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Implementing a sea ice-based survey to characterise toothfish interactions in the southern Ross Sea

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We developed and implemented a random, stratified, vertical longline survey conducted through the annual sea ice in McMurdo Sound to determine the age composition, diet, reproductive status, and local abundance of Antarctic toothfish (*Dissostichus mawsoni*). A pilot season was carried out in 2014, where the methodology for a standardised hook and line survey was defined and some initial biological samples were collected. In 2015, seven randomized locations were surveyed. Data suggest that the toothfish in McMurdo Sound were abundant relative to historical catch rates, had a very similar size distribution, were relatively old (median age in 2014 was 24 years), and their diet was varied consisting of euphausiids and fish (mainly *Pleuragramma antarcticum*), though many had empty stomachs. In 2016 the survey design was piloted in Terra nova Bay. These data will be synthesized with parallel studies on the diets of Weddell seals and killer whales, as well as linking movement patterns of toothfish and mammalian predators to the distribution of *P. antarcticum* in McMurdo Sound and in Terra Nova Bay. The resulting data will contribute to the development of ecosystem models that could be used to inform management strategies to respond to the potential ecosystem effects of fishing and the likely interacting effects of climate change.