

# Research Update

NWRA- 2004/004a: updated April 2006.



**Project title:** “THE ABUNDANCE AND DISTRIBUTION OF DRUPELLA CORALLIVOROUS GASTROPODS AT NINGALOO REEF, WESTERN AUSTRALIA”

**Personnel:** Researchers: Shannon Joy Armstrong Marine Scientist and Manager (Honours graduate - Southern Cross University), Cochise Page Marine Scientist and Manager (graduate of Southern Cross University Marine Science and Management Degree)

Supervisors: Assoc Prof Peter Harrison PhD (Director of Marine Studies, Southern Cross University), Chris Simpson (Manager of CALM’s Marine Conservation Branch).

## Overview:

During the late 1980s and early 1990s outbreaks of the corallivorous gastropod *Drupella* devastated a 100km stretch of the world’s largest fringing coral reef system, Ningaloo Reef in Western Australia. Detailed surveys of *Drupella* abundance and impacts were done at Ningaloo in 1987 (Ayling & Ayling, 1987), 1989 (Forde, 1995), 1991 and 1994 (Osborne & Williams, 1995). However, differences in survey design and methodological technique between surveys rendered the results of these studies statistically incomparable. No study had been conducted on *Drupella* at Ningaloo since 1994. Therefore, this study examined the distribution and abundance patterns of *Drupella* at Ningaloo Reef during early 2005, and used precision and cost benefit analysis to determine an economical yet precise survey design for monitoring these populations. A nested survey design involving 3, 0.5x20m belt transects per site with three sites per location and four locations per region produced the most economical yet precise results. This method was then used to survey the abundance of *Drupella* and benthic habitat types at thirteen locations along the Ningaloo Reef tract. *Drupella* abundance ranged from 0.2 *Drupella* per m<sup>2</sup> at Bundegi, the most northern study location, to 5.25 per m<sup>2</sup> at the southern most study location, Pelican Point. The highest mean percentage cover of hard live coral was also recorded at Pelican Point (53.24%) which is consistent with the findings of previous surveys. The lowest mean percentage cover of total living hard coral was recorded at the Bruboodijoo (19.43%) study location. Regression analysis showed a 56% correlation between *Drupella* and it’s dominant types of coral prey (plate and staghorn *Acropora*), while a 60% correlation was found between *Drupella* and plate *Acropora*, reflecting the prey preference of *Drupella*. Effective management of these reefs requires understanding on the ecology of *Drupella*, the long term effects of their feeding activities and the potential interactions of outbreaks with other natural or anthropogenic disturbances. The information gained from this study will greatly assist the establishment of a long term monitoring program aimed at recording the distribution and abundance of *Drupella* over differing spatial and temporal scales.

**This project was conducted and completed during 2005.**

## For further information please contact:

Shannon Joy Armstrong

Honours graduate, Marine Scientist and Manager

Ph: 0427519622 (CDMA)

Email: shannonocean@yahoo.com.au