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What Role Does Ocean Zoning Play in Marine Spatial Planning?: Viewpoints from the EU, US, and China

In the view of many ocean stakeholders, the terms "ocean zoning" and "marine spatial planning" are often taken to mean the same thing: that is, lines on a map showing where some ocean uses are allowed and others are not. However, there are in fact distinctions between the concepts. The most basic is that marine spatial planning (MSP) is the process of planning ocean uses, whereas zoning is a regulatory measure to help implement the results of such planning.

That distinction matters. Although marine spatial planning generally results in regulatory zoning maps, such is not always the case. The current initiative to apply coastal and marine spatial planning in the US, for example, will stop short of applying zoning regulations, according to organizers. What does MSP look like in practice when it involves, or does not involve, ocean zoning? In this issue, MEAM gathers the viewpoints of practitioners in the EU, US, and China.

Definitions of marine spatial planning and ocean zoning

- **Marine spatial planning**

The public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process.

- **Ocean zoning**

A regulatory measure to implement marine spatial management plans, usually through a zoning map or maps and regulations for some or all areas of a marine region. Ocean zoning is an effective tool of MSP.

(Excerpted by MEAM from *Marine Spatial Planning: A Step-by-Step Approach toward Ecosystem-based Management* [2009, UNESCO], available at **www.unesco-ioc-marinesp.be/publications**.)

European Union: Integration of spatial planning and ocean zoning

Background: The European Commission is actively promoting the use of maritime spatial planning across European waters. In 2008, the Commission published a *Roadmap for Maritime Spatial Planning*, providing a framework with 10 key principles for implementation. This past December, the Commission published a report that reviewed MSP in practice in EU member states; it also reiterated that action is essential at the EU level to ensure coherent MSP, particularly in cross-border marine areas. Both publications, as well as other EU documents on MSP, are at **http://ec.europa.eu/maritimeaffairs/spatial_planning_en.html**.

Implementation of MSP is the responsibility of EU member states. The European Commission acts as a facilitator to enhance cooperation and develop a common approach to MSP.

Viewpoint of: Maria Damanaki
European Commissioner for Maritime Affairs and Fisheries

- **On MSP and its role in sustainable growth**

"A common approach to MSP across the EU would enable the efficient and smooth application of maritime spatial planning in cross-border marine areas. Ensuring that MSP is used in all member states would enhance sustainable growth across the different maritime sectors — be they traditional (fishing or maritime transport) or new (marine renewable energies).

"Maritime spatial planning is crucial for legal certainty, predictability, and transparency, thus reducing costs for investors and operators, in particular those operating in more than one member state. MSP also has a vital role to play in supporting the implementation of existing EU legislation, such as the Marine Strategy Framework Directive, as well as possible future developments in the field of integrated coastal zone management."

- **On the role of ocean zoning in European MSP**

"Spatial planning is a wider concept than ocean zoning and entails a cyclical process of analyzing

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and allocating space (and time, where relevant) to achieve ecological, social, and economic objectives. The MSP process involves sectors and stakeholders, and results in a broad plan. The zoning [in that plan] is one aspect of MSP.

"Allocating marine areas for a specific purpose, or regulating the activities in a specific area, is nothing new. EU member states have practiced this in different forms for some time. We have marine protected areas, shipping lanes, harbors, sand extraction areas, fishing areas, areas designated for wind energy, etc. These can all be called zones.

"I underline that at the EU level, we look at this issue from a process perspective and do not deal with specific space allocation [zoning] between individual maritime user groups. That allocation is within member states' competence. However, due in part to the stability, transparency, and predictability provided by MSP, we are under the impression that stakeholders are generally in favor of the space allocation that results from it."

On the EU's distinction between *maritime* spatial planning and *marine* spatial planning

European Commissioner for Maritime Affairs and Fisheries Maria Damanaki explains why the EU uses the term "maritime spatial planning" rather than "marine spatial planning":

"There is no difference between marine spatial planning and maritime spatial planning. In the EU Marine Strategy Framework Directive, the word 'marine' is used more in the context of the marine environment. Meanwhile, in the context of the EU Integrated Maritime Policy, the word 'maritime' refers to all maritime (human) activities, including the protection of the marine environment. When spatial planning of the sea was a new concept, it was mainly perceived in the EU as an environmental policy. However, it is now regarded as a sector-neutral approach with the objective not only to protect the marine environment but also to promote economic growth of the maritime economy."

