

Urubicimbera, a new Orthocladiinae genus from Brazil (Diptera, Chironomidae)

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Urubicimbera n. gen. is erected based on the male of *U. montana* n. sp. from Santa Catarina State in South Brazil. The genus can be separated from other Orthocladiinae genera based on the combination of bare eyes, wing and squama; low antennal ratio ($AR \leq 0.3$), antenna with apical seta; no acrostichals; costa short, ending at < 0.6 of wing length; with long, false vein nearly reaching wing tip; R_{4+5} ending proximal to M_{3+4} ; anal point long, narrowly triangular, evenly tapering to pointed apex, with microtrichia only and virga composed of single, stout spine.

Key words: Diptera, Chironomidae, Orthocladiinae, *Urubicimbera*, new genus, *U. montana*, new species, Mata Atlântica, Brazil, Neotropical region.

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Introduction

Our knowledge of the Neotropical Chironomidae fauna has increased considerably during the last two decades. Andersen & Sæther (1995) recorded the subfamily Buchonomyiinae from the region when describing *Buchomyia brundini* Andersen & Sæther, 1995 from Costa Rica. A year later Andersen (1996) confirmed the subfamily Prodiamesinae when describing *Monodiamesa mariae* Andersen, 1996 from southern Chile. Today, no less than ten out of the eleven extant subfamilies are known from the region. Only the subfamily Usambaromyiinae, based on *Usambaromyia nigrata* Andersen & Sæther, 1994 from East Africa, is not recorded

from the Neotropical region (Andersen & Sæther 1994). However, it is not unconceivable that this subfamily too is represented in the Neotropical region, but the only known species is small, with a wing length of about 1.6 mm and has dark wing membrane, so it might be difficult to recognize when sorting out chironomids.

The subfamilies Tanypodinae, Orthocladiinae and Chironominae are the most species rich and abundant subfamilies in the region. The larvae of many Tanypodinae and Chironominae species inhabit slow flowing lowland rivers and lakes (see e.g. Cranston & Epler 2013, Epler *et al.* 2013). Orthocladiinae species are traditionally more often associated with fast flowing streams and rivers, particularly in mountainous areas (see e.g.

Andersen *et al.* 2013). However, contrary to what has been stated previously (see e.g. Fittkau & Reiss 1979), the rainforests in the region appear to have a very rich and diverse fauna of orthocladids. Twenty six new Neotropical Orthoclaadiinae genera have been described since Spies & Reiss (1996) published their catalogue of Neotropical Chironomidae, most of them based on species collected in the Atlantic forest (Mata Atlântica) or the Amazon rainforest in Brazil. Many of these species are tiny with a wing length of about 1.0 mm or less and the larvae might be terrestrial or semiterrestrial. In addition, a few transantarctic genera, like *Pirara* Boothroyd & Cranston, 1995 and *Botryocladus* Cranston & Edward, 1999 have been discovered in the southernmost parts of South America (Cranston & Edward 1999, Ashe & O'Connor 2012).

Most of the new genera appear to be endemic to the Neotropical region; in fact, the region has now a higher number of endemic Orthoclaadiinae genera than any of the other major biogeographical regions (Ashe & O'Connor 2012). However, a few of the new genera, like *Onconeura* Andersen & Sæther, 2005 based on *O. undecimata* Andersen & Sæther, 2005 from Chile and *Litocladus* Mendes, Andersen & Sæther, 2004 based on *L. mateusi* Mendes, Andersen & Sæther, 2004 from Brazil, have also been recorded from the Nearctic and Oriental regions, respectively (Andersen & Sæther 2005, Krestian *et al.* 2010, Lin *et al.* 2013, Mendes *et al.* 2004).

Below we describe a new orthoclad species from the southern part of the Atlantic forest in Brazil, showing unique character combinations and place it in a new genus. The species was collected in a Malaise trap in a cloud forest above 1.600 m altitude in Santa Catarina State.

Material and Methods

The specimens were mounted in Canada balsam following the procedures outlined by Sæther (1969). The general morphology follows Sæther (1980). Measurements are given as ranges, followed by the mean when four specimens were measured, followed by the number of specimens

measured in parenthesis.

The holotype will be deposited in the Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo, Brazil. Paratypes will be kept in the Department of Natural History (ZMBN), Bergen University Museum, Norway and at MZUSP.

