

Update

Southeast Asian Centre of Excellence



Hundred Islands National Park, Philippines.
Photo: Maria Vanessa Baria

Brokering knowledge, research and study

Coral reefs are the richest repositories of marine biodiversity across Southeast Asia and they are important economic assets, contributing more than \$1 billion annually to the Philippines economy.

Nearly all of the Philippines' reefs are under severe threat from economic development and climate change. Although there are 1,000 Marine Protected Areas (MPAs) within the country, only 20% are functioning.

As a result, the Coral Reef Targeted Research & Capacity Building for Management (CRTR) Program established the Southeast Asian Centre of Excellence (SEA CoE) in the heart of the region.

The SEA CoE is one of four international centres under the CRTR Program.

From its base at the Marine Science Institute at The University of Philippines, metropolitan Manila, and at the Bolinao Marine Laboratory in northwestern Philippines, the SEA CoE is a hub for coral reef studies in Southeast Asia.

The SEA CoE serves as a venue for the research of various CRTR Working Groups, providing them with technical support as appropriate. In addition, it undertakes or supports local research on coral reefs.

Importantly, it is ideally located to provide a platform for education and training activities. These include postgraduate degrees, short courses, workshops, study tours and mentoring programs.

Connecting people with coral reefs

Southeast Asia is home to half of the world's coral reefs. A key function of the SEA CoE is to build the scientific capacity and coastal knowledge that is necessary in order to sustain coral reef ecosystems for both present and future generations in the region. The primary target for this knowledge transfer is coastal communities.

Many local, coastal communities do not understand or know what a coral reef actually is, how its ecosystem interacts with them, and why it is so important for their villages to preserve and conserve it.

At a community-level, the SEA CoE seeks to educate villagers, fishers, marine managers and policy-makers about the damage to reefs caused by pollution, overfishing and unsustainable coastal development.

By linking advances in scientific knowledge to on-the-ground decisions and by providing and improving science-based coral reef management and policy tools, the CRTR Program's SEA CoE aims to strengthen the way coral reef managers, villagers and policy-makers view and manage coral reefs.

The Coral Reef Targeted Research & Capacity Building for Management Program (CRTR) is a leading international coral reef research initiative that provides a coordinated approach to credible, factual and scientifically-proven knowledge for improved coral reef management.

The CRTR Program is a proactive research and capacity building partnership that aims to lay the foundation in filling crucial knowledge gaps in the core research areas of Coral Bleaching, Connectivity, Coral Diseases, Coral Restoration and Remediation, Remote Sensing and Modelling and Decision Support.

Each of these research areas are facilitated by Working Groups underpinned by the skills of many of the world's leading coral reef researchers. The CRTR also supports four Centers of Excellence in priority regions, serving as important regional centers for building confidence and skills in research, training and capacity building.

The CRTR Program is a partnership between the Global Environment Facility, the World Bank, The University of Queensland (Australia), the United States National Oceanic and Atmospheric Administration (NOAA) and approximately 50 research institutes and other third parties around the world.

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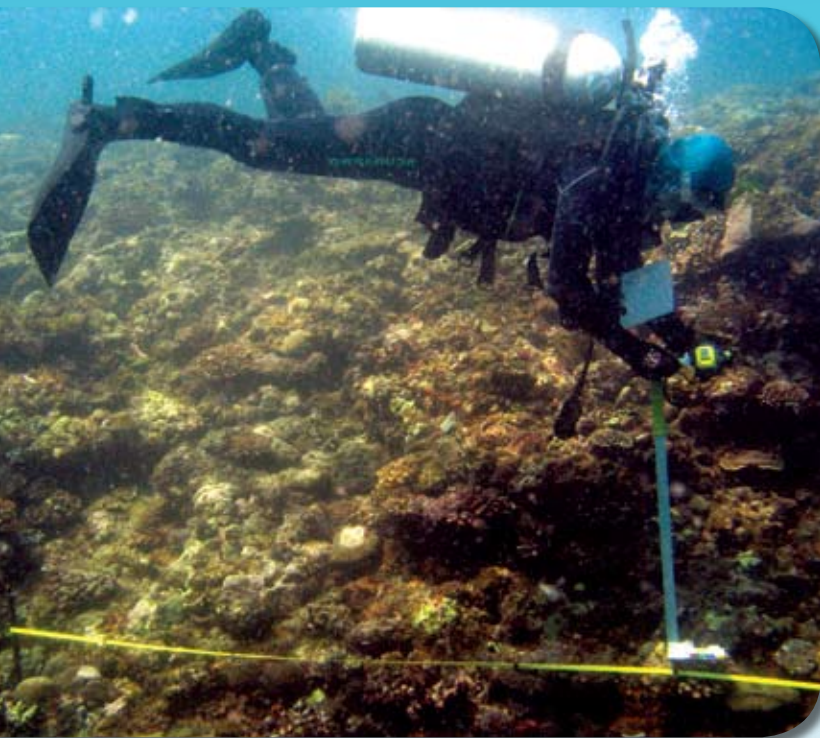
www.gefcoral.org

