

Stuart Hanchet

National Institute of Water and Atmospheric Research, NZ

MONITORING ANTARCTIC TOOTHFISH (D. MAWSONI) RECRUITMENT IN THE SOUTHERN ROSS SEA

Stuart Hanchet, Steve Parker, Sophie Mormede, Kath Large, Alistair Dunn, Ben Sharp

NIWA, NZ; Ministry for Primary Industries, Wellington, NZ

Knowledge of recruitment dynamics, and in particular trends in recruitment and recruitment variability, are key inputs for integrated assessments of fish stocks. A quantitative longline survey monitoring the recruitment of Antarctic toothfish (*Dissotichus mawsoni*) in the southern Ross Sea was started in 2012. The first year established the feasibility of carrying out a random stratified longline survey from a fishing vessel platform, the FV San Aotea II, to monitor recruiting toothfish using standardised gear in a standardised manner. It also established the appropriate depths and stratum boundaries and the number of stations required to achieve a target biomass CV of 10%. Since then a further five annual surveys have been conducted at a similar time of the year.

The surveys caught mainly 70–110 cm total length, 5–10 year old, Antarctic toothfish. The results suggest a decline in toothfish abundance from 2012 to 2015 followed by a sharp increase in 2016 and 2017. The scaled age and length frequency data show the appearance of a strong year class in 2012 which progressed through each year to 2017 and the appearance of a second strong year class in 2016. Although the changes in age frequency were consistent with the trends in abundance across surveys, the extent of those changes in abundance could not be fitted in recent stock assessments, even when the time series was upweighted, suggesting the survey abundance was not representative of the wider stock, but was monitoring local abundance. Nevertheless, the time series has been invaluable in providing the first estimates of year class strength, recruitment variability, and recruitment autocorrelation for an Antarctic toothfish stock. The continuation of the time series will provide an important early-warning signal if changes in recruitment occur in the future, and can be expected to provide updated estimates of recruitment variability and recruitment autocorrelation.