Urubicimbera n. gen.

Type species: *Urubicimbera montana* n. sp.

Etymology: Named after Urubici, the municipality where the specimens were collected and *mberui* from Tupi meaning midge, mosquito. Gender of the genus name: feminine.

Diagnostic characters: The combination of bare eyes, wing and squama; low antennal ratio ($AR \leq 0.3$), antenna with apical seta; no acrostichals; costa short, ending at < 0.6 of wing length; with long false vein nearly reaching wing tip; R_{4+5} ending proximal to M_{3+4} ; anal point long, narrowly triangular, evenly tapering to pointed apex, with microtrichia only and virga composed of single, stout spine will separate the genus from all other orthocladids.

Description: Small sized species, wing length 0.80–1.02 mm.

Antenna. Male antenna with 13 flagellomeres, plumose, groove beginning at flagellomere 2, sensilla chaetica present on flagellomeres 2, 3 and 13, with strong apical seta. Antennal ratio low ($AR < 0.33$).

Head. Eye bare, reniform, without dorso-median extension. Palp with 5 segments, palpomeres normal, third palpomere with few sensilla clavata subapically. Temporal setae few, in single row; inner verticals weak, outer verticals somewhat stronger, postorbitals absent. Frontal tubercle absent. Tentorium and stipes normal. Cibarial pump with anterior margin nearly straight. Clypeus with few setae.

Thorax. Anteprepronotum well developed with lobes meeting medially at anterior margin of scutum, with few lateral anteprepronotals. Acrostichals absent; dorsocentrals simple, uniserial; prealars few, uniserial; supraalar absent. Scutellum with few setae in single row.

Wing. Membrane without setae, with fine

punctuation. Anal lobe normal. Costa not extended, ending at less than 0.6 of wing length; with false vein nearly reaching wing tip; Costa, R_1 and R_{4+5} distinctly inflated, giving a somewhat clavus-like appearance. R_{3+4} ending at 1/3 of the distance between R_1 and R_{4+5} ; R_{4+5} ending proximal to M_{3+4} ; FCu far distal to RM; Cu_1 slightly curved. Brachiolum with 1 seta, other veins bare. Squama bare. Sensilla campaniformia about 4 basally, 5 apically, and 3 above seta on brachiolum; 1 on RM; and 1 basally on R_1 .

Leg. Tibial spurs and comb normal. Tarsal pseudospurs present on mid and hind legs. Sensilla chaetica absent. Pulvilli vestigial.

Abdomen. Abdominal setation reduced. Tergite I with few median setae, tergites II–VIII with anterior and posterior rows of few setae. Sternites I–IV bare, sternite V with 0–2 median setae, sternites VI–VIII with few setae in median cluster.

Hypopygium. Anal point long, narrowly triangular, evenly tapering to pointed apex, with microtrichia. Tergite IX with few setae along posterior margin, laterosternite IX with few setae. Transverse sternapodeme arched. Gonocoxite with small, rounded inferior volsella. Gonostylus clavate; megaseta normal.

Female, pupa and larva. Unknown.

Systematics

The new genus will key to *Smittia* Holmgren, 1869 in the key to the genera of the Holarctic Region (Cranston *et al.* 1989). However, *Smittia* has strongly pubescent to hairy eyes and a strongly extended costa. In the key to the Central American Chironomidae (Spies *et al.* 2009) the genus will key to couplet 120, but no further as it is lacking setae on both wing membrane and on wing veins.

The wing of the new genus, with a short costa and inflated R_1 and R_{4+5} is rather similar to the wing found in *Physoneura* Ferrington & Sæther, 1995. However, the two genera are easily separated as *Physoneura* has pubescent eyes, temporal setae represented by postorbitals only, lacks apical seta on the antenna, has reduced and widely separated median lobes of antepronotum and a

short, triangular to rounded anal point (Ferrington & Sæther 1995, Stur & Andersen 2000). The new genus has bare eyes, temporal setae consisting of inner and outer verticals, antenna with strong apical seta, median lobes of antepronotum meeting at the anterior margin of scutum and the anal point is long, narrowly triangular, evenly tapering to pointed apex. Although the wing venation might indicate a placement in the *Corynoneura* group of genera, the new genus most probably belongs in the *Pseudosmittia* group of genera. It demonstrates many of the characters diagnostic for *Pseudosmittia* Edwards, 1932, but lacks the two short acrostichals on mid-scutum (see Andersen *et al.* 2010b, Ferrington & Sæther 2011). However, the males of *Pseudosmittia* are very heterogeneous. The female genitalia and the immatures are much more homogeneous, but data on the female, larva and pupa are so far unavailable for *Urubicimbera*. A more exact systematic placement thus has to await DNA-sequencing and/or recognition of its immature stages.

