



Revision of *Navicula striolata* (Grunow) Lange-Bertalot and *N. rumaniensis* Hustedt with the description of *N. friedelhinziae* sp. nov.

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Abstract

Navicula striolata was originally described as *N. digitoradiata* var. *striolata* from modern material collected in Sweden. After examination of a sample collected from Belgium, the variety was transferred to *N. reinhardtii* as *N. reinhardtii* var. *gracilior*. From this time a large mix up of these and related taxa was observed in the literature. A similar species, *Navicula rumaniensis* had also been established in 1934 from Neogene Romanian materials but there has been much confusion regarding the status of these taxa, leading to a poor understanding of their distribution. In this study, type material of *Navicula digitoradiata* var. *striolata*, *N. reinhardtii* var. *gracilior* and *N. rumaniensis* are revised using light and scanning electron microscopy in order to clarify their identity and to investigate possible conspecificity. The results indicate that these species are not synonyms. Conspecificity of the modern *N. digitoradiata* var. *striolata* and *N. reinhardtii* var. *gracilior* was confirmed and lectotypes of both varieties have been designated whereas *N. rumaniensis* proved to be a separate species. In addition, the study of Neogene material from Bulgaria revealed the presence of a new *Navicula* taxon—*N. friedelhinziae*. The morphology of these and similar taxa is discussed.

Key words: Bacillariophyta, collections, diatoms, *Navicula*, taxonomy, type material

Introduction

Navicula digitoradiata var. *striolata* Cleve in Cleve & Grunow (1880: 32) was originally described from modern material collected by Cleve in 19th century from Degeberga (province of Skåne, southern Sweden). Grunow (1880) indicated slide Cleve & Möller n°25 as being the type material (although a formal holotype was never indicated by him). Slides of this collection were dispatched through all major diatom collections worldwide (Cleve & Möller 1877). Five years later, Grunow synonymized *N. digitoradiata* var. *striolata* with a variety of *N. reinhardtii* (*reinhardtii*) (Grunow 1860: 566) Grunow (1880: 32), namely *N. reinhardtii* (*reinhardtii*) var. *gracilior* Grunow in Van Heurck (1885: 87). Grunow probably based his synonymization on the observation of this taxon in a sample collected by Delogne from Rouge-Cloître (Belgium) and used in the Types du Synopsis de Belgique (Van Heurck 1880, 1885; Type n° 80). In both samples (Degeberga and Rouge-Cloître), *N. digitoradiata* var. *striolata* / *N. reinhardtii* var. *gracilior* co-occurred with the abundantly present *N. reinhardtii* and likely their coexistence and some faint morphological similarity influenced Grunow's decision to transfer *N. digitoradiata* var. *striolata* to *N. reinhardtii*. Krammer & Lange-Bertalot (1986, plate 40) erroneously indicated Type du Synopsis n° 79 as material for the var. *gracilior*. In fact, the latter contains only the nominate variety *N. reinhardtii*.

Later observations of *N. reinhardtii* var. *gracilior* are, however, scarce and usually confused with *N. reinhardtii* var. *reinhardtii* (Krammer & Lange-Bertalot 1986). In 1985, the status of the taxon was once again altered and the variety *gracilior* was elevated to the species level (with a name change) as *Navicula striolata* [Grunow in Cleve

Conclusions

Our investigation of the type materials of *N. digitoradiata* var. *striolata* and *N. reinhardti* var. *gracilior* confirms their conspecific character to *N. striolata*. Our data suggests that fossil taxon—*N. rumaniensis* should remain a separate species. In addition, it is clear that the morphology of *N. friedelhinziae* allows for description of a new species.

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