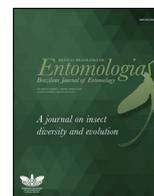




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## New species of *Claudiotendipes* Andersen, Mendes & Pinho and *Tapajos* Trivinho-Strixino, Silva & Oliveira from Brazil (Diptera, Chironomidae, Chironominae)

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### ABSTRACT

Two recently revealed genera, *Claudiotendipes*, consisting of three distinct species, and the monotypic *Tapajos*, have new species described. We describe and figure *Claudiotendipes gilbertoi* sp. n., based on male adult specimens collected in the southern Atlantic Forest of Rio Grande do Sul State. Additionally, we describe and figure *Tapajos froehlichii* sp. n., from male adults collected in the Amazon Forest from Amazonas and Rondônia States. In order to place the newly described *T. froehlichii* sp. n., minor emendations have been made to the diagnosis and description of *Tapajos*.

### Introduction

The genus *Claudiotendipes* Andersen, Mendes & Pinho is composed of three species endemic to the Neotropical region: *C. froehlichii* Andersen, Mendes & Pinho, 2017 from Brazil, *C. epleri* Andersen, Mendes & Pinho, 2017 from Costa Rica and *C. bolivianus* Andersen, 2018 from Bolivia (Andersen et al., 2017; Andersen, 2018). The only species in the genus with known immatures is *C. froehlichii*, and the larvae are found in leaf debris in low order streams (Andersen et al., 2017). A key to the males is given by Andersen (2018).

*Tapajos* Trivinho-Strixino, Silva & Oliveira is a monotypic genus also endemic to the Neotropical region. The genus was erected based on *T. cristinae* Trivinho-Strixino, Silva & Oliveira, 2013 from central and northern Brazil by Trivinho-Strixino et al. (2013). The immatures are unknown.

After analysis of samples of adults collected in Amazon and Atlantic Forest, two new species of these genera were found and are here described and figured: *Claudiotendipes gilbertoi* sp. n., collected in southern Atlantic Forest from Rio Grande do Sul State and *Tapajos froehlichii* sp. n. collected in Amazon Forest from Amazonas and Rondônia States, Brazil.

### Materials and methods

Alcohol-preserved specimens were dissected and slide-mounted in Euparal®. Morphological terminology and abbreviations follow Sæther (1980). Measurements are taken according to Epler (1988) and given as ranges. The distribution map was created using SimpleMapp (Shorthouse, 2010).

Type material is deposited at INPA (Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil) and CE-MHS (Entomological Collection of the Federal University of Santa Catarina, Florianópolis, Brazil).

### Results and discussion

***Claudiotendipes gilbertoi* sp. n.** (Figs. 1 and 3)

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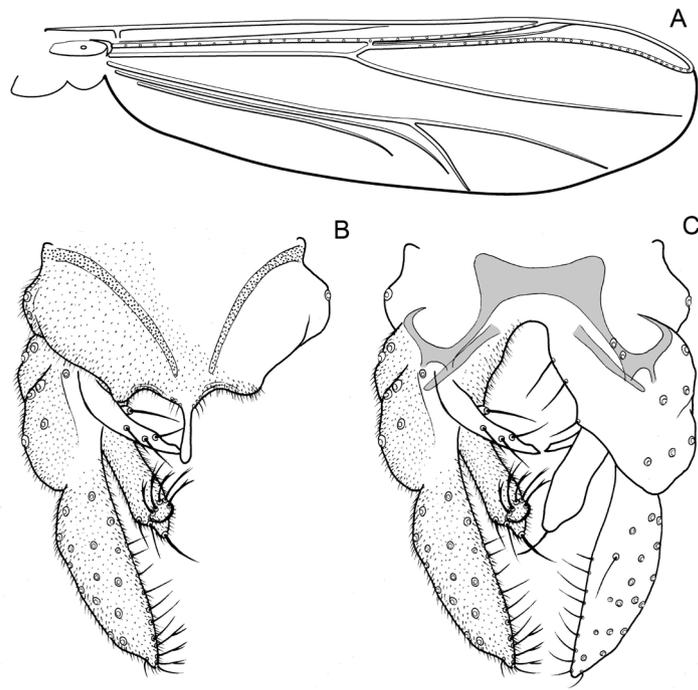
**Diagnosis:** The new species can be separated from its congeners by combination of a gently curved superior volsella, AR 0.43–0.69 and dark brown coloration of head and abdomen.