Urubicimbera montana n. sp.

(Figures 1–10)

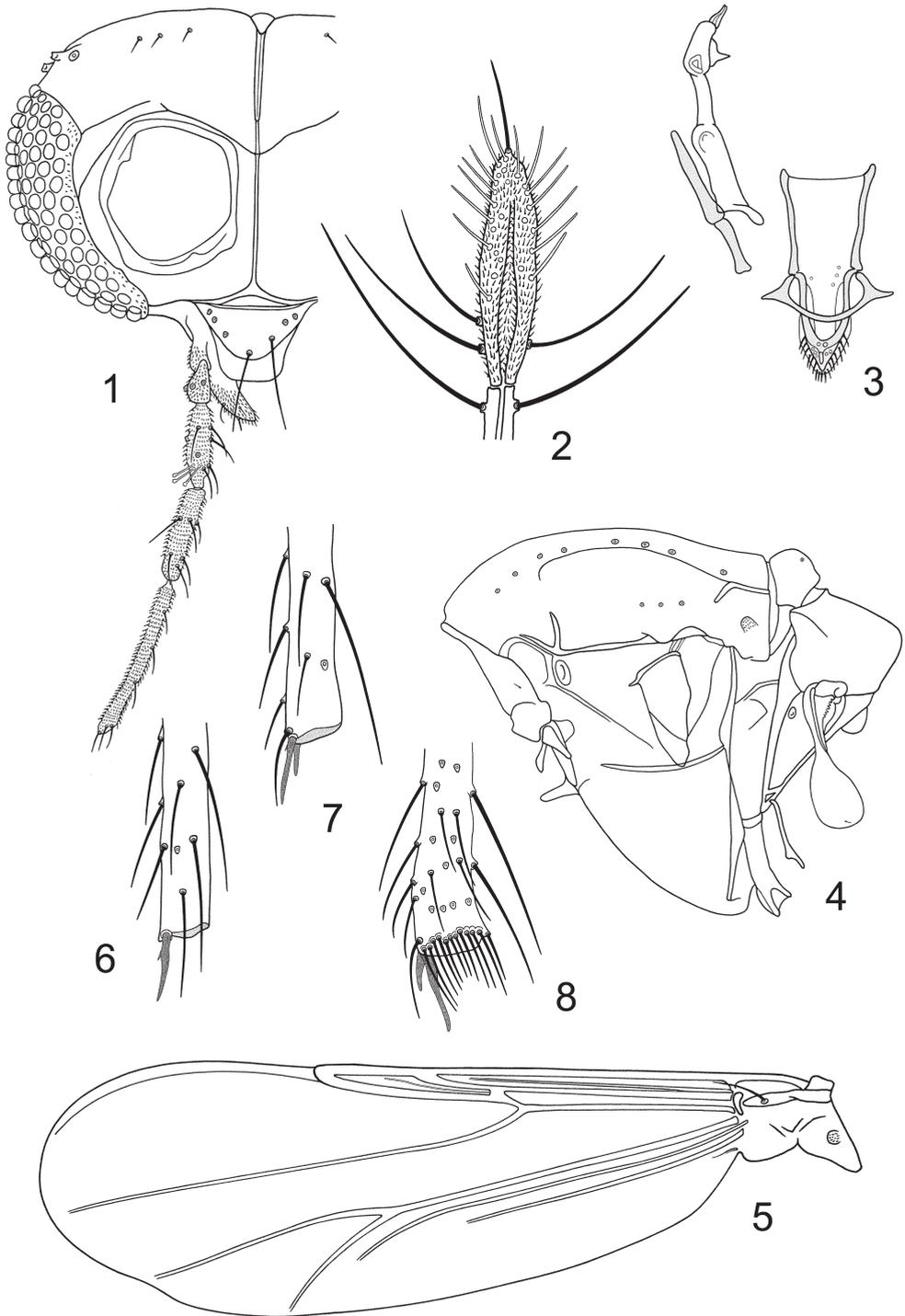
Type material: *Holotype:* male, BRAZIL, Santa Catarina State: Urubici, Morro da Igreja, Parque Nacional de São Joaquim, Rio Pelotas, 1.670 m a.s.l., 28°07'37''S 49°28'47''W, 18.IX–05.XII.2004, Malaise trap, cloud forest, leg. L.C. Pinho & L.E.M. Bizzo (MZUSP). *Paratypes:* 3 males, as holotype (MZUSP, ZMBN).

