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TITLE: Diatoms (Bacillariophyceae) associated with free-drifting Antarctic icebergs: taxonomy and distribution

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ABSTRACT:

Free-drifting Antarctic icebergs can alter the phytoplankton in surrounding waters. In addition, diatom mats live attached to the submerged walls of the icebergs. In this study we describe a diverse diatom community associated with these mats and an atypical planktonic community in waters affected by icebergs. Samples were collected in the winter of 2008 and fall of 2009 from Antarctic icebergs and their adjacent waters, utilizing a remote operated vehicle and plankton nets, respectively, and subsequently analyzed using light and electron microscopy. *Thalassioneis signyensis*, dominant species growing on the icebergs? flanks, provided substrate for other diatoms, mainly *Synedropsis lata* var. *angustata*, *Synedropsis recta*, *Fragilaria* cf. *islandica* var. *adeliae*, *Attheya gaussii*, *Navicula* cf. *perminuta*, *Amphora* sp. and *Nitzschia* spp. New morphological characteristics are given for *S. lata* var. *angustata*, *S. recta* and *A. gaussii*. We report also *Biddulphia alternans* and *Coscinodiscus concinnus* for the first time in Antarctic waters. Similar to sea ice algae, the term sympagic is used to describe the habitat of these diatom communities. A particular planktonic community is also found close to icebergs, including diatoms known to have a benthic, epiphytic, sympagic or freshwater habitat: *Amphora* sp., *B. alternans*, *Cocconeis* spp., *Delphineis minutissima*, *Licmophora gracilis*, *Luticola* cf. *australomutica*, *Opephora* sp., *Pinnularia* spp., *Plagiogramma* sp., *Psammodictyon panduriforme* var. *minor*, *Pseudogomphonema kamtschaticum*, *Rhaphoneis amphiceros*, *S. recta* and *T. signyensis*. Our results support the hypothesis that species associated with icebergs exchange freely with plankton, ice shelves and sea ice, suggesting that icebergs can act as physical agents to transport and distribute organisms in between these habitats.

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