**Male** (n = 3, unless otherwise stated): Total length 2.73–3.12 mm. Wing length 1.59–1.98 mm. Total length / wing length 1.57–1.86. Wing length / length of profemur 2.32–2.61.

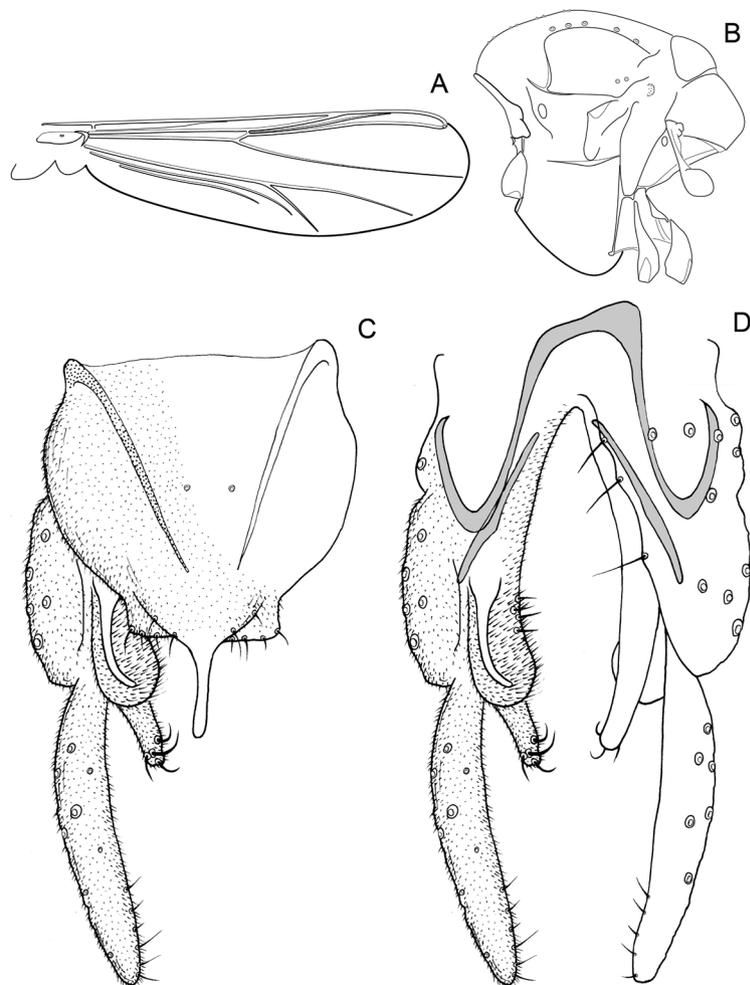
**Coloration:** Antenna and legs light brown; head and thorax dark brown; abdomen dark brown; wings hyaline without markings.

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**Figure 1** *Claudiotendipes gilbertoi* sp. n., male. (A) Wing; (B) Hypopygium, dorsal view; (C) Hypopygium with anal point and tergite IX removed, dorsal aspect to the left and ventral aspect to the right.



**Figure 2** *Tapajos froehlichii* sp. n., male. (A) Wing; (B) Thorax, lateral view; (C) Hypopygium, dorsal view; (D) Hypopygium with anal point and tergite IX removed, dorsal aspect to the left and ventral aspect to the right.

