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Three new *Craticula* species (Bacillariophyta) from the Maritime Antarctic Region

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Abstract

Three new diatom taxa belonging to the genus *Craticula* were found during the ongoing taxonomic revision of the Antarctic freshwater and limno-terrestrial diatom flora: *Craticula australis*, *sp. nov*., *C. obaesa*, *sp. nov* and *C. petradeblockiana*, *sp. nov*. Detailed light and scanning electron microscope observations are used to better characterize the morphology and ultra-structure of these three new taxa. A fourth *Craticula* taxon, formerly identified as *Navicula megacuspidata*, described from South Georgia, is transferred to the genus *Craticula* and its taxonomy is briefly discussed. Comparisons with similar taxa and the ecological preferences of each species are added. The revision of these species confirms once again the endemic nature of the Antarctic diatom flora.

Introduction

The genus *Craticula* Grunow (1867: 20) was described to accommodate a series of taxa that are characterized in having parallel, uniseriate striae, composed of round to elliptical areolae occluded internally by perforated hymenes, a thick raphe sternum, expanded, straight to deflected external proximal raphe endings, hook-like distal endings and the lack of accessory ribs next to the internal raphe branches (Round *et al*. 1990). Moreover, the areolae and the separating frets are aligned longitudinally giving the impression of longitudinal ribs running from pole to pole. Morales *et al*. (2014) discuss in detail the morphology of both valves and cell contents. The taxa within the genus *Craticula* can be roughly subdivided into two groups: a first groups contains all larger-celled species such as *C. cuspidata* (Kütz. 1833: 549) D.G.Mann in Round *et al*. (1990: 666) and *C. ambigua* (Ehrenb. 1843: 471) D.G.Mann in Round *et al*. (1990: 666) and a second group with smaller taxa such as *C. molestiformis* (Hustedt 1949: 86) Mayama (1999: 2) and *C. halophila* (Grunow in Van Heurck 1885: 100) D.G.Mann (in Round *et al*. 1990: 666). The first group typically forms inner valves, known as 'heribaudii' stages (Lange-Bertalot 2001) also known as 'craticula', whereas in the second group some taxa produce highly silicified valves (Kusber & Cocquyt 2007, Van de Vijver *et al*. 2010). At present, this freshwater genus has about 50 taxa (Fourtanier & Kociolek 2011), several of them recently described (Van de Vijver *et al*. 2002, 2010, Lange-Bertalot *et al*. 2003, Morales *et al*. 2014).

The number of *Craticula* species in the Antarctic Region is rather low and the list of records merely comprises observations of northern hemisphere taxa such as *Craticula cuspidata* (Kütz. 1833: 549) D.G. Mann in Round *et al*. (1990: 666) or *Craticula halophila*. Kellogg and Kellogg (2002) list all records. Most taxa have been reported from the Maritime Antarctic Region, although Van de Vijver *et al*. (2002) illustrated three taxa from sub-Antarctic Ile de la Possession (Crozet Archipelago) in the southern Indian Ocean, including one new species: *C. salsuginosa* Van de Vijver & Beyens in Van de Vijver *et al*. (2002: 30). One species, *C. glaberrima* (W. & G.S. West 1911: 282) Van de Vijver *et al*. (2013: 199) was described from the Antarctic Continent (West & West 1911, Van de Vijver *et al*. 2012) whereas Carlson (1913) described *Navicula megacuspidata* Carlson (1913: 14) from South Georgia, a species that, based on its structure, most likely should be transferred to the genus *Craticula*. Additionally, two other *Craticula* taxa, *C. subpampeana* Van de Vijver & Sterken (in Van de Vijver *et al*. 2010: 435) and *C. antarctica* Van de Vijver & Sabbe (in Van de Vijver *et al*. 2010: 433) were recently described from James Ross Island (Van de Vijver *et al*. 2010).

The present paper describes three new taxa from James Ross Island situated in the southern part of the Maritime

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