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Pinnularia caprichosa sp. nov.: a diatom from a black water Brazilian Amazon system

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Abstract

While possessing a remarkable diversity in the acidic and oligotrophic waters of the Amazon basin, the genus *Pinnularia* appears underdescribed in the region. In this study, we present light and scanning electron microscopical observations on *Pinnularia caprichosa sp. nov*. from Tupé Lake, a dendritic lake located on the floodplain of the Negro River basin. This new taxon has a large axial area and transapical striae that are slightly radiate to parallel and longer in the middle portion of the valve. The species was compared with *Pinnularia elliptica*, *P. instabilis*, *P. lacunarum*, *P. montana*, *P. permontana* and *P. subflexuosa*, all of which closely resemble *P. caprichosa* but differ from the new species in specific details of size, striae density and valve shape.

Key words: Bacillariophyta, *Pinnularia*, taxonomy, Amazonian region, South America, scanning electron microscopy

Introduction

Pinnularia Ehrenberg (1843: 45) is one of the richest genera in the Brazilian Amazon, and to date 49 species have already been discovered in a wide range of aquatic environments such as rivers, lakes and 'igarapés' (narrow and not very deep water streams inside the tropical forest), as recorded by Hustedt (1965), Metzeltin & Lange-Bertalot (1998, 2007) and Pereira *et al*. (2012, 2013, 2014). The current report is the third in a series of contributions to the knowledge of the genus *Pinnularia* from Tupé Lake. The first publication detailed the presence of 28 taxa, with three first reports of *Pinnularia* species or varieties to the Brazilian Amazon (Pereira *et al*. 2013). The second publication described four new *Pinnularia* species from Amazonian black water (Tupé Lake, Amazonas State, Brazil) (Pereira *et al*. 2014). The special oligotrophic and low pH conditions and, probably, the contribution of allochthonous inputs from 'igarapés' to Tupé Lake, are important factors influencing *Pinnularia* species richness in this system. In addition to the known diversity of the genus, there appears to be additional taxa awaiting description in the relatively unexplored regions of the Amazon. In the present study we present light (LM) and scanning electron microscopy (SEM) observations of a new species of *Pinnularia*, and compare it with other similar *Pinnularia* species.

Material & Methods

Tupé Lake (03° 02' 35.4" S–60° 15' 17.5" W) is a typical black-water aquatic system, according to the classification system of Sioli (1984). The lake is located on the left bank of the Negro River, to the west of Manaus, Amazonas State, Brazil. The lake is connected with the Negro River by a channel, and with several 'igarapés' whose levels vary according to the floods of the system. Four periods can be identified during an annual cycle in an amazon floodplain

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