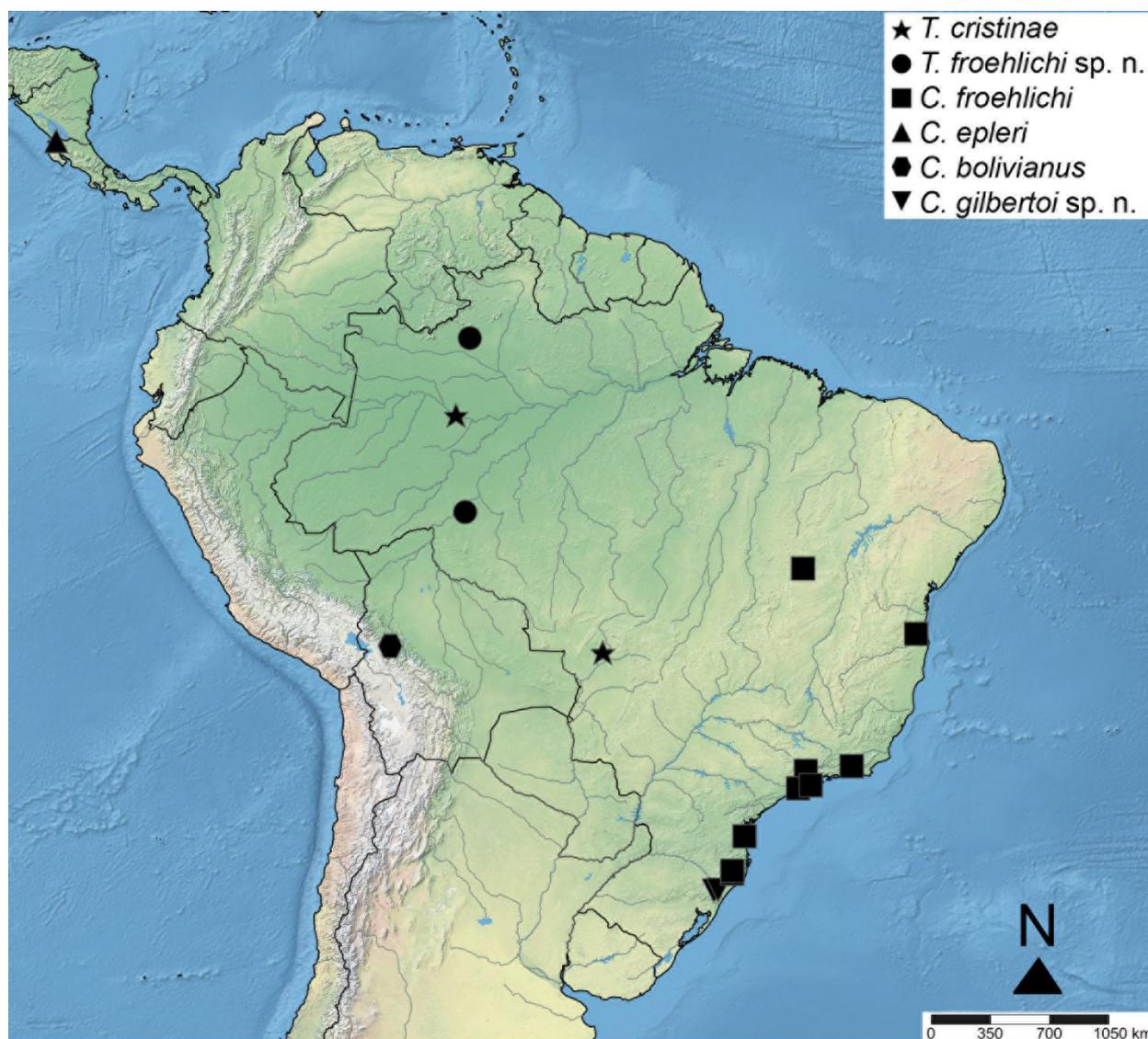


Figure 3 Distribution of *Tapajos* Trivinho-Strixino, Silva & Oliveira and *Claudiotendipes* Andersen, Mendes & Pinho.

**Antenna:** AR 0.43–0.69. Ultimate flagellomere 196–323  $\mu\text{m}$  long.

**Head:** Temporal setae 12. Clypeus with 10–11 setae. Frontal tubercle barely indicated as pale area. Tentorium 105–120  $\mu\text{m}$  long, 25–27  $\mu\text{m}$  wide. Stipes 117–125  $\mu\text{m}$  long. Palp segment lengths (in  $\mu\text{m}$ ): 35–40; 37–50; 154 (1); 149 (1); 234 (1). Third palpomere with 2 sensilla, longest 12  $\mu\text{m}$  long.

**Thorax:** Anteprepronotum bare. Dorsocentrals 9–12; acrostichals 12–14, starting close to anteprepronotum; prealars 3. Scutellum with 6–10 setae, uniserial.

**Wing** (Fig. 1A): VR 1.29–1.33. Brachiolum with 1 seta, R with 17–18,  $R_1$  with 9–11,  $R_{4+5}$  with 29–36 setae, other veins and cells bare. Squama bare.

**Legs:** Scale of fore tibia 6–8  $\mu\text{m}$  long; spur of mid tibia 44–49  $\mu\text{m}$  long, of hind tibia 34–49  $\mu\text{m}$  long. Comb on mid tibia 39–49  $\mu\text{m}$  long, of hind tibia 54–59  $\mu\text{m}$  long. Width at apex of fore tibia 44–59  $\mu\text{m}$ , of mid tibia 49–59  $\mu\text{m}$ , of hind tibia 59–74  $\mu\text{m}$ . Lengths and proportions of legs as in Table 1.