Etymology: The name *montana* refers to the fact that this species was collected at about 1.600 m above sea level in a mountain cloud forest in South Brazil.

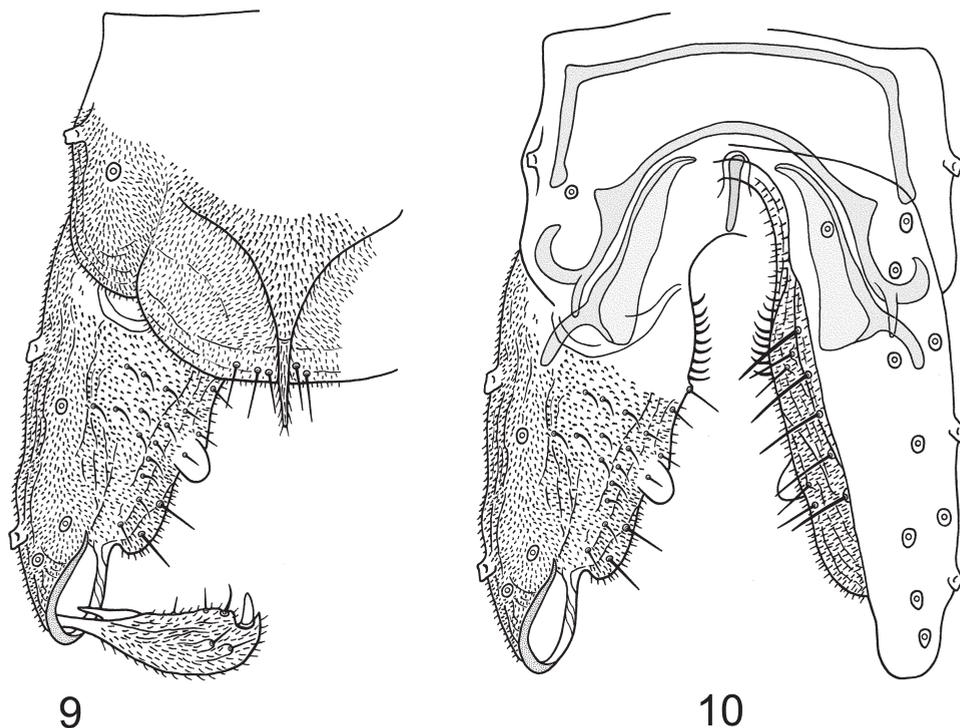
Description: *Male* ($n = 4$, except when stated otherwise). Total length 1.21–1.40, 1.31 mm. Wing length 801–1022, 889 μm . Total length / wing length 1.37–1.52, 1.48. Wing length / length of profemur 3.35–3.64, 3.48.

Coloration. Head and thorax brown, legs and abdomen lighter brown.

Antenna. Antennal ratio (AR) 0.21–0.33, 0.27. Ultimate flagellomere 86–142, 118 μm long



FIGURES 1–8. *Urubicimbera montana* n. gen., n. sp., male. 1. Head. 2. Antenna, last segment. 3. Tentorium, stipes and cibarial pump. 4. Thorax. 5. Wing. 6. Apex of fore tibia. 7. Apex of mid tibia. 8. Apex of hind tibia.



FIGURES 9–10. *Urubicimbera montana* n. gen., n. sp., male. **9.** Hypopygium, dorsal view. **10.** Hypopygium with anal point and tergite IX removed, dorsal aspect to the left and ventral aspect to the right.

(Figure 2).

