Connectivity Working Group

Coral Reef Targeted Research & Capacity Building for Management

Fact Sheet

Program Overview

The Coral Reef Targeted Research & Capacity Building for Management (CRTR) Program has been established to address fundamental information gaps in our understanding of coral reef ecosystems, so that management options and policy interventions can be strengthened globally.

Its goal is to:

"*Build scientific capacity necessary to provide the information needed for management and policy, so that coral reef ecosystems under threat from climate change and multiple human stressors can be sustained for current and future generations*".

In achieving this, the Program's targeted research framework will systematically define information gaps of strategic importance.

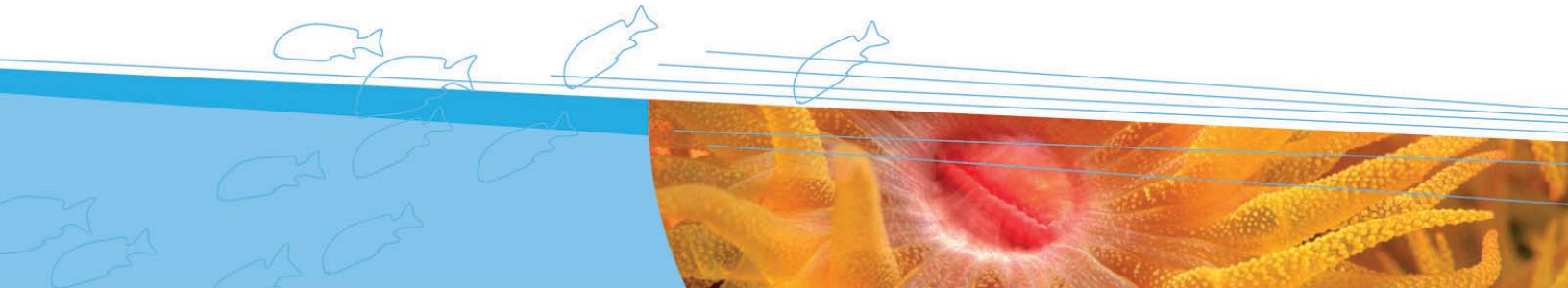
Connectivity

Coral reefs are patchily distributed but are connected by ocean currents. Connectivity is therefore the flux of items between locations. Connectivity exists for nutrients, sediments, and pollutants, and for the transfer of individuals between local populations. Because of the complex nature of water movement in and around reef system, connectivity is difficult to measure and predict. We know that the transfer of non-living materials is likely to be determined by local and regional hydrodynamics but we know that the transfer of organisms (demographic connectivity) is more complex. This is because passive transport due to hydrodynamics is substantially modified by the sensory and behavioural capabilities of the organisms. Even though most dispersal amongst populations is done by larval stages, larvae of many reef species are highly capable mid-water organisms that can determine, to a degree, where and when they travel.

Because of these complexities the Connectivity research team chaired by Professor Peter Sale (International Network on Water, Environment & Health, United Nations University, Canada), will focus on demographic connectivity. This is seen as the most challenging form of connectivity to investigate and studying demographic connectivity will inevitably require that we improve our capacity to model hydrodynamics that drive those other forms of connectivity.

Objectives

The primary objective of the CWG during Phase 1 will be to undertake demonstration projects that will make empirical measurements of connectivity for selected taxa at specific locations. This means that new methodologies for tracing the movements of larvae from source populations to settlement sites will be developed. These new techniques will become additional ecological tools for measuring demographic connectivity in other species and other sites, while the demonstration projects will provide early information on connectivity in the specific cases studied.



Because the nature of the research to be done requires large spatial- and temporal-scale, multidisciplinary efforts, the Connectivity Group will initially focus its work in the Mesoamerican Caribbean, with only limited work at Pacific sites during Phase One. The work program comprises seven interrelated projects using different, multi-disciplinary approaches that take advantage of particular characteristics of specific coral reef species. These approaches include use of molecular genetics, otolith chemistry, larval biology and behavior, modeling of dispersal, and monitoring of recruitment, and are directed to selected fish, coral, and lobster species. Species studied are common and representative of the reef biota; some are also economically important.

Core to the program is a series of annual training workshops for, and a recruitment monitoring program run by personnel from management agencies and NGOs in the region. These workshops, and other planned interactions with the management community will help to build a region-wide understanding of the importance of information on connectivity for effective management of coral reef systems.

Importance to Management & Policy

At present there is a lack of quantitative data on demographic connectivity, although it is recognised that this information is vitally important in the implementation of networks of marine protected areas (MPAs) or parks. At present, in the absence of solid data, or of techniques for gaining such information at sites of interest, MPA design and implementation uses 'educated guesses' to decide appropriate spatial scales and sites of placement. Our ability to improve the conservation and management of coral reef systems, and the important fisheries they support will be enhanced by the data and techniques that will result from the Connectivity program. Present-day status of many reef fishery resources suggests the need for such improvement is considerable.

Further Information

Further information on the Connectivity Working Group and its activities can be obtained from:

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CRTR Project partners include the Global Environment Facility (GEF), World Bank (WB), The University of Queensland (UQ), United States National Oceanic and Atmospheric Administration (NOAA), UNESCO-Intergovernmental Oceanographic Commission (IOC/UNESCO) and approximately 50 research institutes & other third parties around the world.

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