Making progress with targeted research

The Southeast Asian Centre of Excellence
is making major in-roads in three local research projects:

1 Coral Identification & Taxonomy

This sub-project seeks to provide expert identification and reference services for the CRTR Program at Bolinao Marine Laboratory (BML), initiate the improvement of the collections at the BML and the rest of the Marine Science Institute, develop a virtual (Internet-based) museum of photographs and descriptions of these collections, and develop field guides in support of the coral research at BML.



Survey of benthic communities using digital photo transects. Photo: George Imperial

Progress to date includes:

- The on-line map library of Philippine corals has been updated to include information on coral distribution, species lists, virtual museum, taxonomic guides and featured species.
- A *Field Guide to the Bubble Corals of the Philippines* has been developed. The guide is being used by non-scientific divers who are trained by the project to map the distributions of these corals in the Philippines.
- A *Guide to the Corals of Bolinao and Western Luzon* has commenced with field surveys and taxonomic identification of the coral species photographed.

2 Coral Disease & Marine Microbiology

This project aims to:

1. Survey diseases of corals from the Gulf of Lingayen (near Bolinao and Alaminos) and to identify microbial populations as single causative agents.
2. Test the hypothesis of a linkage between organic pollution from nearby mariculture and the incidence of certain bacterial diseases in corals.
3. Identify epidemiological pathways by screening for potential vectors carrying bacterial pathogens such as certain coral reef inhabiting invertebrates.
4. Test the hypothesis of a linkage between monsoonal climate-linked changes in coastal water quality and the incidence of microbial diseases in nearby coral reefs.
5. Test the hypothesis of a linkage between the incidence of microbial coral diseases and elevated water temperature maxima, also in combination with organic pollution levels favoring opportunistic mesophilic pathogens.



Brown Band Disease



White Syndrome

Progress to date includes:

- Infection trials have revealed three *Vibrio* spp. isolates as causative agents of *Porites* ulcerative white spot (PUWS) disease. On the other hand, fish farming waste did not have significant effect on the incidence of, and recovery from, PUWS under experimental conditions.

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3 Connectivity

The Connectivity project aims to explore the following research questions:

1. Are there distinct spatial patterns of community structuring of reef-associated rabbitfish in the reef areas in Bolinao and adjacent localities?
2. Do natural environmental phenomena such as seasonal monsoon winds and oceanographic processes influence the community structuring of these species in Bolinao and adjacent localities?
3. Are the different methods for determining genetic structuring concordant in the model species being studied?

Progress to date on the Connectivity project includes:

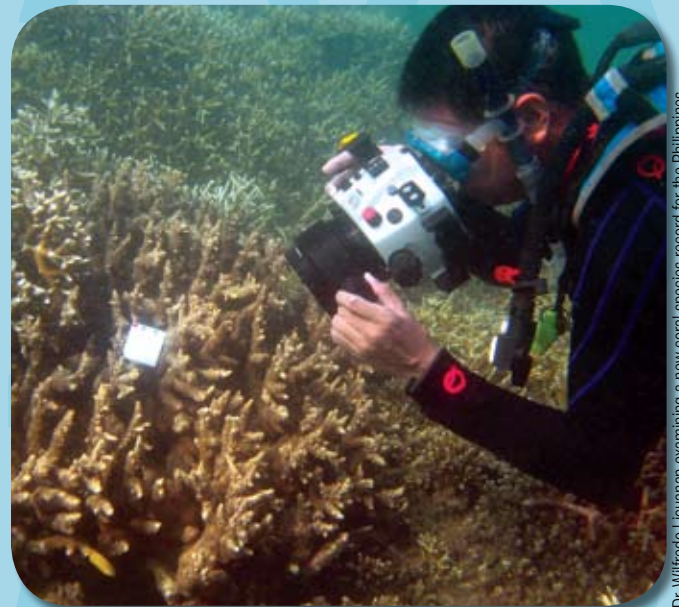
- Initial results of microsatellite analyses suggest significant genetic differentiation among populations and a putative partitioning of six populations into three genetically distinct groups among the study sites. However, morphometric analysis, performed to analyse population differentiation of *S. fuscescens* collected in 2005 and 2006, suggest that morphometric methods might not be powerful enough to differentiate among *S. fuscescens* populations as this method relies on morphological differences on the body shape.
- A genomic library containing 180 clones was generated. Out of these clones 60 were screened for putative microsatellite markers. Thirteen primers were designed for amplification and testing for polymorphisms of which eight initially showed polymorphisms and were tested for Hardy-Weinberg Equilibrium.



Satellite image of the Bolinao reef complex. Source: Quickbird Satellite Image

Key objectives for the Southeast Asian CoE

1. Provide technical support for the research activities of the various Working Groups (WGs) of the CRTR Program, initially with the Remediation and Restoration WG and the Remote Sensing WG.
2. Upgrade the reference coral collections in local museums, starting with those of the University of the Philippines, and to develop local expertise for the identification of Indo-Pacific species. Taxonomic guides and coral collections will be made available to all WGs and local individuals that require the identification of specimens.



Dr. Wilfredo Licuanan examining a new coral species record for the Philippines.
Photo: Mark Vergara

3. Undertake other research related to coral disease and to connectivity, with a view to expanding the activities of the WGs for these disciplines, while focusing on local issues.
4. Increase the capacity of the CoE, in particular to conduct coral reef research and training, in order to extend information and skills to local and regional stakeholders, managers and researchers alike. The ultimate objective is to contribute to the conservation of coral reefs which are of vital importance to the rural poor in coastal areas.

Linking global research to local action

The Local Government Initiative (LGI) project undertaken by the SEA CoE is well on the way to achieving its goals with the hosting of a workshop titled 'Environmental Compliance Assessment as an Approach to Improving Coastal Governance' during October 2007 in Alaminos City, Pangasinan. Under the LGI, the SEA CoE also provided assistance in organising the Workshop on the Development of Local Fisheries Code and Coastal Resource Management Programs held at the School of the Seas, Bantayan, Cebu, during February 2008.

Through the Local Government Initiative (LGI) the CoE is providing technical assistance to the Marine Protected Area (MPA) establishment in Agno, Pangasinan. Two MPA orientations at the Local Government Unit (LGU) and community levels in the Lingayen Gulf area were conducted in December 2007 and January 2008. These were followed by underwater assessments undertaken in March 2008 to gather important data needed to determine the best sites for the MPA establishment in the municipality of Agno. Results of the survey are being collated and analysed and will be presented to local residents through a series of community validations. This will serve as one of the bases for the selection of the appropriate MPA(s) in the locality.

Each LGU is undergoing a self assessment (scorecard) of how effective it is in compliance with the legislation for protection of the marine environment. Within the LGUs, the issue of compliance can be more readily monitored due to the link with the Ombudsman (whom the LGUs have to report to), and therefore there is a message of accountability.

In conjunction with this activity, the LGI has been working with villages to establish common protocols for enforcing the MPA zones, as there are many differences across villages. This initiative has involved meetings with MPA managers, local police and other relevant people. The meetings have looked at the issues facing villages and assessed issues for enforcement. The end-result has been a simple set of guidelines, in the form of a pamphlet on operational protocols which shares lessons learnt and experiences, for how coastal law enforcers can enforce the MPA zone.



Fishers, Barangay Captains (community leaders) and government officials gather to play ReefGame - a role-playing game to explore livelihood alternatives in traditional fishing communities in Bolinao, Philippines Photo: Anne Dray

Further Information

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