**Hypopygium** (Figs. 1B and C): Tergite IX covered with microtrichia, without median setae, and with small projections at each side of anal point; laterosternite IX with 2 setae. Anal point nearly parallel-sided, 30–37  $\mu\text{m}$  long, 7–8  $\mu\text{m}$  wide, with 2–3 setae to each side of base.

Transverse sternapodeme 67–72  $\mu\text{m}$  long, nearly straight. Phallapodeme not measurable. Gonocoxite 115–149  $\mu\text{m}$  long. Superior volsella gently curved, 62–77  $\mu\text{m}$  long, with 2 dorsal and 1 apical seta. Median volsella 5–7  $\mu\text{m}$  long, with 1 seta. Inferior volsella 62–67  $\mu\text{m}$  long, with 2 simple setae and 1 stout apical seta on main branch and 5 bifid to trifid setae on side-branch. Gonostylus 112–127  $\mu\text{m}$  long. HR 1.00–1.13. HV 2.43–2.84.

**Female and immatures:** Unknown.

**Type material:** Holotype male, slide-mounted, BRAZIL, Rio Grande do Sul, Jaquirana, Rio Tainhas, Passo da Ilha, 29°05'11"S 50°21'52"W, 10.xi.2007, light trap, coll. L.M. Fusari & A.M.O. Pes (INPA). Paratypes: 1 male, slide-mounted, same data as previous (INPA). 1 male, slide-mounted, BRAZIL, Rio Grande do Sul, Camará do Sul, PARNA Serra Geral, Córrego Lagoa Suspensa, 25.ix.2016, sweeping, coll. T. Duarte et al. (CE-MHS).

**Etymology:** The species is in honor of Professor Dr. Claudio Gilberto Froehlich, for the enormous contribution to research on systematics of aquatic insects from the Neotropical region.

**Remarks:** The new species resembles *C. bolivianus* by having general brown coloration (*C. froehlichii* and *C. epleri* are pale), but is easily distinguished by the gently curved superior volsella and bifid to trifid setae on side branch of inferior volsella. *C. bolivianus* has medially bent superior volsella and simple setae on side branch of inferior volsella.

**Distribution:** The species occurs in Atlantic forest from Rio Grande do Sul, southern Brazil (Fig. 3).

***Tapajos froehlichii* sp. n.** (Figs. 2 and 3)

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**Diagnosis:** The new species can be separated *Tapajos cristinae* by having squama bare, scutellum without setae and posterior margin of tergite IX quadrate.

**Male** (n = 2, unless otherwise stated): Total length 1.79–2.19 mm. Wing length 0.97–1.02 mm. Total length/wing length 1.99–2.07. Wing length/length of profemur 2.34–2.44.

**Coloration:** Antenna, legs and thorax medium brown; head light brown; abdomen uniformly light brown; wings hyaline without markings.

**Antenna:** AR 1.29 (1). Ultimate flagellomere 417 (1)  $\mu\text{m}$  long.

**Head:** Temporal setae 6–9, uniserial. Clypeus with 10–11 setae. Frontal tubercle 5  $\mu\text{m}$  long. Tentorium 50–75  $\mu\text{m}$  long, 17–22  $\mu\text{m}$  wide. Stipes 82–85  $\mu\text{m}$  long. Palp segment lengths (in  $\mu\text{m}$ ): 18–20; 18–20; 55(1); 72(1); 105(1). Third palpomere with 2(1) sensilla, longest 15(1)  $\mu\text{m}$  long.

**Thorax** (Fig. 2B): Dorsocentrals 6; acrostichals 8–10, starting close to anteprepronotum; prealars 2. Scutellum without setae. Squama bare.

**Wing** (Fig. 2A): VR 1.28–1.33. Brachiolium with 1 seta,  $R_{4+5}$  with 2 setae at apex, other veins and cells bare. Squama bare.

**Legs:** Inner scale of fore tibia 12–17  $\mu\text{m}$  long; spurs of mid tibia 30–42 and 17–27  $\mu\text{m}$  long, of hind tibia 22–32 and 20–25  $\mu\text{m}$  long. Comb on mid tibia 25–30 and 16–18  $\mu\text{m}$  long, of hind tibia 42–45 and 16–18  $\mu\text{m}$  long. Width at apex of fore tibia 37–42  $\mu\text{m}$ , of mid tibia 37–42  $\mu\text{m}$ , of hind tibia 42–45  $\mu\text{m}$ . Lengths and proportions of legs as in Table 2.