• On whether all stakeholder groups will be involved

"I anticipate and advocate that all economic activities at sea, including fisheries, are to be taken into account in the MSP process. MSP is identified as a tool for integrated maritime policy and should, therefore, not exclude any particular activity.

"There is, however, a particular difficulty in including fisheries in the MSP process. The EU fisheries policy in general (seaward from 12 nm) is an exclusive competence of the EU, whereas spatial planning at sea is the responsibility of the relevant EU member state. This means, in practice, that fisheries decisions are taken by different authorities and at a different level than the MSP process. (EU member states may still propose fisheries measures, including zoning measures, in their territorial waters, so the issue of exclusive EU competence only applies beyond 12 nm.) To solve that issue, we will have to look into the possibility of establishing mechanisms for cooperation and decision-making between the EU authorities responsible for fisheries matters and the national authorities responsible for the MSP process. This is an issue we are currently looking at in the framework of the reform of the EU Common Fisheries Policy.

"The same goes for other maritime economic activities that, under international law, do not fall under the exclusive jurisdiction of the coastal state in national waters (such as maritime transport) or international pipelines and cables crossing national borders."

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US: Spatial planning that stops short of ocean zoning

Background: In July 2010, US President Barack Obama signed an executive order establishing a national ocean policy (**www.whitehouse.gov/administration/eop/ceq/initiatives/oceans**). The policy adopted the final recommendations of an interagency task force, including the framework for a national system of coastal and marine spatial planning (CMSP). The CMSP process will be carried out on a phased basis across nine regional planning areas. Each regional process — involving federal, state, local, and tribal authorities — will report to a National Ocean Council to certify that the resulting plans are consistent with national policy.

Viewpoint of: Jennifer Lukens
Acting Director of Coastal and Marine Spatial Planning for the US National Oceanic and Atmospheric Administration (NOAA). NOAA is one of several federal agencies that comprise the US National Ocean Council, which will be engaged in CMSP.

• On the goals of CMSP

"Coastal and marine spatial planning is a forward-looking planning process. It is focused on the future — or the desired state — of our oceans, coasts, and Great Lakes. In this case, the vision is to have healthy and resilient ocean ecosystems that support coastal communities and economies. We need to look at what our existing uses are and what we want our communities to look like in the future so that we can prepare for the necessary changes (including in infrastructure and transportation) and promote sustainable economic growth. We are also ensuring compatibility of uses, quality of life for residents, and protection of natural resources.

"The basis of the ocean policy framework is science-based decision-making, but a large part of it also involves simply getting stakeholders to the table with federal, state, and tribal decision-makers. There is a lot of relationship-building necessary to understand the needs of the community and to design what the future is going to look like in order to maintain sustainability."

• On how the US spatial planning process is different from zoning

"Zoning is associated with a set of regulations. That is, you cannot do a certain activity within a defined area, and there is a statute and a regulation associated to enforce that. I think a lot of stakeholders fear CMSP because they are confusing it with zoning and don't understand that it is a planning process. They worry about regulations and they jump to the conclusion they will no longer be able to do an activity where they want to do it or where they currently do it.

"The upcoming coastal and marine spatial plans from our nine regional processes are intended to identify areas that are more conducive or suitable for certain uses — such as shipping lanes, fishing, recreation, offshore energy development, or important habitat conservation. However, the regional plans will not be regulatory, and they will not supersede existing statutes and authorities. As a result, zoning is not the proper analogy for CMSP, and to call it zoning only creates confusion in understanding what this process truly is.

