

The State of MPA Science: What Have We Learned Lately?

In October 1999, MPA News surveyed a dozen MPA experts from around the world on what scientific question intrigued them most ([MPA News 1:2](#)). Reflecting the relative newness of MPA science, respondents viewed some of the most basic questions -- such as whether no-take areas increase stock biomass, both within and outside their borders -- as unanswered.

Since then, several academic papers, reports, and consensus statements have cited "compelling" scientific evidence for marine reserves' use as a central tool in fisheries management. A committee of the US National Research Council has argued in favor of the expanded use of marine reserves for protecting and rebuilding depleted fish stocks (see box at end of article). A separate group of 160 marine-science academics voiced a similar opinion ([MPA 2:8](#)).

This month, MPA News again surveyed scientists, this time to see what recent research has done the most to improve our understanding of the science of MPAs. We asked them a single question:

What has been the most noteworthy contribution to the science of marine protected areas in the past three years, and why?

Below are three responses (more responses will appear in next month's MPA News):

Austin Bowden-Kerby, Scientific Director, Coral Gardens Initiative, Fdtn. for the Peoples of the South Pacific/Counterpart International, Suva, Fiji

"The most noteworthy contribution in recent years has been a major advance in community-based processes for the establishment of MPAs in coral reef environments (led in part by the Biodiversity Conservation Network project and World Resources Institute and evidenced by increased funding for MPAs from private foundations like Packard and MacArthur, etc.).

"It is noteworthy because roughly some 70+% of coral reefs on the planet are owned or controlled in part by rural fishing communities -- 'customary fishing rights owners' -- and these communities and their fishing activities are a major force of destruction. Therefore they MUST be involved. This involvement can only happen when scientists and managers respect the knowledge of the fishers, encourage local and new knowledge to express itself, and facilitate involvement in a participatory process, leading to the development of community-based resource management plans and MPAs for restoring local resources. The process is in itself is a big step toward any long-lasting solution involving MPAs in areas with customary fishing rights owners -- nay, it is the very foundation itself."

Rod Fujita, Marine Ecologist, Environmental Defense, Oakland, CA, USA

"Ben Halpern's survey of scientific research on marine reserves (Halpern, B. 'The impact of marine reserves: do reserves work and does reserve size matter?' in press, *Ecological Applications*) is having an especially important impact on policymakers, because it summarizes a lot of empirical work on marine reserves and confirms the scientific consensus on marine reserves in quantitative terms as a result of a detailed analysis.

"The work of Swearer, Warner, and others on larval transport and dispersion has also been particularly instructive because it challenges the conventional wisdom that marine reserves have to be quite large to be sustainable."

[Editor's note: [The abstract of Halpern's paper is available online.](#)]

Fabian Pina Amargss, Marine Biologist, Centro de Investigaciones de Ecosistemas Costeros (CIEC), Cayo Coco, Morón, Cuba

"The most noteworthy contribution to the science of marine protected areas in the past three years has been the technical report *Marine Protected Areas and the Management of Coral Reef Fisheries* prepared by J.L. Munro from ICLARM Caribbean/Eastern Pacific Office, Suite 158, Inland Messenger Service, Road Town, Tortola, British Virgin Islands and

executed in collaboration with the Centre for Marine Sciences, University of the West Indies, Jamaica with funding provided by the Inter-American Development Bank. This report is remarkably important because it provides this science with new knowledge for the management of coral reef fish such as:

- Heavily exploited fish stocks have drastically reduced settlement and recruitment rates when compared with the moderately exploited fish stocks.
- Some species remain resident in the reserve for extended periods; other species move out of the reserve with increasing size and few move substantial distances.
- Estimates of growth parameters were obtained for 15 species of reef fish. Most of these parameters were previously unknown.
- Marine fisheries reserves delay recruitment to the fishery and reduce growth overfishing by increasing the average size of the catch.

"This report also suggests the creation of reserves which encompass all depths, and that reserves should ideally cover 10 km of coastline."

BOX: National Research Council book now available

The book *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems* has just become available for purchase. As reported earlier in MPA News ([MPA 2:5](#)), the book is the product of a committee of the US National Research Council; the committee examined the potential role of marine reserves in protecting and rebuilding depleted fish stocks. To order: National Academy Press, 2101 Constitution Avenue, NW, Lockbox 285, Washington, DC 20055, USA. Tel: +1 800 624 6242 (US) or +1 202 334 3313 (outside US); Web: www.nap.edu.

The listed price of the book is US \$42.95 (US orders) or US \$51.75 (international orders), although discounted prices are available for online orders.

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