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Syvertsenia iberica (Cymatosiraceae): a new estuarine diatom genus characterized by the position of its process

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Abstract

Diatom assemblages were studied along an intertidal transect in the lower Guadiana River Estuary (South-Eastern Portugal). The analyses of the assemblages by means of light and scanning electron microscope revealed a new diatom genus and species, *Syvertsenia iberica*. *Syvertsenia* was found in three out of eighteen of the samples analysed in the transect. The proposed new genus belongs to the family Cymatosiraceae, which is characterized by the presence of two distinct ocelluli. In common with other genera belonging to the subfamily Cymatosiroideae, the new genus shows heterovalvy and morphological similarity to *Cymatosira*, *Campylosira* and *Plagiogrammopsis*. In terms of ultrastructure, the features which identify these diatoms as a new genus are its linear valve outline, protracted to distinctly set off apices and also the distribution pattern of areola. Furthermore the position of the tubular process on a valve mantle extension, allows an easy distinction from other Cymatosiroideae. *Syvertsenia iberica* is a benthic epipsammic diatom whose ecological and geographical distribution requires more investigation.

Key words: Cymatosiroideae, Epipsammic, Estuarine diatoms, Guadiana, Iberian Peninsula, Taxonomy

Introduction

Transitional environments, such as estuaries, provide a remarkable diversity of habitats arising from differences in sedimentary environments, chemical gradients, nutrient availability and hydrodynamic processes. Consequently, estuaries often host highly diverse diatom species assemblages (Denys & Wolf 1999). However, little information is available about the taxonomy of diatoms from transitional environments compared to freshwater environments (Cooper 1999), where knowledge is more advanced. Therefore, it is likely that future studies in estuarine environments will result in the discovery of new diatom species and genera.

The diversity of sub environments inside an estuary is clearly expressed through the variation in diatom assemblages, where freshwater, brackish and marine diatoms coexist along salinity gradients. Estuarine diatoms can have planktonic, tychoplanktonic or benthic life-forms. In these land-ocean transition areas, benthic diatoms may colonize diverse substrata (Cooper 1999, Snoeijs 1999) and be classified as epiphytic, epilithic, epipsammic, epipelic and epizoic. The majority of work related to estuarine diatoms explores their (paleo-) ecological potential (e.g. Juggins 1992, Zong & Horton 1998, Gehrels *et al*. 2001, Sawai *et al*. 2004, Hassan *et al*. 2009). Significantly fewer studies have been dedicated to estuarine diatom taxonomy (e.g.

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