"That being said, the agencies that sign on to participate in the regional planning bodies will have agreed to execute those plans to their ability within the constraints of their existing regulatory authority. An agency that has existing regulatory authority over a particular sector will be equipped with information it has learned through the CMSP process; if necessary, it can then adapt its regulations through its normal public process and administrative procedures. That is the intent of signing on to participate. As an agency, you are spending the time and going through this process to inform your decisions in accordance with these plans, within your authority and to the extent possible. CMSP is intended to provide a better framework for applying these existing laws and agency authorities, without superseding them."

• On whether all stakeholder groups will be involved

"The whole intent of coastal and marine spatial planning is to be as comprehensive as possible so that there is understanding of what the environment can handle sustainably while supporting the current and anticipated uses. However, there will be different drivers in each of the nine regions throughout the country. A particular region may start out by focusing on a couple of uses, with the goal of eventually involving all uses in the comprehensive planning effort."

For more information: Jennifer Lukens, NOAA. E-mail: **Jennifer.lukens@noaa.gov**

US invites public comment on development of strategic action plans

The new US national ocean policy features nine priority objectives, including coastal and marine spatial planning, EBM, regional ecosystem protection, changing conditions in the Arctic, and more. To support implementation of these objectives, the interagency National Ocean Council is developing a strategic action plan for each one. The Council has invited public comment on how best to prepare such action plans, including obstacles to achieving the objectives and metrics for measuring progress. To submit comments, go to **www.whitehouse.gov/administration/eop/oceans/comment**.

China: Zoning the entire territorial sea

Background: In 2002, China's government instituted the framework for a national marine functional zoning scheme to zone the nation's entire territorial sea, from the coast out to 12 nm. All of China's major water bodies within that area have now been zoned, according to government reports. The purpose of the zoning scheme is to reduce user conflicts, guide distribution of marine industries, and protect the environment, including through designation of marine protected areas.

The zoning is a central element of China's marine spatial planning, which also includes a broad system of sea-use authorization and user fees. A synopsis of Chinese marine spatial planning is at **www.unesco-ioc-marinesp.be/spatial_management_practice/china**.

Viewpoint of: Wen Bo
Pew Fellow in Marine Conservation, Beijing, China

• On MSP and zoning in China

"I do not think the national functional zoning scheme has achieved the goals it was supposed to, including guiding the distribution of marine industries and protecting the environment. In reality, the functional zoning scheme has often been ignored. "A core area of Huidong marine reserve in Guangdong, for example, was re-zoned to make way for a petrochemical industrial complex. Likewise, a spotted seal national sanctuary was re-zoned for the development of a seaport and coastal industrial complex at Changxing Island of Liaoning province.

"Having a marine functional zoning scheme can be very helpful for ensuring a good understanding of the marine environment and resources. However, China's scheme is often not well-understood or –respected, and law enforcement is rather inadequate."

• On MPAs designated under the zoning scheme

"No specific figure is available on the number of protected areas established due to the zoning scheme. However, as of the end of 2010, 1.12% of Chinese marine waters are in MPAs. The State Oceanic Administration's plan is to increase the coverage of MPAs to 3% of Chinese marine waters by 2015 and 5% by 2020."

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Tundi's Take:
In Zoning, Beware of Shortcuts Leading to Dead Ends

By Tundi Agardy, MEAM Contributing Editor. E-mail: tundiagardy@earthlink.net

Editor's note: Tundi Agardy authored *Ocean Zoning: Making Marine Management More Effective*, published in 2010. It is available on **www.amazon.com**.

The most natural, organic way of allocating space and resources in the ocean is to start with zoning based on existing patterns of use. Be warned, however: this "easy" solution can be dangerous. We run great risk by codifying patterns of use through zoning when we do not take the time to understand why those patterns are the way they are. In effect, we may lend permanence and credibility to ways of using ocean resources and space that are haphazard at best and, at worst, highly damaging to marine ecosystems.

