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"Turning the Dials" in the Direction of Progress: Reflecting on the Largest Study of Marine EBM in Practice

Recognize the connections within ecosystems. Balance the needs of those ecosystems with the needs of humans. Manage in an adaptive way. Collaborate.

These and other principles of ecosystem-based management have been laid out in numerous publications. But what do these concepts look like when translated into actual use? Now, thanks to a project that takes an unprecedented view of marine EBM in practice worldwide, we have a clearer idea than ever.

In June 2012, the website "Marine Ecosystem-Based Management in Practice" was launched, sharing 22 in-depth case studies and 43 shorter "case snapshots" of EBM efforts from around the world (<http://webservices.its.umich.edu/drupal/mebm/>). The website describes the approaches and accomplishments of each EBM project as well as the challenges it faced.

Each of the in-depth cases was developed through extensive interviews and document reviews, while the case snapshots were generated primarily from web sources. From the total of 65 cases, the website distills lessons for improving the practice of marine EBM, and suggests cases to illustrate each lesson. The cases are also searchable by factors such as governance type, ecosystem scale, and more.

Funded by the David and Lucile Packard Foundation, the project was carried out by research teams at the University of Michigan, Brown University, and Duke University, each in the US. The Michigan team, headed by Julia Wondolleck and Steven Yaffee, produced 16 of the comprehensive cases. The Brown/Duke team, led by Heather Leslie, generated six.

Here MEAM talks with Yaffee, Wondolleck, and Leslie about the project and the lessons it holds for marine EBM:

Your project website notes that none of the 65 cases in your study meet all the key elements or principles of EBM (see box, "Five principles of ecosystem-based management", at the end of this article). Rather, the cases are "moving toward" a marine EBM approach. Will any marine project achieve full EBM?

Steven Yaffee: We are not sure that there is something called "full marine EBM". That is, most of the principles are ideals to strive for but rarely will be fully achieved. The elements we highlight on the website can be seen as a set of dials. Effective managers seek to turn the dials in the direction of progress, but they will always be faced with implementation challenges of a variety of kinds. Success is best defined not as "achieving marine EBM," but rather as moving management in the right direction: incorporating more elements of a system in decision-making, considering larger spatial and temporal scales, promoting dialogue among scientists and user groups, assuring protection of ecosystems while promoting ecosystem services, and seeking to manage using an adaptive approach.

Julia Wondolleck: One of the lessons of our case study research is that there is no single right way to do these things. Rather there are various strategies and approaches that need to be matched to the context and conditions of the specific issues, places, and circumstances. There are rules of thumb that managers and policy makers can follow, and we have tried to highlight these in the Lessons Learned section of our website. But managers should be somewhat reassured to know that success can lie simply in making progress.

Heather Leslie: In each of the six cases that the Brown/Duke team produced - cases with distinct ecological and social contexts from California to Mexico to the Western Pacific - ecosystem-based approaches were layered on top of existing institutions. Consequently, the principles were translated quite differently in differently places. And, not surprisingly, we observed quite different outcomes.

Ecosystem-based management on land has a longer history in practice than marine EBM. Steve and Julia, your backgrounds were originally in the management of public lands and forests. In what ways is EBM for inland ecosystems similar to or different from EBM in the marine environment?

Wondolleck: Many of the challenges that we identified in the marine EBM cases are the same as those in terrestrial situations. Scientific complexity and uncertainty, jurisdictional complexity, competing interests and lack of a shared vision, ineffective plans, and limited resources are evident at many ecosystem-scale conservation efforts - on land and in the water. At the same time, there are also several factors that can promote success in either domain. These include a strong sense of place or issue of concern, preexisting government programs or structures, evidence of political will or organizational commitment, effective collaborative processes, and the availability of technical and financial resources.

Yaffee: There may be more room for innovation in marine systems. In the terrestrial realm, decades of management conflict, a strong sense of property rights and entitlement, and a robust set of competing constituencies have produced a longstanding set of conflicts that constrain opportunities for creative problem-solving. Terrestrial EBM has become a process for managing this conflict as much as managing the land. While it has achieved small-scale successes, it has been extraordinarily challenging to move forward in many places.

In contrast, in the marine realm, rights are not as well-defined; the systems themselves may be less intrinsically fragmented and more likely to be controlled by government; economic interests may be more threatened by declines in fisheries and hence willing to experiment with change; and community-based fishing interests may be less obstructionist. Marine EBM initiatives appear to evidence a wider array of forms than those seen in terrestrial EBM. As a result, agencies involved in marine EBM initiatives

may have greater political space to experiment.

A decade ago, the concept of integrated coastal management was in relatively wide favor. Then ecosystem-based management became popular and was embraced by several nations in their ocean and coastal policies. Now marine spatial planning is becoming a hot concept, sometimes with EBM as a component of it. What impact do these changes in terminology and focus have on ocean management?

Yaffee: Terms come and go, sometimes due to political changes and sometimes just to symbolize investments in something new. At bottom, though, many of the key ideas underlying an ecosystem approach remain as normative ideals regardless of how they are labeled, simply because they make sense.

Leslie: To move from policy rhetoric to concrete action beyond pilot areas, we need to be able to assess when and how ecosystem-based approaches substantially improve ecosystem condition and human well-being, compared to alternative management frameworks. That is the question we are addressing with these case studies.

Yaffee: We hope that these cases provide a benchmark for the current state of marine EBM from which we can continue to assess progress and capture additional lessons. The goal of marine EBM - healthy oceans supporting healthy communities - will only be achieved through experimentation and adaptation. Learning from real-world experience is essential to that process.

For more information:

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BOX: Five principles of ecosystem-based management

The Marine Ecosystem-Based Management in Practice project identifies five principles, or elements, of EBM:

Scale: Marine EBM seeks to use ecologically relevant boundaries rather than political or administrative boundaries, and often involves management at larger geographic scales or longer time frames.

Complexity: Marine EBM views marine resources as elements of complex systems, and seeks to employ strategies that acknowledge and use complexity in management.

Balance: Marine EBM seeks to balance and integrate the needs of multiple human user groups while maintaining the health of the underlying system that supports those needs.

Collaboration: Since managing across boundaries involves the interests of more people, and managing complexity involves more areas of knowledge, marine EBM is usually collaborative and involves a diverse set of organizations and individuals in thinking about and making decisions.

Adaptive management: Given the existence of uncertainty in what we know and the inevitability of change in the future, marine EBM seeks to be adaptive through monitoring and evaluation tied to changes in future management directions.

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