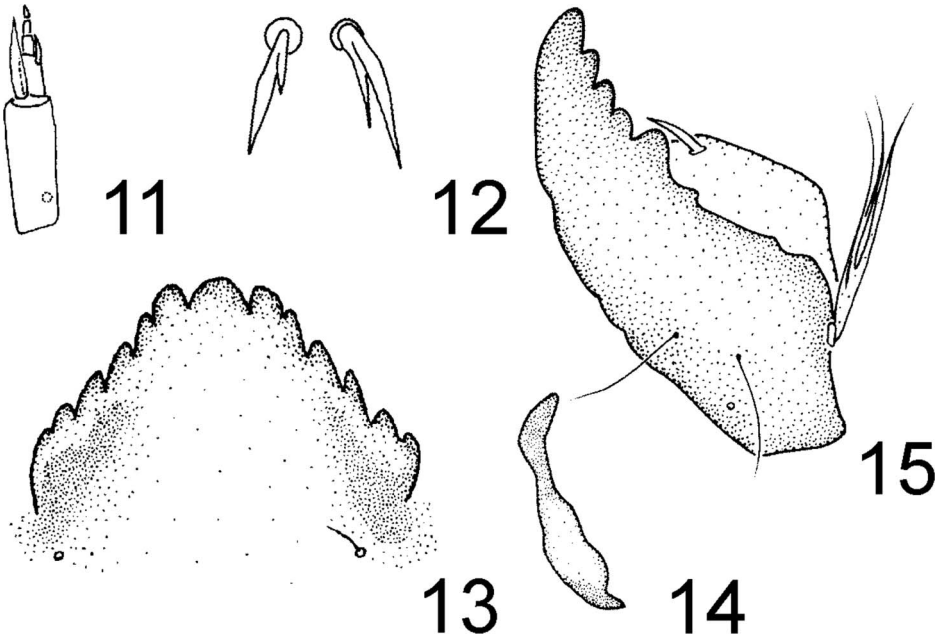


Figures 1–3. *Oliveiriella sanjavieri* sp. nov. Male imago. (1) Antenna; (2) wing; (3) hypopygium (dorsal view). Scale bar = 0.5 mm.



Figures 4–10. *Oliveiriella sanjavieri* sp. nov. Pupa. (4) Frontal apotome, ocular field and prefrons; (5) cephalothorax; (6) precorneal setae and thoracic horn; (7) abdomen dorsal, not all D-setae figured (hooklets detailed); (8) tergum II ; (9) sternum II; (10) anal lobe dorsal. Scale bar = 0.5 mm.

as holotype. Paratypes (IFML): 3 ♂ and 1 ♀ imagines, Valle de La Sala, San Javier stream, 15.IX.2006, light trap, Tejerina Col.; 1 ♂, Tucumán, Potrero de las Tablas, río Grande, Las Juntas 2 stream, 26° 46′ 10″ S, 65° 28′ 20.4″ W, 925 m a.s.l., 20.IX.2005; 1 ♀, Potrero de las Tablas, río Grande, Las Juntas 2 stream, 05.IX.2003; 6 larvae, 8 pupae (5 with larval exuvia, 3 pharate), Anfama stream, 26° 44′ 53.7″ S, 65° 30′ 46″ W, 1105 m a.s.l., 20.IX.2005; 2 pupa (1 pupa with larval exuviae), Las Juntas 1 stream, 26° 45′ 30″ S, 65° 29′ 31.3″ W, 1070 m a.s.l., 20.IX.2005; 8 pupae (4 pharate, 4 with larval exuviae), 125 larvae, Garabatal stream, 26° 42′ 10.5″ S, 65° 31′ 10.1″ W, 1265 m a.s.l., 20.IX.2005; 1 pupa with larval exuviae, El Siambón stream, 26° 43′ 12″ S, 65° 26′ 42.7″ W, 1080 m a.s.l., 19.IX.2005; 1 pupa with larval exuviae, Las Juntas 3 stream, 26° 50′ 42.3″ S, 65° 26′ 02.7″ W, 700 m a.s.l., 19.IX.2005. All the material is deposited in IFML.



Figures 11–15. *Oliveiriella sanjavieri* sp. nov. Larva. (11) Antenna; (12) SI; (13) mentum; (14) premandible; (15) mandible.

Diagnostic characters

Male adults of *Oliveiriella sanjavieri* sp. nov. are distinguishable from *O. almeidai* by the larger body and wing size; higher AR; brown areas on wings reaching M_{3+4}; higher ratio of total length/wing length, wing/profemur length and SV values. The pupae are separable from *O. almeidai* by having larger size; thoracic horn increasing in width towards the apex (in *O. almeidai*, similar width along its length, apical margin blunt), and apical margin serrated, lateral setae of abdominal T II–V strong, more than half segment length. The larvae resemble *Cricotopus* in general aspect, especially those of the *tremulus* group (Hirvenoja 1973), but present simple setae in all segments and longer anal tubules. Larvae of *O. sanjavieri* differ from *O. almeidai* by having head dark brown and a larger body size.