Patterns of ocean use arise from an array of factors:

- Logistics (distance from ports, ease of navigation, access to coastlines or habitats)
- Need or demand for resources, wealth, and access to technology
- *De facto* protections resulting from avoidance of danger or conflict
- Cultural beliefs
- Existing rules and regulations

Most coasts and oceans have been used for millennia by a growing number of diverse users doing different things. So the patterns we see today are rarely the result of careful, science-based planning. When planning has occurred, it has often been driven by one or more sectoral management authorities, or by an influential user group's interests and impacts — hence the clear need for integrated marine spatial planning. Although MSP is still a young field, there are already cases where initial spatial planning needed to be amended — and existing use patterns altered — to meet management objectives. One example is Stellwagen Bank National Marine Sanctuary (US): several years after the site's initial planning, existing shipping lanes had to be moved to minimize conflicts with whales, the focus of MPA management (http://stateofthecoast.noaa.gov/mpa/cmsp_whales.html).

Mozambique example

Using MSP to achieve effective EBM is not easy, and agencies with limited budgets will inevitably look for shortcuts based on existing use patterns. Witness the research of planner Jim Dobbin. In northern coastal Mozambique, he found that the current distribution of villages provided an inappropriate basis for zoning for sustainable development. The reason for existing patterns of use there is historical: colonial engineers built roads on dry, sandy soils (avoiding river valleys and wet areas) in order to extend the season for moving goods and people from land-locked countries in the interior to the coast. Eventually villages grew up along the road system as civil war in the interior led people to escape toward the coast. However, the most fertile lands for subsistence agriculture, and the most useful access points to aquatic and marine resources, are far from these areas. Today, well-intentioned international agencies and NGOs are perpetuating these existing patterns of development by funding schools, clinics, and wells — keeping villagers in these unsustainable areas. If Mozambique is committed to developing the region, it will need to foster new use patterns based on real resource opportunities and constraints.

Similarly, existing patterns of commercial fisheries exploitation worldwide — and especially in areas with ever-intensifying races to fish — may not be sustainable. Often this brings costs in the loss of biodiversity and ecosystem services that would be difficult to justify in the bright light of rational, science-based decision-making.

Conversely many existing conservation measures, including biodiversity protection via no-take reserves, may not be ideally placed. In some instances, a no-take reserve is implemented in an area where it is easiest to achieve that end (i.e., areas where fishery activity or multiple use conflicts are absent). In other instances, it may be the right target area, but the threat that puts the area at risk is not the threat being addressed by the no-take restrictions.

The practical reality is that however necessary strategic ocean zoning is, it cannot start from scratch, reallocating people as if no historical patterns of use existed. The optimal must be weighed against the practical. So the feasibility of changing patterns of use must be taken into account. This leads us to a fundamental question: how should ocean zoning be optimally used to enable MSP objectives to be met? Circumstances will vary, and no two planning entities will take the same path in utilizing the zoning tool. But a standardized process could help planners realize the potential of zoning. Integral to this process would be:

- Understanding (and mapping) existing patterns of use and impacts;
- Identifying (and mapping) ecologically critical and sensitive areas; and
- Developing multiple zoning options with scenarios that show costs and benefits of each.

In places where effective zoning has been achieved, bringing us closer to EBM, these steps have been followed — with planners opting out of the easy but dangerous paradigm of zoning built on existing uses.

EBM Perspective: Implementing Integrated EBM at the Interface with Indigenous Knowledge

By Leane Makey

The indigenous Māori people of the Kaipara region in New Zealand's Northland are spiritually and physically intertwined with their most sacred treasure — the Kaipara Harbour. To address ongoing environmental degradation to the health of the Kaipara, tribal elders have led the establishment of a multi-stakeholder partnership combining two approaches to environmental management: one indigenous and the other derived from western knowledge. This forms the basis for future research, planning, policy development and management of the Kaipara ecosystems — harbor and catchment.

Catalysts for integrated EBM

There were several factors that contributed to implementing a system of integrated EBM based on traditional knowledge:

