Ningaloo

Collaboration Cluster

The role of sea urchins in Ningaloo Reef

Scientists are working to understand the importance of sea urchins in the coral reef habitats of the Ningaloo Marine Park (NMP) lagoon.

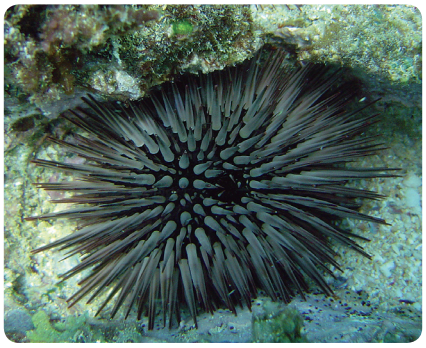
The role of sea urchins in coral and seaweed dominated ecosystems has been studied before however their role in influencing the composition and structure of coral reef habitats has rarely been explored.

Sea urchins are important grazers in many marine systems and can cause major changes in the ecosystem when their populations reach high levels (generally after a decline in the numbers of their fish predators).

In this study, researchers worked to firstly characterise the coral reef habitats of the NMP lagoon through a combination of field sampling and broad scale remote sensing information. This detailed information was then used to determine what factors influence the distribution and population of the grazing urchin (*Echinometra mathaei*) within the NMP.

Currently, the results from this study are being analysed and so far they indicate that the distribution of urchins is not affected by the Sanctuary Zones in the park (i.e. no significant evidence has been found of indirect effects from fishing of urchin predators). However, habitat type has a major influence on urchin distribution, for example urchin populations were higher on near-shore intertidal and sub-tidal reef platforms, lagoonal patch reefs and shallow back-reef platforms than other habitats.

In coral reefs in other parts of the world, unusually high urchin populations can indicate overfishing. So far, this study has found no indication of fishing pressure indirectly affecting urchin populations, which suggests that the current zoning may be effective. However, further analyses of the data, particularly those from the near-shore sanctuary areas where shore based fishing is allowed, are yet to be completed.



If fishing pressure is having an effect, it is likely to be seen in those areas where urchin abundance is predicted to be highest. This important baseline information will provide a benchmark for managers, which future monitoring can be measured against. In addition this information can assist in future decision making about the NMP.

Further research will be conducted in 2011 to investigate whether overgrazing by urchins and the subsequent erosion of surfaces affects the resilience of the coral reef; as well as to see if urchin behaviour can modify the lagoon habitats. The comprehensive results from this project will be available in 2012.

Contact

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Ningaloo research is an initiative of the Western Australian Marine Science Institution, CSIRO's Ningaloo Collaboration Cluster and the Australian Institute of Marine Science, working in partnership with government, local communities and enterprises.

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