

## RV Investigator Scientific Highlights

<b>Voyage #:</b>	<b>IN2017_V05</b>		
<b>Voyage title:</b>	Long-term recovery of trawled marine communities 25 years after the world's largest adaptive management experiment		
<b>Mobilisation:</b>	Wednesday 20 September, 2017 Garden Island, Sydney, NSW		
<b>Depart:</b>	0800, Wednesday 11 October 2017, Broome, WA		
<b>Return:</b>	0800, Friday November 10, 2017, Henderson (Fremantle), WA		
<b>Demobilisation:</b>	Friday 10 November, 2017, Henderson (Fremantle) WA		
<b>Voyage Manager:</b>	Max McGuire, MNF CSIRO	<b>Contact details:</b>	max.mcguire@csiro.au
<b>Chief Scientist:</b>	John Keesing, O&A CSIRO	<b>Contact details:</b>	john.keesing@csiro.au
<b>Principal Investigators:</b>	John Keesing, Roland Pitcher, Keith Sainsbury, Alan Williams, Joanna Strzelecki (CSIRO) Stephen Newman, Corey Wakefield (WA Dept. of Fisheries)		
<b>Supplementary Projects</b>	<ol style="list-style-type: none"> <li>1. Assessment of marine biodiversity as part of determining long-term recovery of trawled communities on the NWS Dr Monika Bryce, WA Museum (monika.bryce@museum.wa.gov.au)</li> <li>2. Natural iron fertilization of oceans around Australia: linking terrestrial dust and bushfires to marine biogeochemistry Dr Andrew Bowie, UTAS (andrew.bowie@utas.edu.au)</li> </ol>		
<b>Piggyback Projects</b>	<ol style="list-style-type: none"> <li>1. Collection of marine invertebrates, particularly sponges, and a survey of their fluorescent properties correlated to depth and chlorophyll content Prof Peter Karuso, Macquarie University (peter.karuso@mq.edu.au)</li> </ol>		

## Scientific Highlights



### The Chief Scientist

Dr John Keesing is a marine ecologist working as a research scientist at CSIRO who studies the response of marine plants and animals to environmental pressures such as pollution, fishing, aquaculture, habitat modification and climate change

### Title

Long-term recovery of trawled marine communities 25 years after the world's largest adaptive management experiment

### Purpose

The aim of the voyage is to determine the extent to which habitat forming benthic invertebrate and demersal fish assemblages of the North West Shelf (NWS) have recovered from high levels of foreign trawling effort between the 1960s and the late 1980s and to compare these with areas which have been continuously fished with lower levels of effort or completely protected from trawling within the area under management of the Pilbara Trawl Fishery since 1990.

By contrasting the diversity, abundance, biomass and size/age composition of the demersal fish community and epibenthic, habitat forming invertebrates across these gradients of historical and recent fishing effort, and by comparing these data with that collected in the 1980s using the same methods, we aim to make firm conclusions about the rates of recovery of trawled communities and the sustainability of trawling. Our hypothesis was that areas where trawling effort has ceased or has been dramatically reduced will be characterised by re-establishment of benthic habitats with greater coverage, biomass and complexity of larger habitat-forming filter-feeder communities, and of higher production of key demersal fish species (families: Lethrinidae, Lutjanidae) since comparative surveys in the 1980s.

### Contribution to the nation as a result of this voyage

This results obtained and samples collected on the trip will enable us to evaluate the recovery of benthic habitats and demersal fish assemblages 30+ years after very significant reductions in trawl effort and enable a comparison with areas which have been trawled continuously over that period. The ability to do this with access to comparative data collected in the 1980s is unprecedented as a result of this voyage. This will result in significant improvements in what we understand about the ability of trawl impacted systems to recover in the long term and whether management responses have been effective in both protecting and enabling recovery of impacted ecosystems.

The effects of trawling on the seabed are a major issue worldwide and our results will be both significant in an international context and relevant to the management of trawl fisheries in Australia and overseas. The results are likely to have significant potential for uptake into and impact on fisheries and marine ecosystem management.