Tropical Water Quality Hub

National Environmental Science Programme

Project 2.1.1 Integrated Pest Management of Crown-of-Thorns Starfish

Project Summary

Successful Crown-of-Thorns Starfish (CoTS) management will, for the foreseeable future, depend on manual control at specific sites being effective and efficient. This project will develop an Integrated Pest Management approach to site management, based on a detailed understanding of CoTS ecology and management operations, to protect coral and maximise performance of control activities at economically and ecologically important reefs. It will provide an intelligent, field-deployable decision support tool to guide strategic selection of control activities based on site conditions and management constraints. This approach will be underpinned by new, targeted field work focussed on improving management.

Problem

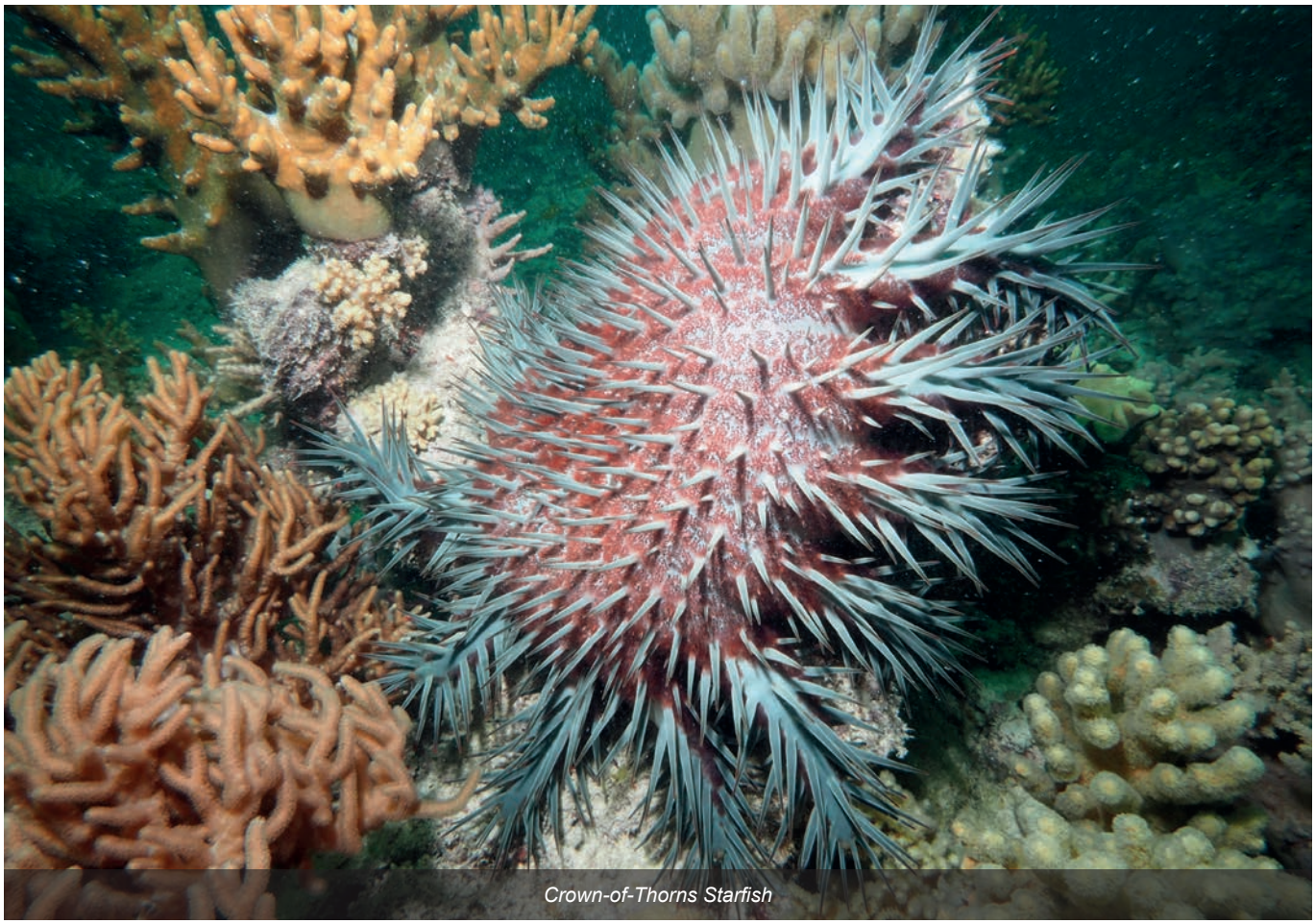
The Great Barrier Reef (GBR) has experienced dramatic declines in coral cover due to bleaching events, cyclones and ongoing CoTS outbreaks. Forty-two percent of hard coral loss recorded between 1985 and 2012 on the GBR is attributable to CoTS. Developing an effective and efficient CoTS management program is vital for the GBR. The scale of the problem, however, seemingly swamps the resources available. In such situations management must work smarter, not just harder, using an understanding of the pest species' ecology and of management's capabilities to structure control actions at ecologically meaningful scales.

How Research Addresses Problem

In NESP Project 1.1 we brought together key managers and researchers to review current and potential future management practices. Workshop participants developed i) a strategic approach to CoTS control based on Integrated Pest Management (IPM) principles and ii) the research strategy required for its implementation. This strategy identified that CoTS management must respond at multiple scales and have objectives for each stage of the outbreak cycle. This proposal addresses the first stage of this strategy by developing an IPM-based approach to site management and improving surveillance and natural control technologies. Effective and efficient site level control is imperative because all current and envisaged management methods ultimately rely on control of CoTS at specific sites.

Crown-of-Thorns Starfish

Photo: David Westcott



Crown-of-Thorns Starfish

Photo: David Westcott

To deliver IPM-based management, the project will develop a field-deployable Decision Support Tool to enable on-water managers to select the locations and intensities of surveillance and control at a reef to provide the best population-level outcomes. It will incorporate a detailed understanding of CoTS population and movement processes, along with descriptions of the effectiveness, overheads and costs of surveillance and control actions. It will enable on-water managers to project the impact of their management decisions on the CoTS population at a site to select the most effective strategies.

Data to inform the Decision Support Tool will be provided by previous work and a small set of new, targeted field studies providing information vital to effective population-level CoTS management.

An interim regional-surveillance strategy will be developed to fill an immediate gap.

In addition, focused research on surveillance technologies and on the potential to harness natural controls in management programs will be conducted.

Further information

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