



A comparative study of *Pleurosigma subrectum* and *P. acus* (Bacillariophyta)

FRITHJOF A.S. STERRENBURG^{1,*}, STUART R. STIDOLPH², EUGENIA A. SAR³ & INÉS SUNESEN³

¹ Stationsweg 158, 1852LN Heiloo, the Netherlands.

² 3/15 Gebbie Rd., Taradale, Napier, New Zealand.

³ División Ficología, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina.

* Corresponding author (e-mail: fass@wx.nl)

Abstract

In continuation of an earlier paper on *Pleurosigma* species with an (almost) non-sigmoid valve and raphe sternum, a comparative study was made in LM and SEM of *Pleurosigma subrectum* and *P. acus*. For *P. subrectum*, slides and a subsample of the type material were examined. For *P. acus* no unmounted material permitting SEM investigation is extant; a sample containing specimens fully matching the type in LM was therefore used as epitype material for SEM. The original data on striation of *P. acus* are emended. No morphological differences indicating separate specific status of these two taxa were observed and *P. acus* is therefore here designated a heterotypic synonym of *P. subrectum*. From the data now available, this is a very widely distributed species. The study demonstrates the indispensable role of collections for investigations on the diversity and distribution of diatom species.

Key words: diatoms, *Pleurosigma*, *P. acus*, *P. subrectum*, taxonomy, type material

Introduction

In Sar *et al.* (2012) a study was made of a group of species of *Pleurosigma* W. Smith (1852: 2, in part, *nom. cons.*) with (almost) non-sigmoid valves and raphe sternum. It was shown that a sigmoid outline is not a generic character of *Pleurosigma*, as the non-sigmoid species examined and the sigmoid species in the genus show an identical general morphology: sandwich-type valve consisting of a basal (interior) layer with more or less round areolar openings and a tegumental (exterior) layer with very narrow longitudinal fissures, arranged in three (transverse and two oblique) stria systems.

In Sterrenburg *et al.* (2005) a SEM study was made of valve morphogenesis in some *Pleurosigma* species including the non-sigmoid *P. acus* A. Mann (1925: 132) and it was found that the valve structure of *Pleurosigma* is not loculate (“divided into separate compartments by septa”). The two valve layers are shored by short pillars, found to be hollow in two different species, so that there are no septa and the valve interior consists of an open space resembling a parking-garage.

Two characteristic non-sigmoid *Pleurosigma* taxa described from climatologically very different regions are *P. subrectum* Cleve in Cleve & Grunow (1880: 14, 53) from Arctic waters and *P. acus* from the Philippines. The former appears to have vanished from the literature since the 19th century; the type material of the latter was examined in Stidolph (2002) and the data were used in Sterrenburg *et al.* (2005) for identification of specimens from the Pacific coast of the USA. The sum total of information so far available for these two taxa appears to be as follows:

For *P. subrectum*:

- The protologue (Cleve & Grunow 1880: 14, 53) mentions the valve outline, the raphe-sternum pattern and the striation; a drawing (Cleve & Grunow 1880: pl. 3, fig. 72) depicts a specimen that is either tilted or distorted as it is clearly asymmetric. As usual, no holotype is designated.
- Peragallo (1891: 14) quotes the data in Cleve & Grunow (1880) adding that it is larger and more coarsely striated “than the type”. However, by “the type” he means *P. intermedium* W. Smith (1853: 64), a wholly different species—see