Phytotaxa 148 (1): 47–56 (2013)
www.mapress.com/phytotaxa/

Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.148.1.3

Stauroneis lacusvulcani sp. nov. (Bacillariophyceae), a new diatom from volcanic lakes in northeastern China

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Abstract

Stauroneis lacusvulcani sp. nov. is described from two small volcanic lakes in northeastern China. The morphology of *S. lacusvulcani* is illustrated with light and scanning electron micrographs and discussed in comparison with several species of the *Stauroneis gracilior* group. *S. lacusvulcani* can be distinguished by the size of the valves and its long-protracted and strongly capitate apices. Diatom analysis of the sedimentary record from Lake Xiaolongwan (Jilin Province) showed that this new species was most abundant during the early Holocene (~8950 to 10,640 yrs BP).

Key words: China, morphometric analysis, new species, palaeolimnology, *Stauroneis*

Introduction

In recent years, our understanding of the taxonomy and species diversity in the genus *Stauroneis* Ehrenberg (1843: 45) has considerably improved thanks to the work of Lange-Bertalot *et al.* (2003), Van de Vijver *et al.* (2004) and Bahls (2010). In their overview for China, Li & Qi (2010) listed 43 species and varieties of *Stauroneis.* In the past few years, sediment cores were retrieved from numerous volcanic lakes in northeastern China. During this research, a new species of *Stauroneis* was discovered and is described herein using light (LM) and scanning electron microscopy (SEM).

Material and methods

Samples collection and preparation

In the context of an ongoing project that aims at investigating the past and present diversity and distribution of diatoms in Northeastern China (Fig. 1), surface-sediment and sediment core samples have been investigated from a suite of lakes. The samples were retrieved from the deepest point of the lakes using either an Uwitec® gravity corer or a modified piston corer (Chu *et al.* 2009). In parallel with the collection of sediment samples, surface water samples (~0.3 m depth) were also collected and analysed for a wide range of chemical and physical variables. The methods used to measure these various environmental variables are given in Rioual *et al.* (2013).

The species described herein was found in 2 localities: first in the surface-sediment of Lake Xiaolongwan (October 2005) and then in the surface sediment of Sifangshan Tianchi (April 2012). We also investigated the distribution of this new species in a sediment core retrieved in 2006 from Lake Xialongwan. The age model

Accepted by David M. Williams: 31 Oct. 2013; published: 28 Nov. 2013

So far, *S. lacusvulcani* has been found in only two lakes. However, its distribution is not restricted to a small geographical zone as the two lakes are located more than 800 km apart and the type of lake in which it was found is rather common in northeastern China.

Acknowledgements

Dr Yan Fang (State Key Laboratory of Paleobiology and Stratigraphy, Nanjing) is thanked for assistance with the SEM. This research was supported by the "Strategic Priority Research Program" of the Chinese Academy of Sciences, Climate Change: Carbon Budget and Relevant Issues (grant # XDA05120201-2) and the National Science Foundation of China (grant # 40502018).

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