- The spatial scale of Kaipara Harbour established it as an ideal place to practice and test integrated EBM. The Kaipara Harbour is New Zealand's largest estuarine ecosystem (947 km^2 with a catchment of 641,000 ha) and is the second largest of its kind in the southern hemisphere.
- The complex Kaipara Harbour ecosystem was overlaid by a rudimentary environmental management structure. Governance was by multiple authorities resulting in a weak assortment of western-style legislation, policies, and planning instruments. This created conflicting management philosophies, conflicting management scales, and a highly fragmented legislative framework.
- The indigenous people of New Zealand were recognized under the Treaty of Waitangi, signed in 1840 between tribal chiefs and the Governor of New Zealand. The treaty is not a legal statute but is recognized under most of New Zealand's environmental legislation. When the northern Kaipara tribe settled its historical grievances with the New Zealand government in 2002, statutory acknowledgements were provided requiring government agencies to partner with the tribe to manage its sacred resources.
- Spatial conflicts between indigenous and commercial fishers, as well as a reduction in fish and shellfish populations, brought together the Kaipara Harbour community for the first time — fishers, landowners, government agencies, and conservationists.
- The ecosystem-based concept was not new to the indigenous Māori people of Kaipara. Indigenous Māori have an established philosophy and practice concerning the human relationship with the natural world, particularly the relationship between *tangata* (humans, communities) and *whenua* (referring broadly to the natural world including sea, land, and sky). The model of integrated EBM is designed to connect and utilize, rather than co-opt, ancient indigenous management philosophy with modern western management philosophy.

Building an EBM framework

Despite the natural overlap of indigenous Māori resource management with the principles of integrated EBM, the blended approach represented a challenge for government departments and local land authorities. It was a tribal-led initiative, and it was founded on principles and concepts from outside the existing New Zealand paradigm of sector-based resource management.

To address these challenges, particular steps were taken:

- A shared vision was developed by indigenous Māori in partnership with central government, local government, community organizations, tribal authorities, the research community, and non-governmental conservation organizations.
- The problems — both environmental and management-based — were identified and agreed upon, using data on the environmental health of Kaipara Harbour and its catchment and identifying shortcomings of the existing New Zealand resource management system. The partners identified six long-term objectives to define the project: protecting and restoring biodiversity; restoring sustainable fisheries; protecting and restoring indigenous elements of nature; understanding climate change; promoting socio-economic opportunities; and integrated management and action.
- The co-management partners agreed on the principles of the project: integrated ecosystem-based management, indigenous Māori knowledge (*kaitiakitanga*), respect (*manaakitanga*), and co-management. These are all consistent with an indigenous philosophy that seeks harmony in the world.

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Editor's note:
Leane Makey is project coordinator of the Integrated Kaipara Harbour Management Group.

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No single authority or non-government group holds legislative powers sufficient to advance the proposed paradigm of integrated EBM without the collaboration of partners. To confirm this agreement between collaborators, terms of reference were established that outlined leadership and partnership roles, responsibilities, and financing. The terms also set the conceptual structure of an Integrated Kaipara Harbour Management Group (IKHMG), which oversees the co-management.

Making change happen on the ground, with the ecosystem at the core of management, is the partnership's vision. There is much work to do but small steps have been achieved through the use of this approach. The project's biggest success so far has been the formation of the IKHMG, which has instituted a system of respect and trust with a local co-management approach. The project has also been instrumental in attracting central government research investment into catchment-harbor sediment and nutrient effects, as well as mapping marine habitats. These research programs are a partnership between the research agencies and the tribe. They are walking together on this journey.

EBM and traditional resource management in coastal Canada

On the Pacific coast of Canada, several First Nations (indigenous societies) have blended their traditional resource management with EBM as part of the Pacific North Coast Integrated Management Area initiative. The initiative's aim is to ensure a healthy, safe, and prosperous ocean area by engaging all interested parties — including stakeholders and federal and provincial agencies — in the collaborative development and implementation of an integrated management plan (**www.pncima.org**).

Steve Diggon, marine planning coordinator for Coastal First Nations (**http://coastalfirstnations.ca**), describes here how traditional resource management by indigenous Canadian societies relates to today's EBM:

"Traditions of land, sea, and resource stewardship evolved through countless generations in the oral histories of Pacific Northwest Coast First Nations. First Nations perspectives on EBM explicitly acknowledge that humans are part of the ecosystem. Human communities are ultimately sustained by ecological systems, and therefore the key to the well-being of both is to maintain ecological integrity. First Nations communities continue to depend on the health of surrounding ecosystems to survive and flourish.