Male imago

Thorax length 1104–1280 (1202) ($n = 3$). Abdomen length 2088–2280 (2187) ($n = 3$). Wing length 1925–2431 (2184); width 620–772 (683) ($n = 4$). Wing length/length of profemur 2.7–3.2 (2.9). Head dark brown, almost black. Thorax dark brown; median part darker and the rest lighter; scutellum dark brown; postnotum and pleura dark brown. Wing with two anterior brown areas reaching M_{3+4} and a third spot in the anal cell, wing basally darkened, veins brown (Figure 2). Abdominal tergites black. Tergites I–III with a whitish semicircle from the anterior margin to about the middle of the tergite. Tergites IV–V with a whitish semicircle from the posterior margin to about the middle of the tergite. Sternites dark brown.

Head. AR = 0.91–0.96 (0.94) ($n = 2$). Antennae with flagellomeres light brown; plume light brown, pedicel dark brown, without subapical setae (Figure 1). Antennal flagellomere length: 1°–12° 450–530 (483) ($n = 3$), 13° 380–440 (407) ($n = 3$). Eye hairy. Outer verticals

1, inner verticals 1. Buccal parts light brown. Clypeus rectangular, with 14–16 setae. Tentorium 195 long; 47 wide. Stipes 173 long; 35 wide ($n = 1$). Palpal segment length: 37, 44, 84, 131, 182 ($n = 1$).

Thorax (n = 2). Acrostichals 17–20 (18); prealars 3; dorsocentrals 23–29 (26); scutellars 18.

Wing (Figure 2). VR 1.19 ($n = 2$). Costa extended beyond R_{4+5}. Cu slightly curved. Squama with 7–9 (8) setae ($n = 3$).

Legs (Table 1). With a white ring on fore and mid-tibiae covering at least half of each tibia. Tibial spur of fore leg 57–60 (59) long; two spurs of mid-tibiae subequal in size: about 30; 2 spurs of hind tibia unequal in size: 70 and 30 long, comb with 12–13 teeth ($n = 2$). Sensilla chaetica 8–13 (10) ($n = 5$) on hind Ta_1. Pulvilli absent. Length and proportions of legs as in Table 1.

Abdomen. Chaetotaxy: tergite I with about 50 setae, tergites II–VI with two median setae, dorsal and lateral setae variable in number according to specimen.

Hypopygium (Figure 3). Length ($n = 3$): gonocoxite 206–214 (210), gonostylus 70–78 (75), both white. Tergite IX with seven setae on each side. Laterosternite 4–5 setae. Anal point absent. Inferior volsella cylindrical, ventrally without setae, apically rounded. Ventral median edge of gonocoxite with a row of about 12–14 medially directed long setae. Crista dorsalis ending in a strong conical tooth (Figure 3). Megaseta long, 15 ($n = 2$). HR: 2.7– 3.0 (2.8). HV: 4.3–4.7 (4.5).

Female imago ($n = 1$)

Length of thorax 1592; length of abdomen 2016. Colour pattern as in male. Head dark brown; antennae with light brown flagellomeres.

Head. AR = 0.52. Flagellomere length: 72, 50, 54, 56, 122. Eye hairy. Outer verticals 2, inner verticals 1. Buccal parts light brown. Palpal segment length (2–5): 52, 83, 116, 120. Palpal segment 1, clypeus, tentorium, stipes, and cibarial pump not clearly visible in the slide.

Wing. Length 2240, width 704. VR = 1.26. Wing/profemur length, 3.0.

Legs (Table 2). Sensilla chaetica 33 on middle Ta_1 and 21 on hind Ta_1 in three rows.

Genitalia. Broken off while mounting.

Table 1. Length (in μm) and proportions of legs of *Oliveiriella sanjavieri* n. sp., male ($n = 4$).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR	BV	SV
Fore	746	884	526	259	202	148	99	0.59	3.05	3.10
Mid	734	742	382	166	130	73	82	0.51	4.16	3.86
Hind	722	774	414	186	155	79	85	0.54	3.80	3.61

Table 2. Length (in μm) and proportions of legs of *Oliveiriella sanjavieri* n. sp., female ($n = 1$).

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR	BV	SV
Fore	744	864	536	264	192	152	104	0.62	3.01	3
Mid	736	824	464	224	184	88	88	0.56	3.47	3.36
Hind	752	744	344	168	120	72	80	0.46	4.18	4.35

Pupa ($n = 8$, except when otherwise stated)

General colouration dark brown. Length. Thorax 928–1024, 970; abdomen 1488–2160, 1692.

