



## Voyage ss2012\_t03

### Floating Marine Plastics around Australia

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#### Contribution to Australia's national benefit:

Floating marine plastics have become a major hazard to marine life and are also leading to aesthetic degradation, economic losses and human health hazards. Due to these issues, monitoring studies are needed to assess the effectiveness of governments' actions in reducing the overall amount of marine plastics in Australia.

For the first time, floating marine plastics were systematically sampled in waters close to Australian continent (Figure 2). The data will provide information with which to identify the sectors and regions that contribute most significantly to the increase in marine plastic pollution in Australia, facilitating the government's ability to address this threat via national regulations and international negotiations.

Better management plans to decrease marine plastics hazards to marine life and humans can be delivered through a better understanding of marine plastics' composition, spatial distribution and origins.

#### National Research Priorities related to this project:

**An Environmentally Sustainable Australia (Goal 5: Sustainable use of Australia's biodiversity).** Marine debris has become a major hazard to marine life through ingestion (causing death and intoxication) and entanglement.

#### Promoting and Maintaining Good Health (Goal 3: Preventive healthcare).

Some plastics are toxic to humans, particularly to infants and children. Marine plastics can contain toxins from the plastic itself (i.e. phthalates) and from additional toxic chemicals adsorbed from the surrounding seawater (i.e. PCBs). It poses a toxic threat to the food chain and some seafood might have toxins coming from plastics.

**Safeguarding Australia (Goal 3: Protecting Australia from invasive diseases and pests).** Floating marine plastics can carry invasive species from one location to another, as they are a hard substrate that allows the transfer and movement of marine organisms and eggs.

#### As a result of this voyage:

1. We have a better understanding of the spatial distribution of floating marine plastic in waters close to the Australian continent. Future analyses will give us (1) the types of polymer that occur in these waters and (2) the probable origin of these plastics.
2. We have found that marine plastics in Australia are coming from national and international sources.
3. We have mapped plastic concentration at the oceans' surface in waters close to Australia through the execution of 129 15 minutes net tows (Figure 2).
4. We have commenced a program of at-sea floating marine plastic monitoring study.

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