**Climate change, fisheries management, and modelling changes in fish community structure in the Southern Ocean**

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Heard Island and McDonald Island are located within the northern half of the Kerguelen Plateau in the Southern Ocean. The Kerguelen Plateau is a biodiversity hotspot with many endemic fish species, and the region has economic importance in supporting valuable fisheries. This region is also a climate change hotspot with notable changes in water temperatures and ocean currents. Most existing information on fish species and their distribution in this region is derived from annual random trawl surveys, fishery observations, and indirectly from research on fish predators. In this study we use trawl survey data and contemporary joint species distribution models to understand how the fish assemblages have changed through time and space. Using a joint species distribution modelling approach, we demonstrate that several species, including mackerel icefish, have realised large changes in their distribution and abundance through time. These changes are likely to be related to environmental factors such as sea surface temperature anomalies and southern annular mode. Our results indicate that the prevalence and abundance of many species, and overall species richness, have increased over the period 2003 to 2016. It is unclear whether these changes reflect shifts in the fishery, management, or the effects of climate change. We also found evidence of several species’ distributions responding to temperature variability, and these species are potentially exposed to the ongoing impacts of climate change. This new information can be used by managers and policy makers to ensure sustainable fisheries and the protection of biodiversity into the future.