



***Stenopterobia cataractarum* sp. nov. (Bacillariophyta), a new benthic diatom from a waterfall in Zambia, Africa**

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Abstract

Rivers, streams and associated habitats have been sampled for diatoms in the relatively understudied Congo and Zambezi sister basins. The primary purpose of the sampling effort was to collect samples for biological monitoring purposes and the establishment of a diatom-based monitoring programme. However, a large number of possibly endemic and novel taxa have been encountered in this region making the application of diatom-based indices at a species level difficult. In this paper we describe a new species of *Stenopterobia* from the Ntumbachushi Falls in the Luapula Province of Zambia. This taxon is closely related to *Stenopterobia delicatissima* but chiefly differentiated by a lower number of striae, a well-defined unornamented lanceolate axial area and shortened ribs which do not fuse with the fenestrae. This taxon also shows some similarity to *Stenopterobia delicatissima* var. *ghanaensis* but the valves are consistently narrower.

Key words: Africa, diatoms, freshwater, new species, Surirellaceae, taxonomy

Introduction

In recent decades diatoms have become a vital part of the suite of biological indicator organisms used to monitor changes and disturbances in water quality. The majority of this work has been done in Europe and North America with a number of diatom based water quality indices being developed. These indices and other diatom-based methods and metrics have proved invaluable for water quality monitoring (Smol & Stoermer & 2010). Recently these methods were applied in South Africa (e.g. Taylor et al. 2007) with some success. However Taylor et al. (2007) highlighted potential problems with the transfer of European based metrics when endemic African taxa are present as dominants in the samples. In this way, the EU ACP funded Southern African Rivers Assessment Scheme or SAFRASS (www.saf rass.com) was undertaken in order to develop capacity building tools with the aim of introducing a suite of biomonitoring tools in Zambia; similarly the BELSPO funded Congo Zambezi Diatom Monitoring or COZADIMO project was initiated to determine the usefulness of diatoms as water quality indicators in the Congo and Zambezi sister basins.

Central Africa has a very large diversity of aquatics habitats and, given the size of this region, is remarkably understudied. Fortunately a large number of rivers and streams around Zambia and the Democratic Republic of the Congo were recently sampled and in addition a number of associated habitats such as waterfalls and seeps. On examination of some of the samples, collected under the auspices of the above mentioned projects, it has become clear that the majority of species encountered form part of the paleo- and neo-tropical flora and that a high percentage of these taxa are new to science and are possibly endemic to tropical central Africa. This makes the application of diatom indices rather difficult, especially at a species level with many taxa undescribed.

In this paper we examine a novel species from the genus *Stenopterobia* which forms a relatively small but heterogeneous group that comprises several taxa sometimes previous allocated to the genus *Surirella* Turpin (1828:

The ecology of *Stenopterobia cataractarum* fits well within the known ecology of the genus *Stenopterobia* according to Round et al. (1990): freshwater, (epipellic), apparently restricted to acid oligotrophic lakes and ombrogenous mires. It was found on periodically wetted stones (epilitic) but was also found in low numbers in other habitats including wooden logs in the spray zone at the type locality. It was not found in any of the samples from the Ngona River.

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