A new species of *Litocladius* Mendes, Andersen & Sæther, 2004 from the Amazon rainforest, Brazil (Diptera, Chironomidae, Orthocladiinae)

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*Litocladius joergeni* sp. n. is described and figured based on a male collected in a Malaise trap in the Reserva Adolpho Ducke near Manaus in Amazonas. The new species can be separated from its congeners by the combination of having an apical spine on third palpomere, wing with setae only on vein $M_{1+2}$ and in cell $r_{4+5}$, a subquadrangular inferior volsella with several strong setae and a very long, complex virga surrounded by strong lamellae.

Key words: Diptera, Chironomidae, Orthocladiinae, *Litocladius joergeni*, new species, Brazil, Neotropical region.

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**Introduction**

The genus *Litocladius* was erected by Mendes et al. (2004) based on *L. mateusi* Mendes, Andersen & Sæther, 2004 from São Paulo State in Brazil. The males can be separated from other orthoclads by having scalpellate acrostichals, a long virga with lateral lamellae, a short costal extension, setae on squama and a long anal point with lateral setae. The larvae are probably terrestrial or semiterrestrial as pupae have been collected among mosses.

A total of five *Litocladius* species have been described from South and Central America so far, *L. mateusi*, *L. confusus* Mendes & Andersen, 2008 from Rio de Janeiro State, *L. floripa* Mendes & Andersen, 2008 from Santa Catarina, São Paulo and Rio de Janeiro States and *L. neusae* Mendes, Andersen & Hagenlund, 2011 from the Amazonas State, Brazil and *L. chavarriae* Mendes, Andersen & Hagenlund, 2011 from the Alajuela Province, Costa Rica (Mendes et al. 2004, 2011, Mendes & Andersen 2008). In addition one species from Oriental China, *L. liangae* Lin, Qi & Wang, 2013 was recently described by Lin et al. (2013). Below a seventh species is described and figured based on a male from the Amazon rainforest in Brazil.

**Material and methods**

The specimen was collected in a Malaise trap and preserved in alcohol. Prior to examination it was dissected, treated with KOH and mounted in Canada balsam following the procedure outlined by Sæther (1969). The general morphology follows Sæther (1980).

The holotype will be kept in the Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZUSP).
**Litocladius joergeni** sp. n. (Figures 1–5)

**Type material:** Holotype: male, BRAZIL, Amazonas State, Manaus, Reserva Adolpho Ducke, 1 km after entrance, 04–08.II.2010, Malaise trap, leg. L.C. Pinho & H.F. Mendes (MZUSP).

**Etymology:** The species is named after Jørgen Rieber-Mohn for all help and support.

**Diagnostic characters:** The new species can be separated from its congeners by having apical spine on third palpomere combined with a subquadrangular inferior volsella with several strong setae, a very long, complex virga surrounded by strong lamellae and wing with setae only on vein M_{1+2} and in cell r_{4+5}.

**Description:** Male (n = 1). Total length 2.91 mm. Wing length 1.54 mm. Total length / wing length 1.89. Wing length / length of profemur 2.52.

**Coloration.** Brown, thorax with light brown stripes, legs light brown, abdomen brown with dark brown hypopygium.

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**FIGURES 1–3. Litocladius joergeni** sp. n., male. 1. Tentorium, stipes and cibarial pump. 2. Thorax. 3. Wing.
Antenna. Antennal ratio (AR) = 1.49. Ultimate flagellomere 572 μm long.

Head. Temporal setae 11 including 4 inner verticals, 2 outer verticals and 5 postorbitals. Clypeus with 5 setae. Tentorium, stipes and cibarial pump as in Figure 1. Tentorium 119 μm long, 25 μm wide. Stipes 129 μm long, 37 μm wide. Palp segment lengths (in μm): 26, 48, 110, 117, 132. Third palpomere with 3 sensilla clavata subapically, longest 8 μm long; and apparently with 1 apical spine – spine missing, but third palpomere with strong, apical scar.

