

MACROFAUNAL ABUNDANCE AND COMMUNITY STRUCTURE ALONG A  
STRONG LATITUDINAL SEA-ICE GRADIENT ON THE WESTERN ANTARCTIC  
PENINSULA SHELF

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## ABSTRACT

The West Antarctic Peninsula (WAP) region exhibits one of the strongest warming trends in the world, reducing duration of winter sea-ice cover and altering pelagic-benthic coupling. That pelagic-benthic coupling in the WAP is highly modulated by the sea-ice is well documented; however the effects of sea-ice duration on benthic community structure of the deep Antarctic shelf have not been examined. We studied Antarctic shelf communities along a 5-station transect from Smith Island (63°S) to Marguerite Bay (68°S) spanning annual sea-ice duration from 2 to >8 months. Megacore samples elucidated changes in macrofaunal abundance, community structure and diversity along the sea-ice gradient. We found a non-monotonic trend in macrofaunal abundance versus sea-ice gradient, with northernmost station, Stn. AA (63°S), exhibiting the highest mean abundance. We speculate that this trend might be due to either different hydrographic conditions relative to stations B-G, or to a threshold effect related to declines in sea-ice duration. A strong latitudinal trend was observed in community structure, with increasing dominance by a single, polychaete species, *Aurospio foodbanesia* from the north to south ends of our transect. We hypothesize that the latitudinal sea-ice gradient along the WAP is causing increased community stress with increasing latitude due to shorter duration of food pulses.