



The status of the coral predator *Drupella cornus* at Ningaloo Marine Park

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Background

Between the mid 1980s and early 1990s, the feeding activity of unusually high densities of the corallivorous gastropod *Drupella cornus* resulted in significant coral damage along at least 100 km of Ningaloo Marine Park (NMP), with coral mortality approaching 100% in some areas. The density of *D. cornus*, the area and severity of associated coral damage and longevity of the outbreak itself was on a greater scale than recorded on other reefs elsewhere in the world to date.



In early 1987, large numbers of *D. cornus* were observed consuming hard corals at several locations along the then proposed NMP during a survey initiated by the Department of Conservation and Land Management (CALM), now the Department of Environment and Conservation (DEC). In 1989, six *Drupella* monitoring locations were established and surveyed by marine park staff. In 1991 these locations were re-surveyed and seven new locations were established. In 1994 all 13 locations were re-surveyed, and in 2005 an improved method for monitoring *D. cornus* was developed using precision and cost benefit analyses and all 13 locations were re-surveyed using the new method. Effort was made to ensure statistical comparability between results gained by the old and new methods to maintain the integrity of the historical data. In 2006, four of the 13 locations were re-surveyed and four new *Drupella* monitoring locations were established in the 2004 southern extension of the NMP and the newly-gazetted Muiron Islands Marine Management Area (MIMMA). There are now 17 *Drupella* long-term monitoring locations positioned approximately every 20 to 40 km along NMP.

Current Findings and Management Implications

The results of the recent surveys indicate that, relative to the outbreak densities recorded during the late 1980s and early 1990s, *D. cornus* densities have been low to moderate since 1994 and have not greatly affected coral cover at the NMP and MIMMA. Coral communities appear to have recovered from the *D. cornus* outbreak event, with live hard coral cover increasing consistently since 1994 at most locations.

DEC will continue to keep a watching brief on *D. cornus* and coral communities at NMP by undertaking surveys at least every three years. In the meantime, any anecdotal information regarding changes in localized densities of *D. cornus* should be reported to DEC's Exmouth office on ph: 9947 8000 or Marine Science Program on ph: 9334 0299.



Specific recommendations and future studies

Although the reasons for outbreaks in *D. cornus* densities remain unclear, it is important to try to mitigate any potential anthropogenic causes of increased numbers of *D. cornus*. Research has shown that mucus produced by damaged coral is a feeding stimulus for *D. cornus*. Observations suggest that *D. cornus* feeding aggregations are being attracted to broken coral at a heavily visited dive site at NMP, most likely caused by inexperienced divers or boaters. Continuing coral damage during such activities could attract increased numbers of *D. cornus* to the site causing local declines in live coral cover. This is obviously deleterious to reef recovery and could result in a reduction in the attractiveness of the site for diving and snorkelling. A simple education pamphlet could be developed and distributed in the Exmouth District to encourage more sustainable diving and boating practices to address this issue.

Speculation has also arisen concerning the role of predation in regulating populations of *D. cornus*. It has been suggested that overfishing of natural predators of *D. cornus* could lead to increases in *D. cornus* density. Preliminary research suggests that lethrinids (emperors) and other species targeted by recreational fishers at NMP prey on *D. cornus*. Further research is required to identify predators of *D. cornus* and determine what influence removal of these predators has on the *D. cornus* population at NMP.



For more information please locate the 'Discovering Ningaloo – latest findings and their implications for management' report at the Forest Science Library or visit the Ningaloo Research website at: <http://www.ningaloo.org.au>