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Report Calls for Ocean Zoning to Address Human Impacts on Oceans

A major shift in ocean policy is strongly urged by a team of scientists who are calling for comprehensive, national, ecosystem-based ocean zoning for the United States. Newly emerging data on the combined effects of multiple human stressors on marine ecosystems are now available to support this shift in policy, the scientists say.

The work, published in the Spring 2009 issue of the journal Issues in Science and Technology, was conducted at the National Center for Ecological Analysis and Synthesis (NCEAS) at UC Santa Barbara, with support from The David and Lucile Packard Foundation.

Despite increasing emphasis in recent legislation on the cumulative effects of human activities, "the oceans are still largely managed one species, sector, or issue at a time," says Carrie V. Kappel, the lead author.

Some promising new initiatives do take an integrated approach, but these tend to be small in scale and isolated from each other.

The authors argue for a comprehensive, coordinated management system, based on the concept of ocean zoning.

Co-author Ben Halpern explains that "zoning is commonplace on land ––we zone for business, schools, residences, and natural space –– but this has largely been done

piecemeal and reactively.

In the oceans, we have a great opportunity to zone for human uses in a comprehensive, pro-active manner." Designating marine zones for different uses would separate incompatible activities, reduce conflicts, and protect vulnerable ecosystems, the authors say.

This approach, however, requires comprehensive data on the cumulative effects of the full suite of human uses of the oceans, which until now has not been available.

But recently emerging tools are changing the picture. The authors describe the advent of a robust new tool, called a cumulative impact map, that can provide the kinds of information needed to optimize zoning for coordinated ocean conservation and use. Co-author Kim Selkoe explains how "the maps synthesize large amounts of data on the ecological impacts of all human uses of the oceans, providing the big picture on the health of the oceans and revealing which areas are impacted by which human uses."

The policy proposal, enhanced by the availability of new scientific tools, is timely.

The West Coast Governors' Agreement on Ocean Health –– signed by the governors of California, Oregon, and Washington in 2006 –– underscores the importance of managing human impacts on an ecosystem basis. The agreement is facilitating a move toward coordinated, proactive, regional collaboration for the management of human uses of the waters off the three states.

"Our science has shown that everywhere you look, the oceans are affected by a multitude of human activities," says Kappel. "Increasingly, we're seeing conflicts among users of the marine environment and negative effects of both land-based and marine activities. The policy implication is that we need comprehensive ecosystem-based ocean zoning. West Coast managers and policymakers could become leaders in developing ways to do just that."

About the National Center for Ecological Analysis and Synthesis

NCEAS was established in 1995. The organization has hosted more than 4,000 scientists from over 50 countries, and supported more than 430 collaborative projects in ecology and related fields.

NCEAS scientists develop new techniques in informatics, and apply general knowledge of ecological systems to specific issues, such as the loss of biotic diversity, global change, and sustainability of marine ecosystems. NCEAS is among the top 1 percent of 38,000 institutions evaluated for scientific impact in environmental research. NCEAS is funded by the National Science Foundation, the State of California, the University of California, and numerous other donors.

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