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Notes & News: Ireland releases integrated marine plan - Report on theory and practice of MSP - FAO guidelines for responsible recreational fisheries ^[2]

Ireland releases integrated marine plan

The Government of Ireland has released an integrated marine plan to support sustainable development of its ocean resources and ensure that government departments work together more efficiently and effectively on marine issues. The plan, titled "Harnessing Our Ocean Wealth", sets out three goals - a thriving maritime economy, healthy ecosystems, and strengthening the country's maritime identity - as well as 39 action items to help meet those goals. The plan is at www.ouroceanwealth.ie/Pages/default.aspx ^[3].

Report on theory and practice of marine spatial planning

Released to the public in draft form a few months ago, the final version of a report by the Scientific and Technical Advisory Panel of the Global Environment Facility provides a summary of marine spatial planning (MSP) worldwide. The report describes available tools, barriers to use, and innovative methods. Drawing from examples, the report discusses the potential that MSP has to align conservation and development interests while protecting vital ecosystems and the services they deliver. The report "Marine Spatial Planning in the Context of the Convention on Biological Diversity" is at www.cbd.int/ts ^[4]. (The title of the draft report was "Synthesis Document on the Experience and Use of Marine Spatial Planning".)

FAO guidelines for responsible recreational fisheries

The UN Food and Agriculture Organization (FAO) has released technical guidelines for the management of sustainable recreational fisheries. Recreational fishing is prominent in many coastal ecosystems of industrialized countries, and its importance is increasing rapidly in transitional economies as well. The new FAO guidelines provide detailed sections on policy and institutional frameworks (tailored to policy-makers), management actions and strategies (tailored to fisheries managers), recreational fisheries practices (tailored to individual recreational fishers), and recreational fisheries research (tailored to researchers and managers). The 176-page guidelines are at www.fao.org/docrep/016/i2708e/i2708e00.htm ^[5].

World Risk Report: Degradation of reefs and wetlands creating greater risk

Widespread degradation of coastal and marine ecosystems is leading to significantly increased risk for coastal populations, according to the latest annual assessment of global risk levels. The World Risk Report 2012 - produced by United Nations University, The Nature Conservancy, and Alliance Development Works - calculates the relative risk level experienced by each country worldwide. The level was determined by the extent to which communities are exposed to natural hazards such as droughts, storms, earthquakes, and also by their degree of vulnerability.

"Where protective reefs, mangroves, and wetlands have degenerated or even completely disappeared, the forces of nature impact with far higher force on inhabited areas," said Peter Mucke of Alliance Development Works. Added co-author Christine Shepard of The Nature Conservancy, "Coral reefs, oyster reefs, and mangroves offer flexible and cost-effective first lines of defense [against natural disasters], as well as other benefits like healthy fisheries and tourism that sea walls and breakwaters will never provide." The report is at www.worldriskreport.com ^[6].

Guidelines on controlling invasive lionfish

A new manual by the US National Oceanic and Atmospheric Administration provides the first guidelines for coastal managers to control the spread of invasive lionfish. Native to Asia, the lionfish has no natural predators in waters of the southeastern US, Gulf of Mexico, and Caribbean regions. As a result, it is spreading rapidly while preying on native fish species. With the ability to remove up to 60% of prey fish from a given habitat, the lionfish poses a substantial threat to the region's marine ecosystems. "Invasive Lionfish: A Guide to Control and Management" is available at <http://lionfish.gcfi.org/manual/> ^[7]

Guidance available for educators on Ocean Frontiers movie

For educators who want to use the film *Ocean Frontiers* to teach about marine spatial planning and ecosystem-based management, there are now formal discussion materials available to supplement the movie. A discussion guide walks university-level professors through concepts in the film, suggests questions for classes, and recommends readings. A separate resource guide supports secondary-level educators with summaries and teaching tips. The guides are at <http://ocean-frontiers.org/discussion-guides/> ^[8].

Website enlists the public to identify seafloor habitat, organisms

In one of the latest examples of crowdsourcing environmental research, the new website Seafloor Explorer asks the general public to help identify marine life and habitats in seafloor images from the northwest Atlantic. A collaboration between oceanographers and social scientists, the website guides visitors through a brief tutorial on what habitats they see (sand, gravel, cobble, and more) and what organisms are present (scallop, fish, seastar, crustacean). Once trained, the visitors are directed into a database of 100,000 images taken by the HabCam habitat-mapping underwater vehicle. The purpose of the project is to provide greater understanding of the region's seafloor ecosystems and create habitat maps at a resolution much higher than scientists would have been able to generate without the manpower this project provides. The website is www.seafloorexplorer.org [9].

Organization Spotlight: OceanElders, a Catalyst for Ocean Conservation [10]

Launched in 2010, the nongovernmental organization OceanElders is a group of experienced global leaders who use their collective influence to promote ocean conservation. The first Ocean Elder appointed was oceanographer and explorer Sylvia Earle. Now there are twelve, including Virgin Group CEO Sir Richard Branson, Queen Noor of Jordan, Jean-Michel Cousteau, billionaire Ted Turner, and former Great Barrier Reef Marine Park Authority chairman Graeme Kelleher.

"OceanElders' members are from many different areas of human activity," says Kelleher. "Its members hold the potential to influence government, industry, and societal policy in relation to the oceans." The organization drew original inspiration from The Elders, a group convened in 2007 by Nelson Mandela to advance global peace and human rights.

The OceanElders organization, whose members and staff work on a voluntary basis, aims to work catalytically with other organizations. "OceanElders was created to be collaborative," says Gigi Brisson, a US-based investor and philanthropist who founded and now manages the organization. "There are wonderful ocean organizations run by amazing and passionate people, but the structure of the nonprofit world often causes them to compete for awareness and for funding. OceanElders is set up to avoid replicating the great work that is being done by others. We wish to support that work and elevate its visibility and impact by using our personal connections, our business networks, our combined experience, and media."