Thorax (Figure 2). Antepronotum with 4 setae. Dorsocentrals 10; acrostichals 17 composed of 6 anterior weak decumbent, 3 weak hair-like and 8 scalpellate in mid scutum; prealars 5; supraalar 1. Scutellum with 11 setae, uniserial.

Wing (Figure 3). Venarum ratio (VR) = 1.26. Costal extension 35 μm long. Brachiolum with 1 seta, M$_{1+2}$ with 6 setae apically, cell r$_{4+5}$ with 12 setae, remaining cells and veins bare. Squama with 10 setae.

Legs. Spur of fore tibia 58 μm long, spurs of mid tibia 33 μm and 21 μm long, spurs of hind tibia 65 μm and 32 μm long. Width at apex of fore tibia 28 μm, of mid tibia 36 μm, of hind tibia 44 μm. Comb with 10 setae, longest 40 μm, shortest 25 μm long. Lengths and proportions of legs as in Table 1.

Hypopygium (Figures 4–5). Tergite IX covered with microtrichia, with 2 strong setae to each side of the base of the anal point; laterosternite IX with...
**TABLE 1.** Lengths (in µm) and proportions of legs of *Litocladius joergeni* sp. n., male (n = 1). LR = Leg ratio, BV = “Bein-Verhältnisse”, SV = “Schenkel-Schiene-Verhältnis”.

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4 setae. Anal point tapering, 80 µm long, 33 µm wide at base, 2 µm wide at apex, with 14 strong, marginal setae. Phallapodeme 119 µm long; transverse sternapodeme weakly curved, 127 µm long. Virga complex, 150 µm long including 11 µm long apical pincer-shaped part, surrounded by strong lamellae. Gonocoxite 207 µm long. Inferior volsella subquadrangular, 37 µm long, with rounded, apical crista dorsalis; megaseta 12 µm long. Hypopygium ratio (HR) = 1.83. Hypopygium value (HV) = 2.58.

**Biology and distribution:** The species is only known from the type locality, Reserva Adolpho Ducke, a 10,000 ha reserve in the outskirts of Manaus in the Amazonas State, Brazil. The single male was collected in a Malaise trap situated close to a stream and several temporary pools. The area is covered with primary forest and is relatively flat. During the rainy season numerous small pools are formed scattered on the forest floor.


**Discussion**

*Litocladius joergeni* sp. n. groups with *L. chavarriai*, *L. floripa* and *L. neusae* based on the presence of 1–2 apical spines on third palpomere. With a wing length of 1.54 mm the new species is slightly larger than the other three species except *L. chavarriai* and has a higher antennal ratio (AR) than the others, 1.49 compared to 0.73–0.85 in *L. chavarriai*, 1.14 in *L. neusae* and 1.04–1.48 in *L. floripa*. Further, *Litocladius joergeni* sp. n. has less setae on the wing than the other three species; only wing vein M1+2 and cell r4+5 are setose, while the others all have setae on vein R and there are e.g. 80–140 setae in cell m1+2 in *L. chavarriai*, 43–76 in *L. floripa* and 1–3 setae in *L. neusae*.

In *L. floripa* the inferior volsella is bluntly triangular, in *L. neusae* rounded with few setae, while *L. chavarriai* has a rounded inferior volsella with dorsal ridge and strong setae; in *L. joergeni* sp. n. this volsella is subquadrangular with several strong setae. The most striking differences between the species are in the size and shape of the virga. In *L. joergeni* sp. n. the virga is 150 µm long compared to 50–51 µm in *L. neusae*, 86–92 µm in *L. chavarriai* and 82–95 µm in *L. floripa*. It is composed of several intertwined spines surrounded by strong lamella and the apical pincer-shaped part is comparatively much shorter in *L. joergeni* sp. n. than in the other three species.

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References


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