"Traditional stewardship and resource management practices are rooted firmly in a connection to place within First Nation societies, and in their relationship to nature. Access to resources was controlled within tribal territories, with chiefs acting as stewards of communally held resources. Coastal First Nations ethics and values — such as respect for humans and the environment, reciprocity, balance, and reliance on knowledge that is passed on through generations — underlie traditional land and sea management systems.

"During the past four years, First Nations have been working to develop community-based marine use plans. Each has established marine use planning committees that have been instrumental in guiding the development of their plans. Most of the First Nations have completed or are nearing the completion of their plans, articulating each society's values, interests, opportunities, and strategies. The plans will provide each First Nation with a solid basis on which to engage the Pacific North Coast Integrated Management Area Initiative as well as inform other processes at both the local and regional levels."

For more information:

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Flooding in NE Australia: How Ongoing Monitoring of Flood Plumes Helps in Managing the Great Barrier Reef

In January, massive flooding in the Australian state of Queensland killed at least 35 people and sent plumes of muddy, polluted water downstream and into the Great Barrier Reef Marine Park. The marine park's water quality management program (www.gbrmpa.gov.au/corp_site/key_issues/water_quality) monitors a wide array of nutrients and pollutants that flow from the neighboring river catchments to the MPA's waters. The program includes a flood plume monitoring program directed by Michelle Devlin of James Cook University. Here Devlin describes the monitoring program and how it informs park management:

"There is a flood somewhere, every year, in the Great Barrier Reef region. The aim of our flood plume monitoring program is to understand the short-term impacts of the river plumes, where the plumes go, and what it means for the marine environment when they get there. From information on the movement, extent, and concentrations of flood plumes, we are able to map high exposure areas and start to identify areas at risk from particular pollutants, depending on adjacent catchment.

"Thus it allows a greater understanding of short-term impacts as well as areas that may be at higher risk from altered water quality. This information can be used spatially to identify and correlate with our understanding of the short- and long-term changes associated with biological communities. As we gain confidence that an impact is identified with a particular pollutant, for example, we can deliver that information to managers to address the problem.

"Monitoring of riverine plumes on the GBR has been carried out sporadically for several decades. However, recent concern on the impact of catchment activities on Great Barrier Reef water quality has led to a reinvigorated sampling program, where the monitoring and mapping of plume waters is an integral component of a multidisciplinary program, including ambient water quality measurements, monitoring of inshore corals and seagrasses, and herbicide detection.

"This year, we have had the onset of an early wet season (November in comparison to January) in the central Great Barrier Reef region, and high flow in the Fitzroy River from November, culminating in the major flow event in early January. There have also been record flows in rivers south of the Fitzroy (outside of the marine park boundary) in the Mary-Burnett and Brisbane Rivers in which plume waters have moved north and joined up with the Fitzroy plume. We still have another two months of the wet season to go.

"With the recent flooding event, the quality of the water is concerning with elevated concentrations of sediment, nutrients (particularly dissolved nitrogen), and pesticides. Plume waters are low-salinity waters; this can and does stress the corals and seagrasses. So the combination of low-salinity waters with high concentrations of pollutants can be quite a toxic mixture to the biological systems. Lower-salinity conditions can also decrease the temperature threshold at which corals are likely to bleach, so plume-impacted areas may be more susceptible to the higher summer temperatures.

"It is important to note that our research also looks into the long-term changes that are associated with changes in water quality. Oversupply of dissolved nitrogen, dissolved sediments, and pesticides has begun to change the baseline: on the reef, we are seeing longer periods of high turbidity in the dry season, as well as higher annual means of chlorophyll a. There is also concern that the frequency and size of the flow events is increasing, but there are no concrete data on that yet." M

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Notes & News

Webinar on EBM in practice: recording available

An audio recording of the 13 January 2011 webinar on EBM in practice along the US west coast, co-presented by MEAM and the EBM Tools Network, is available at www.ebmtools.org/about_ebm/meam.html.

The webinar featured the work of the West Coast EBM Network, a partnership of community-based initiatives focused on proactive management of local coastal ecosystems (www.westcoastebm.org).

