

## More Responses on the State of MPA Science

In [last month's MPA News](#), we surveyed scientists for their opinion on what recent research had done the most to improve general 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 3 years, and why?

MPA News printed three responses last month, and is printing two more below:

### **Craig Dahlgren, Science Director, Perry Institute for Marine Science/Caribbean Marine Research Center, Bahamas**

"There have been two major contributions to the science of marine protected areas in the last three years. The first has been the increase in modeling studies that have examined the effect of marine reserves on fisheries outside of their boundaries, and the various circumstances under which marine reserves can support or enhance fisheries yields. These modeling studies will provide the basis for the continued creation of marine reserves for fisheries management and will guide much empirical research over the next 3+ years.

"Similarly, another major contribution has been studies examining factors that influence larval dispersal from marine reserves. While it is well documented that marine reserves can increase spawning stock biomass (SSB) of exploited species, we are only beginning to understand how this increase in SSB is transferred to protected and unprotected areas by larval dispersal. Models and empirical studies have begun to change the way that we think about populations of marine species and how marine reserves may affect these populations, both inside reserves and outside reserves in fished areas. Improved understanding of how marine reserves replenish themselves, each other, and fished areas is essential to understanding how marine reserves function and how they may be used as a management tool."

#### **For more information:**

Craig Dahlgren, Perry Institute for Marine Science/Caribbean Marine Research Center, Lee Stocking Island, Bahamas. Tel: +1 561 741 0192; E-mail: [cdahlgren@cmrc.org](mailto:cdahlgren@cmrc.org).

### **David Dow, Northeastern Regional Recreational Fisheries Coordinator, National Marine Fisheries Service, USA**

"Even though there is a lot of evidence for the role of MPAs in increasing the diversity and abundance of benthic invertebrates and demersal fish of limited mobility, the role of MPAs in helping facilitate the recovery of depleted groundfish stocks in a wider system has not been as well-documented.

"The recovery of yellowtail flounder (*Limanda ferrugineus*) and haddock (*Melanogrammus aeglefinus*) populations on Georges Bank as a result of a large-scale closure (17,000 sq. km) to groundfishing seems to be a good example of benefit to the wider ecosystem. This success story was augmented by the recovery of sea scallop (*Placopecten magellanicus*) populations within the closed areas, which have since been re-opened to harvesting. This has been described in: 'Large-scale closed areas as a fishery management tool in temperate marine systems: the Georges Bank example' by Steven A. Murawski et al. which appeared in *Bull. Mar. Sci.* 66:775-798 (2000)."

#### **For more information:**

David Dow, NMFS, NOAA, 166 Water Street, Woods Hole, MA 02543, USA. Tel: +1 508 495 2249; E-mail: [David.Dow@noaa.gov](mailto:David.Dow@noaa.gov).

[Editor's note: The limited re-opening of these closures to scalloping was profiled in [MPA News 2:3](#).]

## **Box: High-tech solutions to scientific data needs**

MPA News reported last month on the challenges facing practitioners in accessing science. Following up, here are two new high-tech projects that promise some help to MPA practitioners in Africa and the US:

The **Ocean Data and Information Network for Africa** project, or ODINAFRICA, aims to provide a comprehensive "one-stop shop" for the continent's oceanographic and marine-resource information, using the project website (<http://odinafrica.org>) launched in May 2001. The website's products and services include scientific journal articles, a database of African ocean publications, and a directory of African ocean experts, and will soon offer a metadatabase of ocean datasets available on the continent. Supported by the government of Flanders (Belgium) and the Intergovernmental Oceanographic Commission of UNESCO, the ODINAFRICA project involves 20 African coastal states.

Mika Odido, an ODINAFRICA regional coordinator, said the project will cover biological parameters as well as physical. Already a marine species database for Eastern Africa has been developed within the project framework.

In the US, the National Oceanic and Atmospheric Administration (NOAA) has teamed with other governmental agencies and academic organizations to develop an automated coral reef monitoring system that will eventually be deployed throughout the nation's coral reef areas. Currently under testing on a reef in the Bahamas, the **Coral Reef Early Warning System**, or CREWS, was developed in response to the US Coral Reef Task Force Monitoring Group's recommendation to monitor all major US coral reefs by 2007.

The CREWS stations will serve several purposes, including modeling conditions thought to be conducive to coral bleaching, and serving as a testing station for other instruments useful in monitoring coral reef ecosystem dynamics. The system will produce automated e-mail alerts when conditions are thought to be conducive to bleaching. CREWS could eventually be extended to monitor parameters for such biological phenomena as the spawning and migration of fish and invertebrates. For an introductory guide to CREWS, visit [http://www.coral.noaa.gov/crw/crews\\_layman.pdf](http://www.coral.noaa.gov/crw/crews_layman.pdf).

### **For more information:**

Mika Odido, Intergovernmental Oceanographic Commission of UNESCO, P.O. Box 95832, Mombasa, Kenya. Tel: +254 11 472527; E-mail: [m.odido@unesco.org](mailto:m.odido@unesco.org).

Jim Hendee, Coral Health and Monitoring Program, Atlantic Oceanographic and Meteorological Laboratory, NOAA, Miami, FL 33149-1026, USA. E-mail: [jim.hendee@noaa.gov](mailto:jim.hendee@noaa.gov).

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