



## Five new taxa in the genus *Pinnularia* sectio *Distantes* (Bacillariophyta) from Livingston Island (South Shetland Islands)

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### Abstract

The non-marine diatom flora of Livingston Island (South Shetland Islands, Maritime Antarctic Region) is currently under revision. The taxonomy and morphology of all *Pinnularia* taxa belonging to the section *Distantes* present in the samples from Livingston Island have been studied. Eleven different *Pinnularia* taxa from this section have been recorded. In addition to the cosmopolitan *Pinnularia borealis* var. *borealis*, *P. borealis* var. *scalaris* and *P. rabenhorstii* and three already described (sub) Antarctic taxa (*P. australorabenhorstii*, *P. obaesa* and *P. rabenhorstii* var. *subantarctica*), five new taxa are noted here based on their unique morphological features. The new taxa are: *Pinnularia australoborealis* sp. nov., *P. borealis* var. *pseudolanceolata* var. nov., *P. laterotundata* sp. nov., *P. perlanceolata* sp. nov., and *P. quesadae* sp. nov. These results confirm the presence of a highly specific non-marine diatom flora in the Antarctic Region contradicting the view concerning diatom cosmopolitanism.

**Key words:** Byers Peninsula, Maritime Antarctic Region

### Introduction

The genus *Pinnularia* Ehrenberg is one of the largest non-marine diatom genera in the world. Krammer (2000), in his revision of the European *Pinnularia* taxa, estimated that there may be over 1500 *Pinnularia* taxa worldwide, and the number of new *Pinnularia* taxa described every year is remarkable. Cleve (1895) divided the genus into nine different, though closely related, groups that were subsequently raised to taxonomically valid sections by Patrick & Reimer (1966). The proposed division was later criticized (Krammer 2000) as not being useful due to too many intermediate forms between sections. The section *Distantes* (Cleve) Patrick, however, received less criticism and can still be used to separate a group of *Pinnularia* species which have broad, flat striae that are distantly placed from each other (Patrick & Reimer 1966). The most well-known taxa in this section belong to the *P. borealis* Ehrenberg (1843: 420) species-complex.

Although early researchers working on Antarctic non-marine diatoms found several new diatom species (e.g., Van Heurck 1909, West & West 1911, Carlson 1913), it was not until Heiden & Kolbe described *Pinnularia kerguelensis* Heiden (1928: 594) that the first species of that genus was described from the Antarctic Region. Later, Hustedt described *Pinnularia splendida* Hustedt in A. Schmidt *et al.* (1934: Pl. 391, figs 5–6) and *P. krasskei* var. *ventricosa* Hustedt in A. Schmidt *et al.* (1934: Pl. 391, figs 9–10) from the sub-Antarctic island of South Georgia, followed by Manguin who described nine new taxa (including species and varieties) from the sub-Antarctic Kerguelen Archipelago (in Bourrelly & Manguin 1954). In the past decade a large number of new *Pinnularia* species has been recorded from various localities in the different parts of the Antarctic Region ranging from the sub-Antarctic islands in the southern Indian Ocean (Van de Vijver & Gremmen 2006, Van de Vijver *et al.* 2002, 2004, 2011b) to the islands of the Maritime Antarctic Region in the southern Atlantic Ocean (Van de Vijver 2008, Van de Vijver *et al.* 2009).