



## Voyage ss2010\_v05

### Biological Oceanography of Western Rock Lobster Larvae

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

The Western rock lobster is the most valuable single-species fishery in Australia, representing about 20% of the total value of Australia's fisheries. Variability in settlement of larvae and catch of adults has persisted and been shown to be highly correlated with the strength of WA's Leeuwin Current (El Nino) and westerly wind conditions. In 2009, the Department of Fisheries WA, fishing industry representatives and oceanographers assessed the failure of rock lobster recruitment in two consecutive years. An industry workshop confirmed that lack of understanding of the biological oceanographic mechanisms affecting nutrition, growth and survival of the rock lobster larvae ("phyllosoma") at sea posed a serious risk to a sustainable rock lobster industry. On this voyage we determined the key prey targeted by the phyllosoma at sea, identified a major oceanographic feature (the Abrolhos Front) that may impact regional recruitment off Western Australia and assessed the nutrition of wild larvae as well as the nutritional potential of the planktonic food web. We also made estimates of phyllosoma abundance to compare with the previous estimates in the 1970s.

#### As a result of this voyage:

1. We have a much better understanding of the feeding ecology of rock lobster phyllosoma. By identifying the key prey of the larvae, we have opened up new research potential in both fisheries and aquaculture. Further biochemical analyses of both predator and prey should yield a clearer picture of how the key prey support progress to metamorphosis.
2. We have assessed the productivity of the Leeuwin Current water mass at a critical time for phyllosoma feeding and have evaluated the capacity of the planktonic food web to deliver high quality prey to feeding larvae. Much of this work is still in progress.
3. We have identified a major oceanographic feature (Abrolhos Front) which apparently brings two very contrasting but productive water masses in proximity to each other, while providing a shoreward regional flow pattern favourable for successful recruitment. This novel finding should support better understanding of oceanographic mechanisms governing recruitment as well as supporting stronger modelling outcomes.

#### Itinerary

Departed Fremantle, WA  
10:00, Tuesday 6 July 2010

Arrived Fremantle, WA  
08:00, Tuesday 27 July 2010

#### > Voyage track ss2010-v05