Ten years from now, Brisson would like the organization to have played a role in multiple ocean management advances, from eliminating bycatch in fisheries to setting aside more than 20% of world oceans in MPAs, and more. She says the organization is open to adding more Ocean Elders over time. The OceanElders website is www.oceanelders.org [11].

Tundi's Take: How Objectives-Oriented EBM Propels Us Away from Static, Formulaic Marine Management [12]

By Tundi Agardy, MEAM Contributing Editor. tundiagardy@earthlink.net

Management of anything at all - a business, a household (or, even harder, teenagers within a household), fisheries, or marine environments - is focused on achieving positive outcomes. That is stating the obvious. But conventional management, and even much of EBM today, focuses not on what can be achieved with management, but what is to be avoided.

That is, far too much marine management today aims to preserve the things being managed (a coral reef, a fishery, a stretch of coastal zone) or to abate the threats to those things (pollution and overuse, over-fishing, unsustainable development). This is usually done by tackling a single use at a time, and commonly according to standard formulae.

This static approach to meeting the challenges of our ever-increasing uses of and impacts on the marine environment has, sadly, not resulted in mostly positive outcomes. And the reflexive targeting of certain users as the "bad guys" that need to be controlled or denied access does even worse: it can create strong opposition to conservation and management that results in wasted effort and sometimes even very negative outcomes.

Objectives-oriented (OO) management takes stock of what needs protecting from overuse or environmental degradation, and it focuses on threats. The difference between more conventional management and OO EBM is that the myriad tools in the management toolkit - legislation and regulations, conflict resolution, spatial planning and zoning, surveillance and monitoring, enforcement and outreach to gain compliance, etc. - are all harnessed with very specific goals in mind.

The Canadian Department of Fisheries and Oceans defines objectives-based approach to management as:

"...essentially an outcomes oriented system that promotes management and use of marine areas and resources in a manner that addresses the multiple needs and expectations of society, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by the ocean."

In practice, this means identifying the needs and expectations of society, along with developing an understanding of the systems that provide those goods and services, and how we come to negatively impact them.

Distinguishing between a focus on uses versus a focus on outcomes may seem like esoteric argument. However, there is significant divergence in the way management is planned and executed under these two different approaches.

A clear example of OO EBM being put into practice comes from the Great Barrier Reef (Australia). Last decade the rezoning of the vast and complex protected area was based on clearly articulated objectives, not on existing human uses. Had the Great Barrier Reef Marine Park Authority followed a conventional management process, they might have mapped existing uses, sought to restrict the most classically damaging uses (commercial fisheries, oil/gas operations) from as many areas as possible, and created a zoning plan according to their vision. In that case, the reason for the zoning would have been to maintain the status quo by restricting the most egregious uses, wherever they could achieve that. Instead, the new zoning system takes stock of both ecosystem attributes (which areas are the most ecologically critical) as well as the realized and potential values to society. Zoning is one of many tools that the planners use to achieve the collective vision for the Great Barrier Reef's future.

The countries of the EU and those of the Barcelona Convention (Mediterranean) are also adopting OO EBM as they define Good Environmental Status and the Ecological and Operational Objectives that will steer management toward EBM with maximum benefit.

A clear difference between this approach and conventional management is that OO EBM is more forward-thinking. In addition - and this may be the most critical distinction - OO management requires that planners and managers meaningfully reach out to stakeholders and to society at large to know what they are aiming for. This does not take the form of asking people to react to a plan. Rather it places stakeholders front and center in the development of that plan, and the very clear and precise articulation of what that plan is meant to achieve.

The indicators of management effectiveness are then not solely ecological, but include assessment of and perceptions about human well-being. This puts social science on par with natural science as a foundation for management. It also puts marine management squarely at the service of human society.

The EBM Toolbox: Funding for Tool Development [13]

Dozens of innovative tools have been created to help integrate scientific research and societal values into management in exciting ways, but many of these tools fail. One reason is that tool developers are unable to find consistent, long-term funding for their work.

A recent article in the journal *BioScience* (Curtice et al., "Why Ecosystem-Based Management May Fail without Changes to Tool Development and Financing", www.jstor.org/stable/10.1525/bio.2012.62.5.13 ^[14]) highlights these funding problems and offers recommendations for addressing them. Among the most important recommendations is to find multiple revenue streams to sustain a tool. Potential revenue streams include:

- Venture capital
- Grants from government agencies or philanthropic organizations
- Internal government funding through an influential tool champion within a government agency
- Charging a fee for services related to the tool such as training courses, access to technical support, and tool customization
- Charging a fee for use of the tool
- Donations from users ("shareware") and corporate sponsorship
- Interest-generating endowments, and
- "Skunkworks", the most common source of funding for EBM tool development, in which funding for scientific research or conservation or management work is used to develop a software product even though no money was specifically allocated for it.

The authors urge developers to move away from relying solely on skunkworks projects and to consider scaled fee-for-license and fee-for-service models that allow users with limited funding to adopt them while still bringing in revenue. These revenues will ultimately lead to better, more user-friendly tools that will justify their cost.

Sarah Carr is coordinator for the EBM Tools Network. Learn more about EBM tools and the EBM Tools Network at www.ebmtools.org ^[15].

"Turning the Dials" in the Direction of Progress: Reflecting on the Largest Study of Marine EBM in Practice ^[16]

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/> ^[17]). 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.

Source: <http://webservices.itcs.umich.edu/drupal/mebm/?q=node/69> ^[18]

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