Head (Figure 1). Temporal setae 3–5 including 1–3, 2 inner verticals and 1–3, 2 outer verticals. Clypeus with 7–8, 7 setae. Tentorium, stipes, and cibarial pump as in Figure 3. Tentorium 82–95, 90 μm long, 9–15, 12 μm wide; stipes 65–73, 70 μm long. Palp segment lengths / widths (in μm): 13–16, 15 / 10–14, 12; 20–27, 24 / 11–14, 12; 41–44 (3) / 11–13 (3); 45–57 (3) / 9–11 (3); 73–84 (3) / 6–8 (3). Third palpomere with 2–4 (3) sensilla clavata subapically, longest 9–11 (3) μm long.

Thorax (Figure 4). Anteprenotum with 1–2, 1 setae. Dorsocentrals 6–9, 8; acrostichals absent; prealars 3; supraalar absent. Scutellum with 2 setae.

Wing (Figure 5). Venarum ratio (VR) 1.67–1.73, 1.69. Costa not extended; false vein 320–360, 334 μm long. Brachiolum with 1 seta, remaining veins and cells bare. Squama bare.

Legs (Figures 6–8). Spur of fore tibia 23–27,

25 μm long, spurs of mid tibia 16–21, 19 μm and 9–11, 10 μm long, spurs of hind tibia 25–32, 28 μm and 9–11, 10 μm long. Width at apex of fore tibia 15–18, 17 μm , of mid tibia 15–18, 17 μm , of hind tibia 20–25, 24 μm . Comb with 9–12, 11 setae, longest 19–23, 21 μm long, shortest 13–15, 14 μm long. Lengths and proportions of legs as in Table 1.

Hypopygium (Figs 9–10). Tergite IX with 4–9, 6 setae along posterior margin. Anal point with microtrichia, 13–18, 16 μm long, 3–4, 3 μm wide at base, tapering to pointed apex. Laterosternite IX with 2 setae. Transverse sternapodeme arched, 48–59, 53 μm long. Phallapodeme 45–52, 48 μm long. Virga with 1 stout spine, 6–11, 7 μm long. Gonocoxite 93–120, 106 μm long, with small, rounded, bare superior volsella. Gonostylus 36–43, 42 μm long; megaseta 3–5, 4 μm long. HR 2.05–2.65, 2.48. HV 2.68–3.65, 3.08.

Female, pupa and larva. Unknown.

TABLE 1. Lengths (in μm) and proportions of legs of *Urubicimbera montana* n. gen., n. sp., male (p_1 n = 4; p_2 n = 3; p_3 n = 2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
p_1	241–295, 259	259–338, 293	–	–	–	–
p_2	331–356	280–342	140–154	75–79	54–61	25–29
p_3	302–317	310–331	158–180	83–90	79–83	29–32
	ta ₅	LR	BV	SV	BR	
p_1	–	–	–	–	–	
p_2	25–29	0.44–0.54	4.08–4.44	4.05–4.79	3.2–3.5	
p_3	27–30	0.51–0.54	3.43–3.51	3.60–3.86	4.5–4.7	

Distribution: The species is known only from its type locality, Morro da Igreja, Urubici, in Santa Catarina State, South Brazil, where it was collected in a Malaise trap in an area with cloud forest above 1.600 meters altitude. The region belongs to the Pine Forest endemism region of the Mata Atlântica (Silva & Casteleti 2003).

Morro da Igreja is also the type locality for *Beardius bizzoii* Pinho, Mendes & Andersen, 2013; *Beardius mileneae* Pinho, Mendes & Andersen, 2013; *Beardius nebularius* Pinho, Mendes & Andersen, 2013; *Caaporangomera urubici* Andersen, Pinho & Mendes, 2015; *Lopescladius vibrissatus* Hagenlund, Andersen & Mendes, 2010; *Miambera miae* Andersen & Mendes, 2012; *Oukuriella pinhoi* Fusari, Roque & Hamada, 2013; *Pseudosmittia catarinense* Andersen, Sæther & Mendes, 2010; *Pseudosmittia gibbistyla* Andersen, Sæther & Mendes, 2010; *Pseudosmittia pinhoi* Andersen, Sæther & Mendes, 2010; *Saetherocladius urubiciensis* Andersen, Mendes & Pinho, 2010; *Saetherocladius fusus* Andersen, Mendes & Pinho, 2010 and *Xestochironomus virgoferreae* Pinho & Souza, 2013 (Andersen *et al.* 2010a, b, Hagenlund *et al.* 2010, Andersen & Mendes 2012, Fusari *et al.* 2013, Pinho & Souza 2013, Pinho *et al.* 2013).

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