



Recent benthic foraminifers and benthic habitats in an Antarctic fjord: Potter Cove, King George Island, Antarctica

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This study examines foraminifer assemblages and hydroacoustically-derived (RoxAnn seafloor discrimination system) benthic habitats along a 5 km long transect from the glacier front towards the mouth of a small fjord in the south of King George Island (West Antarctic Peninsula, WAP). Water depths range between 25 and 114 m. Sediments are in the silt size and generally the mean grain size decreases with increasing water depth. The fjord is usually ice covered between April and November; water circulation is largely clockwise and anti-estuarine. This study focused on the 125 - 500 μm fraction. It revealed 27 benthic species that consisted of about two thirds of calcareous and one third of agglutinated species regardless of the location. Highest absolute abundance of 196 ind/g was found in the central part of the cove. Cluster analysis suggests three assemblage groups or zonations, respectively, that are characterized by relative species frequencies: 1) Glacier Zone (25 m water depth, distance to glacier front: 250 m). This zone is represented by only one sample (located closest to the glacier front) dominated by *Quinqueloculina* sp. as the only taxon. 2) Transition Zone (40-55 m water depth, distance to glacier front: 1-3 km): This zone reveals the highest number of specimens at a moderate diversity. It is dominated by *Globocassidulina biora*, an opportunistic species that has been described to tolerate low primary production and/or increased terrigenous sediment input. Towards the mouth of the fjord *G. biora* decreases and *Cassidulinoides parkeri* and *Bolivina pseudopunctata* gain more importance. 3) Fjord Mouth Zone (>50 m, distance to glacier front: >3 km): this zone is leading over to the more-open marine conditions of Maxwell Bay. In this zone the foraminiferal assemblages reach highest diversity and evenness values but reveal considerably lower absolute numbers of specimens. This zone is dominated by the cosmopolitan species *C. parkeri*, the "deep-water" species *B. pseudopunctata* and the southern-hemisphere species *G. biora*. The foraminiferal zonation corresponds to zones interpreted based on hydroacoustics which allow to separate the fjord in a young glacier-proximal "Dynamic Zone" with rocks and mixed fine sediments covering the inner cove, a large transition zone that we call the "Subrecent Zone" buried under fine meltwater sediments and the "Quasi Persistent Zone" that reveals more mature conditions in many aspects further downfjord. These zones represent development stages with increasing distance to and decreasing influence of the glacier front.