



Achnanthes citronella, *A. trachyderma* comb. nov. (Bacillariophyta) and allied taxa pertaining to the same morphological group

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Abstract

Several diatoms in the family Achnantheaceae (Bacillariophyta), mainly from marine environments, have species with strongly apiculate, lemon-shaped valves. Some of them originally described under the genus *Cocconeis* (i.e., *C. trachyderma* or *C. citronella*), while others were first described as *Stauroneis* species [i.e. *Stauroneis apiculata* or *S.(?) obesa*]. Afterwards, *Cocconeis citronella* has been recombined within *Achnanthes* by Hustedt. The type material of *C. citronella* from Albert Mann's collection, housed in the Smithsonian Institution (US), has been examined with light microscope; some ambiguities are pointed out and new details added to the original description. The intricate history of the latter taxon is redrawn and comparison with allied taxa are tentatively addressed. *Cocconeis trachyderma* is lectotypified and recombined as *Achnanthes trachyderma* comb. nov. *Stauroneis apiculata* and *S.(?) obesa* are recombined as *Achnanthes apiculata* comb. nov. and *Achnanthes obesa* comb. nov. respectively. The examination with light and scanning electron microscope of several marine samples from the Society Archipelago details the unique morphology of *Achnanthes trachyderma* which, until recently, has been often misidentified as *Achnanthes citronella* due to certain similarities between both taxa.

Key words: *Achnanthes citronella*, *A. trachyderma* comb. nov., Achnanthes, morphology, Indo-Pacific Basin, SEM

Introduction

Some benthic marine diatoms species in the order Achnanthes (Bacillariophyta) present valves of a characteristic apiculate or lemon shape (Figs 1–24). Several of them were first described as species of *Cocconeis* [i.e. *Cocconeis citronella* A.Mann (1925: pl. 13, figs 3–6, reproduced here as Figs 15–17), *C. trachyderma* F.Meister (1935: figs 63, 64, reproduced here as Figs 19, 20)] while some others, bearing some similarity with the latter, were first described amongst the biraphids, such as *Stauroneis(?) obesa* Greville (1866: pl. 3, fig. 12, here reproduced as Fig. 4) or *Stauroneis apiculata* Greville (1859: pl. 4, fig. 8, here reproduced as Fig. 1), when they are actually monoraphid diatoms. Some of these taxa, probably pertaining to the same morphological group, have been later transferred to *Achnanthes*, several of them having an intricate taxonomic history resulting in some taxonomic confusions.

Some papers illustrate diatoms identified as *Achnanthes citronella* (A.Mann) Hustedt in Schmidt *et al.* (1937: pl. 415, figs 3–8) with light (LM), scanning electron (SEM) and transmission electron (TEM) microscope, e.g. Meister (1935: 98, pl. 6, fig. 53), Foged (1975: 7, pl. 9, fig. 13), Gerloff & Helmcke (1977: pls 939–945), Foged (1984: 12, pl. 32, fig. 10); Podzorski & Håkansson (1987: 41, pl. 12, fig. 1), Navarro *et al.* (2000: pl. 14, figs 5–7), Riaux-Gobin *et al.* (2011: 13, pl. 1, fig. 6; pl. 8, figs 1–3), Lobban *et al.* (2012: 285, pl. 38, figs 5, 6), Stidolph *et al.* (2012: pl. 21, fig. 12) and Wisshak *et al.* (2014: 115, fig. 3F). All the latter works refer to taxa with diverse morphologies, sometimes without illustrating both valves (sternum valve, SV and raphe valve, RV).

On the other hand, Montgomery (1978: pl. 72, figs C–G, SEM) illustrated diatom specimens as *Cocconeis trachyderma* F.Meister (1935: 99, figs 63, 64) with features very close to those of *Achnanthes citronella*.