**Hypopygium** (Figs. 2C and D): Tergite IX with quadrate posterior margin, bearing four 4 setae each side; with 1–2 median setae; tergal band well developed; laterosternite IX without setae. Anal point parallel-sided, 17–30  $\mu\text{m}$  long, 5–6  $\mu\text{m}$  wide, with 2 setae to each side of base. Transverse sternapodeme 27–30  $\mu\text{m}$  long. Phallapodeme 40–50  $\mu\text{m}$  long. Gonocoxite 77–85  $\mu\text{m}$  long. Superior volsella with a 25–32  $\mu\text{m}$  long bare dorsal lobe and a 30–37  $\mu\text{m}$  long densely trichiose ventral lobe, with 4 short basal inner setae. Inferior volsella 40–50  $\mu\text{m}$  long, with 4 apical setae. Gonostylus 75–90  $\mu\text{m}$  long. HR 0.94–1.03. HV 5.69–6.06.

**Female and immatures:** Unknown.

**Type material:** Holotype male, slide-mounted, BRAZIL, Amazonas, Serrinha, Rio Aracá, 00°24'39"N 63°23'12"W, 29.vii.2009, 69m alt., light trap, PRONEX Program, coll. N. Hamada, A.M.O. Pes, R.L.F. Keppler, C.A.S. Azevedo & C. Monteiro (INPA). Paratypes: 1 male, slide-mounted, BRAZIL, Rondônia, Candeias do Jamari, Rio Preto, Ponte de madeira, 08°52'40"S 63°38'02"W, 19–20.vii.2012, light trap, coll. R. Boldrini & A.S. Fernandes (CE-MHS).

**Etymology:** The species is in honor of Professor Dr. Claudio Gilberto Froehlich, for the enormous contribution to research on systematics of aquatic insects from the Neotropical region.

**Remarks:** *Tapajos froehlichii* sp. n. matches the generic diagnostic characters proposed by Trivinho-Strixino et al. (2013) in all characters except for the inferior volsella slightly expanded, which is distally parallel-sided in the new species. Besides this character, description of the genus should be emended as follows: AR 1.3–2.5; temporal setae uni- to biserial; scutellum with or without setae; squama bare to setose.

**Distribution:** The species occurs in Amazon forest from Amazonas and Rondônia state, northern Brazil (Fig. 3).

**Table 1**

Lengths (in  $\mu\text{m}$ ) and proportions of leg segments in *Claudiotendipes gilbertoi* sp. n., adult male (n = 3, unless otherwise stated).

	Fe	Ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>
p <sub>1</sub>	683–805	610–781	781(1)	390(1)	293(1)
p <sub>2</sub>	732–903	610–781	390–439(2)	171–220(2)	146–171(2)
p <sub>3</sub>	805–976	659–854	708(1)	390(1)	317(1)
	ta <sub>4</sub>	ta <sub>5</sub>	LR	BV	SV
p <sub>1</sub>	244(1)	98(1)	1.07(1)	2.26(1)	1.97(1)
p <sub>2</sub>	97–99(2)	72–74(2)	0.56–0.64(2)	3.55–3.78(2)	3.44–3.83(2)
p <sub>3</sub>	171(1)	98(1)	0.83(1)	2.60(1)	2.59(1)

**Table 2**

Lengths (in  $\mu\text{m}$ ) and proportions of leg segments in *Tapajos froehlichii* sp. n., adult male (n = 2, unless otherwise stated).

	Fe	Ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>
p <sub>1</sub>	355–433	227–276	-	-	-
p <sub>2</sub>	345–394	286–364	167(1)	79(1)	49(1)
p <sub>3</sub>	384–463	355–433	-	-	-
	ta <sub>4</sub>	ta <sub>5</sub>	LR	BV	SV
p <sub>1</sub>	-	-	-	-	-
p <sub>2</sub>	30(1)	30(1)	0.59(1)	4.26(1)	3.76(1)
p <sub>3</sub>	-	-	-	-	-

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## Conflicts of interest

No conflict of interest.

## Author contribution statement

LCP prepared the slides, proposed the new species, wrote the text and was responsible for illustrations. LMF collected some specimens and wrote the text.

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