

Assessment of Information Needs for Ecosystem-Based Management of Coastal Marine Systems

Report on a survey by the National Center for Ecological Analysis and Synthesis
October 2008

Executive Summary

The National Center for Ecological Analysis and Synthesis (NCEAS) developed a survey to identify synthetic research topics that will address the needs of conservation practitioners engaged in implementing ecosystem-based management. The survey was designed to address two primary questions:

1. What types of information might fill gaps or needs in the practice of ecosystem-based management?
2. What might be the most useful ways in which this information could be shared with practitioners?

The survey was distributed to 220 practitioners in seven geographic regions: western Caribbean, eastern tropical Pacific, Philippines, Gulf of California, Gulf of Maine, Great Barrier Reef, and west coast of the United States. We received responses from a total of 47 individuals (21%) representing a wide range of organizational affiliations, years of experience, educational backgrounds, and ages.

A number of themes emerged from the survey responses. Across geographic regions, practitioners reported that key obstacles to developing and implementing ecosystem-based approaches to management are lack of political will, lack of access to relevant data from the natural and social sciences, and insufficient knowledge about and access to analytical tools, such as software for geospatial analysis.

A number of survey questions explored the issue of data access in greater detail. Responses indicated that the following types of information (and, in some cases, methods for obtaining that information) from the natural and social sciences are most needed by practitioners:

- measurements of the effects of natural and anthropogenic stressors (e.g., climate change, storm patterns, fishing, pollutants) on ecosystems
- methods for transferring information and insights from other regions to a given local context
- economic valuation of coastal and marine resources and ecological processes
- data and methods for evaluating tradeoffs among management objectives
- high-resolution data on abiotic and biotic characteristics of ecosystems (e.g., spatial and temporal distribution of ecosystem types, oceanography, population dynamics of valued species)

- data on connectivity (the ability of organisms or ecological processes to propagate through space) and resilience (the ability of a system to remain stable in the face of disturbance)
- high-quality baseline data and projections of the status and trend of management targets

Additional survey questions helped to identify tools that practitioners think would be most useful in developing and implementing ecosystem-based approaches to management. Respondents emphasized models to address climate change and models to conduct simulations or projections of the status and trend of management objectives and their drivers.

We also asked practitioners whether and how new information from the natural or social sciences had demonstrably changed their organization's management goals or actions. Approximately half of the survey respondents answered these questions. Most answers focused on natural science. Information that has changed management appreciably included measurements of the ecological effectiveness of marine protected areas and changes in the abundance or population dynamics of valued species.

Several questions explored how science is communicated among practitioners and policy makers. Respondents said they would like to be involved more directly in the research process, from design to reporting. They would find it useful for results and inferences of research to be distilled with less jargon and, in some cases, via interactive seminars or other participatory mechanisms. Scientific or professional meetings, peer-reviewed journals, and Web sites were among practitioners' most important sources of scientific information. Respondents also expressed a need to improve communication of complex issues in the natural and social sciences, especially to policy makers and the public.

NCEAS is using the results of the survey to inform a request for proposals for Working Groups to develop scientific knowledge about ecological, social, and economic processes that affect management and legislative regulation of coastal-marine ecosystems. We expect to release the request for proposals in early 2009. All individuals who received the survey, regardless of whether they responded to that survey, will receive a copy of the request for proposals.