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Making marine conservation a preferable option for decision-makers

A new report describes strategies for making marine conservation a viable and financially attractive option for decision-makers. The 40-page guide *Economic Incentives for Marine Conservation* proposes three approaches — buyouts, conservation agreements, and alternative livelihoods — and features 27 case studies to illustrate the strategies in practice. It is published by the Science-to-Action Partnership, which is led by Conservation International and comprises more than 75 organizations. The guide is at http://science2action.org/files/s2a/economicincentivesguidebook.pdf.

Editor's note: The goal of The EBM Toolbox is to promote awareness of tools for facilitating EBM processes. It is brought to you by the EBM Tools Network, a voluntary alliance of tool users, developers, and training providers.

The EBM Toolbox by Sarah Carr

Is There an App for EBM?

Over the past decade, there has been an explosion in the number and functionality of geospatial tools addressing coastal and marine management issues. Although these tools, both singly and in combination, can address many of the problems encountered by managers, the complexity of the tools often makes it difficult for managers to use them. At the same time, there is currently a shift in personal computing from relatively complex, multi-functional desktop tools toward "apps" (loosely defined here as easy-to-use, limited-functionality tools).

Currently, most geospatial apps are limited to data exploration and visualization (e.g., Earth Observer at **www.earth-observer.org** and Google Earth at **http://earth.google.com**) but the ability to do simple analysis is on the horizon. Resource managers are hungry for tools that will help them base their decisions on science and make their work easier. Is it possible that geospatial apps can increase the use of geospatial analysis in EBM? If so, what functions could they do well/adequately? Could EBM ever be fully accomplished through the use of apps rather than more complex tools?

The EBM Tools Network would like to hear from you — coastal and marine resource managers and tool developers alike — on this issue:

- What functions could you use apps for?
- Are you more likely to use a combination of apps than a single, multi-function tool?
- What advantages and limitations do you see in using apps?
- Are there ways to overcome the limitations?

Please send your thoughts on this to **ebmtools@natureserve.org**. Responses will be summarized in a future EBM Toolbox column.

(Sarah Carr is coordinator for the EBM Tools Network. Learn more about EBM tools and sign up for Network updates at **www.ebmtools.org**.)

Report: strategies for marine and coastal adaptation to climate change

A new report describes emerging ideas on how best to manage marine and coastal ecosystems to adapt to changing climate conditions. Published by EcoAdapt, an NGO, the guide provides an overview of key climate change impacts on natural and man-made environments in marine and coastal North America, and reviews adaptation options available to and in use by resource managers. *The State of Marine and Coastal Adaptation in North America: A Synthesis of Emerging Ideas* is at www.cakex.org/virtual-library/1615.

Future sustainability of Arctic environment depends on EBM and spatial planning

The Arctic region is experiencing major ecological shifts due to global climate change, and its future sustainability depends on the institution of a new conservation and development plan based on EBM and marine spatial planning, according to a new report by the Aspen Institute, an international think tank. "Failure to plan for holistic, ecosystem-based management of all the various expanding economic activities in the Arctic will almost assuredly lead to regrettable environmental impacts, as well as otherwise preventable disputes or conflicts in proposed uses," states the report. *The Shared Future: A Report of the Aspen Institute Commission on Arctic Climate Change* is available at www.aspeninstitute.org/policy-work/energy-environment/our-policy-work/dialogue-commission-arctic-climate-change.

Workshop on role of MPAs in fisheries management

On 29-31 March 2011, a meeting in Bergen, Norway, will examine new findings and strategies for integrating MPAs in fisheries management, specifically as part of applying an ecosystem approach to fisheries. The workshop "Exploring the Role of MPAs in Reconciling Fisheries Management with Conservation" is co-sponsored by the Institute of Marine Research (Norway), the Norwegian Fishery Forum for Development Cooperation, the Norwegian Ministry of Fisheries and Coastal Affairs, the Nordic Council of Ministers, FAO, and UNEP. Attendance will be limited to 120 people. The workshop website is www.imr.no/om_havforskningsinstituttet/arrangementer/konferanser/mpafish2011/en.
