

Research Update

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Project title: “The effects of algae, herbivores and nutrients on the settlement and survival of coral”

Personnel: Fiona Webster (PhD student – Murdoch University); Dr Mike van Keulen (supervisor – Murdoch University); Dr Russ Babcock (supervisor – CSIRO); Luke Smith (supervisor – Australian Institute of Marine Science: AIMS)

Overview:

Fiona is examining interactions between grazers and algae, and the effects of these interactions on coral settlement and survival at Ningaloo Reef. The majority of the world’s coral reefs show evidence of degradation, with declines in abundance, diversity and habitat structure. One consequence of coral reef degradation is a shift in the balance between corals and algae. Corals and algae compete for light and space and if coral reefs are disturbed, algae can gain the competitive advantage. Despite the importance of coral/algal interactions for an understanding of coral reef ecology and management, there is surprisingly little known about it. This study will examine some of the fundamental questions about the role of algae and herbivores in coral reef ecosystems.

Key questions being addressed include:

- Do algae deter coral settlement, and if so, how?
- How does coral settlement in the presence of algae affect subsequent survival?
- What are the relative effects of urchins and different fish on coral recruits?
- How do herbivory and nutrient enrichment interact, and how does this affect coral recruits?
- Why have the coral communities in parts of Coral Bay not recovered from the 1988 mass mortality event?

The project will involve experiments inside and outside the Maud Sanctuary zone, to address these questions.

Methods:

A series of cage experiments will be established to look at the relative effects of different grazers on algal cover and coral recruitment. Limestone settlement plates with and without exclusion cages will be placed in experimental locations inside and outside the Maud Sanctuary zone. The level of algal cover, coral recruitment and survival on these plates will be monitored through the mass coral spawning event in March/April. All work will be subtidal.

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