

A MOLECULAR APPROACH TO THE TAXONOMY OF *COCCONEIS PLACENTULA* SENSU LATO

Regine Jahn¹, Jonas Zimmermann¹ & Oscar R. Romero²

¹ Botanic Garden and Botanical Museum Berlin-Dahlem, Freie Universität Berlin

² Instituto Andaluz de Ciencias de la Tierra (CSIC-UGR)

Taxa from the freshwater *Cocconeis placentula* s.l. are difficult to differentiate by morphological features. These monoraphid diatoms show the same morphology of their raphid valve (raphe-sternum valve), only the araphid valve (sternum valve) and the first girdle bands of the valves (valvocopula) possess features which up to now have been used for differentiating the taxa. These taxa – be it as species or infraspecific varieties include – among many others – *C. placentula* var. *placentula* Ehrenberg (1838), *C. limbata* Ehrenberg (1840), *C. lineata* Ehrenberg (1849), *C. euglypta* Ehrenberg (1854), *C. placentula* var. *pseudolineata* Geitler (1927), *C. placentula* var. *tenuistriata* Geitler (1932), *C. placentula* var. *euglyptoides* Geitler (1958).

Geitler (1927, 1932, 1958, 1982) was able to differentiate his taxa with the help of cultures, investigating their mating, noting especially the morphology of their auxospores. Since his descriptions, two of his taxa were rediscovered in springs and raised to species rank: *C. pseudolineata* (Geitler) Lange-Bertalot and *C. euglyptoides* (Geitler) Lange-Bertalot (Werum & Lange-Bertalot 2004). Monnier et al (2007) are able to differentiate *C. lineata* and *C. euglypta* by their morphology and their ecology, claiming that they are good indicators of water quality with *C. lineata* preferring oligotrophic habitats and *C. euglypta* habitats with higher conductivities. Also, the recent compendium for identifying species of Central Europe for water quality purposes, show differentiating features for *C. lineata* and *C. euglypta* (Hoffmann et al. 2011) but these characters are different from the concept of Monnier et al (2007), Jahn et al. (2009) and Romero & Jahn (in prep.).

12 monoclonal strains of fresh to brackish water *Cocconeis* specimen were established from mixed samples and from very different habitats and served for morphological and molecular analyses. Besides our standard DNA-Barcode 18SV4 (Zimmermann et al. 2011) further DNA-markers (e.g. *cox1*, *rbcL*, 5.8S+ITS) were tested and analyzed for their efficiency to resolve taxonomical questions.