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Mallomonas cattiensis, *sp. nov.* (Synurales, Chrysophyceae), a new species from Viet Nam

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Abstract

Mallomonas cattiensis, *sp. nov.* is described from Ta Lai reservoir, located in Cat Tien National Park (Dong Nai Province, Southeastern Viet Nam). The description is based on silica-scale morphology studied by means of transmission and scanning electron microscopy. This new species has thick, heavily silicified tripartite scales. The most remarkable features of the new taxon are thick secondary layer in form of lobate structures on the anterior flange of the scales and wide proximal border, covering the posterior flange and often overlapping the V-rib. *Mallomonas cattiensis* belongs to the section *Mallomonas* and is most morphologically similar to *Mallomonas morrisonensis*.

Introduction

The genus *Mallomonas* Perty (1852: 170) comprises unicellular flagellate organisms with highly organized covering of siliceous scales and bristles (Kristiansen & Preisig 2007). The structure of the scales is the most important feature used to distinguish taxa within the genus. Members of the genus are distributed worldwide, mainly in freshwater ecosystems (Kristiansen 2005). Synurophytes are often used as ecological and paleolimnological indicators (Siver 1995, Smol 1995) and as a model organisms in biogeographical studies of algae (Kristiansen 2000, 2008, Neustupa & Řezáčová 2007, Řezáčová & Neustupa 2007).

In Viet Nam, there are some 40 freshwater chrysophyte algae reported (Shirota 1966, Dang *et al*. 2002, Le 2010), but only recently found 27 silica-scaled species are confirmed with illustrations including electron microscopy photographs (Gusev & Nguyen 2011, Gusev 2013). Investigation during 2008–2012 in reservoirs, lakes and swamps in Central and Southern Central Viet Nam (Khanh Hoa, Quang Nam and Dong Nai Provinces) have reported three new species to the science from the genus *Mallomonas* (Gusev 2012, 2013, 2015).

In this present paper, a new species to science belonging to genus *Mallomonas* is described and illustrated in order to contribute to the complete list of chrysophyte algal flora of Viet Nam.

Materials and methods

New species was found in Ta Lai (Tà Lài) reservoir, located in Dong Nai (Đồng Nai) Province, Southeastern Viet Nam, in Cat Tien National Park (Fig. 1). This area has a tropical monsoon climate. The average annual temperature ranges between 25–28 °C, the relative humidity is between 80–94%, the annual precipitation is 1800–2100 mm, and the annual evaporation is 1000–1200 mm. Samples were collected from the surface water layer using a plankton net (mesh size = 20 μm). For electron microscopy studies, an aliquot of each sample was washed by repeated centrifugation in deionized water. Drops of the washed sample were dried or digested 4–5 minutes in sulfuric acid with potassium dichromate. For SEM studies samples were placed on the aluminum stubs and coated with gold for 10 minutes. Observations were carried out with JEOL 6510 LV scanning electron microscope. For TEM studies, formvar coated grids (EMS FF200-Cu-50, Electron Microscopy Sciences) were used and observations were made on JEM-1011.

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