Cephalothorax. Frontal apotome with two frontal setae on prefrons (Figure 4). Cephalic tubercles absent. Setae (Figure 5): dorsocentrals 4, prealar 1, median antepronotals 1, lateral antepronotals 1, Precorneals 3, the closest to the horn is the thickest 100–116 (109) long ($n = 3$). Thoracic horn 220–280 (246) with smoothly serrated apex as in Figure 6.

Abdomen (Figure 7). Tergite I with 12–14 (13) setae, tergites II–-III with two posterior rows of strong hooklets, small spinules on either side of these rows, tergites IV–V with one posterior row of large hooklets and small spines anteriorly. Hooklets: tergite II 20–25 (22), tergite III 21–33 (29), tergite IV 11–20 (16), tergite V 10–26 (16). Tergite VI with a small posteromedian group of spinules and three rows of moderately strong spines, tergite VII with a small posteromedian patch of spinules, tergite VIII with posteromedian fine shagreen. Abdominal segments II–V with two strong lateral setae on small tubercles 0.06–0.15 (0.11). Sternites with fine shagreen, except VI with a pair of sublateral patches of spinules. D setae and V setae as in Figures 8 and 9, respectively. Tergites II–VIII with a pair of strong D_5 near hind margin (Figure 8). Anal lobe with three very short spine-like anal macrosetae (Figure 10).

Larva (fourth-instar larva, $n = 6$ except when otherwise stated)

Body colour dark green. Head capsule 328–402 (382) long; 288–332 (306) wide. Postmentum 162–184 (173) long ($n = 3$). Head dark brown with a pale spot around eyes.

Head. Antenna (Figure 11). Length: basal antennal segment 44–50 (47) long; segment II 10–18 (14) long; segment III 6–8 (7) long; segment IV 6–8 (7) long; segment V 4–6 (4) long. AR 1.16–1.88 (1.47). Blade slightly shorter than antennal segments 2–5. Ring organ 6–10 (8) ($n = 2$) from base. Labrum with S I asymmetrically bifurcated (Figure 12). Mentum (Figure 13). Median tooth convex, wider than the first lateral tooth. First lateral tooth rounded, lateral teeth 3–6 generally regularly decreasing in size, or about the same size. Setae submenti simple. Premandible simple (Figure 14). Mandible dark brown with four inner teeth, with rugose outer margin in some larvae (Figure 15).

Abdomen. Length 3440–4032 (3657). Abdominal setae simple. Posterior parapod claws yellow. Procerci 10–22 (19) long; 12–20 (18) wide. Anal tubules 372–440 (404) long; much longer than posterior parapods 172–252 (210).

Etymology

The species is named after the type locality, San Javier stream.

Oliveiriella almeidai **(Oliveira, 1946)**

Material examined. 17 pupae (1 pharate, 10 with larval exuviae) and 123 larvae from Argentina, Jujuy, P. N. Calilegua. 07.XI.2006, Yuto stream, 23°38′40″ S, 64°35′53″ W, 505 m a.s.l., E. Tejerina col.; 2 ♂ imagines from Jujuy, Ledesma, Zora stream, 23°45′4″ S, 64°41′27″, 411 m a.s.l., 08.II.2006.

Diagnostic characters

The larvae of *O. almeidai* can be distinguished from *O. sanjavieri* sp. nov. by its smaller and yellowish brown head and body.

Larva ($n = 6$)

Body and head yellowish brown. Head capsule slightly longer than wide: 332–360 (349) long; 280–300 (289) wide. Length of antenna: basal antennal segment 42–50 (45) long; segment II 12–16 (14) long; segment III 4–6 (5) long; segment IV 4–5 (4) long; segment V 4–6 (5) long. AR 1.4–1.8 (1.6). Labrum with S I asymmetrically bifurcated. Mentum with 13 teeth. Median tooth convex, wider than the first lateral tooth. Setae submenti simple. Premandible simple. Mandible dark brown with 4 inner teeth, sometime with rugose outer margin.

Abdomen. Length 2720–3176 (2919). Abdominal setae simple. Posterior parapod claws yellow. Procerci 12–24 (20) long; 16–36 (29) wide. Anal tubules 296–440 (379) ($n = 14$) much longer than posterior parapods.

Ecology and distribution

Both species were collected from similar mountain streams in Yungas biogeographic province, characterised by cloudy mountain forests in the eastern slopes of the Andean Cordillera (Cabrera and Willink 1973). However, despite living in similar environments, *O. almeidai* only was collected in the northern portion of Argentinean Yungas (Calilegua National Park); while *O. sanjavieri* was found in the southern Yungas (San Javier and Cumbres Calchaquies). In benthic samples (mean from three Surber samples) from low water periods (September to November), *Oliveiriella almeidai* larval density reached 456 ind/m^2 and *O. sanjavieri* reached 462 ind/m^2.

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