

RV Investigator Scientific Highlights

Voyage #:	IN2015_C02		
Voyage title:	Great Australian Bight deep-water pelagic and benthic ecosystem study		
Mobilisation:	Port Lincoln, 12:00, Sunday, 29 November 2015		
Depart:	Port Lincoln, 10:00, Monday, 30 November 2015		
Return:	Fremantle, 10:00, Tuesday, 22 December 2015		
Demobilisation:	Fremantle, 17:00, Tuesday, 22 December 2015		
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Project name:	Great Australian Bight Research Program		
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Title: Great Australian Bight deep-water pelagic and benthic ecosystem study

Introduction

This was a chartered voyage for the Great Australian Bight Research Program (GABRP www.bpgabproject.com.au) servicing the needs of two Theme areas (Pelagic and Benthic Ecology). The Great Australian Bight Research Program is a collaboration between BP, CSIRO, the South Australian Research and Development Institute (SARDI), the University of Adelaide, and Flinders University. The Program aims to provide a whole-of-system understanding of the environmental, economic and social values of the region; providing an information source for all to use.

Unreservedly the voyage was an outstanding success in terms of the diversity of the science undertaken, sampling ocean physics and nutrients, pelagic microbes to nekton, and producing a benthic inventory of species from 200 to 3000 m. Initial science results have been enlightening with higher production and biomass observed offshore and in the central GAB than previously reported. Our detailed sampling of the nutrients and biota will enable us to elucidate the dominant mechanisms responsible for this production and biomass. This improved knowledge of the structure and function of the central GAB ecosystem will be used to help inform ecosystem models and design long term monitoring programs of the region.

Contribution to the nation

It is expected that uptake of data collected on this voyage will accrue over the long term through a better understanding of benthic species diversity, pelagic production and biomass in the previously unsampled offshore waters of the central Great Australian Bight. The data and derived knowledge will be used for input into ecosystem models and to help formulate future monitoring programs for the sustainable management of the region if subject to oil and gas exploitation.

The voyage also provides national benefit by helping the Australian government (e.g. Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)) understand pelagic production and benthic conservation values attributed to Commonwealth Marine Reserves (CMR) spanning wide depth ranges. These values remain untested on the mid- and lower continental slope - which is particularly relevant in the GAB where oil and gas lease areas extend across the deep reaches of the GAB Marine Park.

As a result of this voyage

1. We will be able to quantify and characterise differences in the biomass and physiological mechanisms driving pelagic production between the eastern and previously unsampled central offshore waters of the GAB (200 – 3000 m).
2. We will be able to characterize community structure of deep ocean (200-3000 m depth) benthic fauna (invertebrates and fishes) in the previously unsampled central GAB.
3. We have found that there is elevated production in the central Great Australian Bight offshore waters 200- 1000 m compared to what has been previously reported.
4. We have characterised the benthic and pelagic communities in a previously poorly sampled region to incorporate into future ecosystem models and help design monitoring programs.
5. We have commenced a program to characterise the central GAB benthic and pelagic ecosystem that can be used for the sustainable management of the region in future years.