



## Voyage SS03-2008

Estimating the effectiveness of spatial closures for deepwater gulper sharks and associated fishery species

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### Contribution to Australia's national benefit:

This survey contributes to Australia's national benefit by increasing our understanding of 'sustainable use' in the deep marine environment. It was the first integrated survey of a deep water fishery ecosystem managed by area closure, and focused on a group of fishes (sharks) vulnerable to overfishing. Acquiring data in the deep sea environment is technically challenging because it mostly involves remote sampling, in our case mostly in 200-600 m depths.

Specific contributions are:

- baseline ecosystem data for active management of vulnerable species
- technical developments that provide Australia with a capacity to take quantitative data on deep seabed ecosystems using non-extractive photographic and acoustic sampling tools
- planning the strategic operational uptake of technical developments for the next stage of the management process – monitoring change through time as a way of assessing performance.

### As a result of this voyage:

1. We have a better understanding of ecosystem structure and function in a large, deep water fishery closure implemented to protect a suite of deep water fishes. These include the southern dogfish which is under consideration for listing as a threatened species.
2. We found an intact deep sea ecosystem supporting healthy populations of the study species, and provided proof-of-concept for the novel methodology and suite of sampling tools to support the management of deep water ecosystems.
3. We have mapped the entire closure, plus additional areas, using world's best acoustic and photographic

techniques. Our map products are in immediate circulation, providing effective visualisation to a variety of science, management and industry stakeholders.

4. We have commenced a program of monitoring using an array of acoustic receivers (the world's deepest) to track tagged fish as a means of evaluating the effectiveness of fishery closures.

### Addressing National Research Priorities:

#### An Environmentally Sustainable Australia

- Goal 2: Transforming existing industries
- Goal 5: Sustainable use of Australia's biodiversity

#### Frontier Technologies for Building and Transforming Australian Industries

- Goal 4: Smart information use

### > Voyage track SS03-2008

