

What Should Be Done When MPAs Do Not Meet Their Goals?: Poll Reveals Range of Views

A successful marine protected area is one that meets its goals. Whether those goals relate to conserving biodiversity, making resource use sustainable, or other purposes, MPA effectiveness is measured by what the site was designed to achieve.

Of course, defining success for an MPA is the easy part. Actually achieving it — amid the normal array of budgetary, ecological, and socio-political challenges that managers face — is more difficult. Evaluation of MPA performance should be considered a normal component of good management processes. In recent years, the emergence of multiple methods for measuring effectiveness has allowed MPA managers to clarify critical issues, improve accountability, and share lessons learned with peers elsewhere (“Measurement of Management Effectiveness — The Next Major Stage in MPAs?”, *MPA News* 7:10).

As management evaluations become more commonplace in the MPA field, some percentage of these sites (10%?...20%?...more?) will be assessed as not meeting their goals. The question arises:

What should management bodies do with MPAs that are evaluated as ineffective?

This month, *MPA News* polled several practitioners and stakeholders for their advice, bearing in mind the financial realities of most MPA management bodies (that is, large budgetary increases are generally not an option). Their answers are below.

Ensure that stakeholders are part of the solution

Kalli De Meyer, executive director, Dutch Caribbean Nature Alliance, and former manager of Bonaire National Marine Park. E-mail: kdm@telbonet.an

The very short answer is, “Go back to the drawing board.”

I would recommend that the management body first evaluate whether the MPA’s goal is still valid, reasonable, and achievable. If this is the case then the next step is, of course, to establish the root cause of why the goal is not being met — for example, whether lack of

time or resources, lack of staff, or training are the cause versus lack of legislation, political will, or similar. Once you know what the problem is, it is much easier to start looking for a fix. Next I would try to find other MPAs with the same or similar problems and find out how they went about solving them.

Where there are stakeholder interests involved, I would bring them on board from the outset so that they can contribute toward the process of finding and applying a solution. Ensuring that stakeholders become part of the solution for resource protection and don’t become part of the problem is one of the key tasks of management. This brooks the question: what if the stakeholders are the problem? The answer is: woo them. Demonstrate the value of the MPA to them in ways that they will understand and accept. And organize exchanges of key stakeholders with other MPAs so that they can learn in a hands-on way (fishermen with fishermen, or dive operators with dive operators) about the value of MPAs and how to benefit from them.

Spatial scale of management needs to match MPA goals

Billy Causey, regional director, Southeast Atlantic, Gulf of Mexico and Caribbean Region, National Marine Sanctuary Program (U.S.). E-mail: Billy.Causey@noaa.gov

More MPAs are considered “paper parks” around the world than those that are managed effectively. Whether an MPA is ineffective in meeting its goal(s) depends on several essential criteria. The first one is easy — lack of funding for important programs such as science, education and enforcement. Clearly, more funding enables implementation of more management programs. However, more management programs do not necessarily translate into effective management.

From my experience, the primary cause of ineffective management is that the spatial scale at which we manage is not always appropriate to meet the goals of resource conservation and protection. Issues like improved ocean governance and ecosystem-based approaches to management have sometimes been

continued on next page

Dear Reader

This issue of *MPA News* covers the months of December 2007 and January 2008, allowing our staff a year-end holiday. In February, our regular monthly delivery resumes.

Table of Contents

What Should Be Done When MPAs Do Not Meet Their Goals?: Poll Reveals Range of Views 1

Special Feature
Insights on Fisheries and Marine Protected Areas from the European Symposium on MPAs .. 4

A. How Much, and How Often, Should the Fishing Industry Be Involved in MPA Planning? 4

B. Finding a Balance Between Conventional Fisheries Management and MPAs: Interview with Peter Jones 5

Notes & News 6

MPA Tip
Managing MPAs for Resilience Amid Climate Change 7

MPA Spotlight
Tubbataha Reefs Natural Park, a World Heritage Site, Addresses Illegal Fishing and Seismic Exploration 8

No reason to maintain an ineffective MPA

Cora Markensteijn, policy officer for nature and spatial planning, Dutch Fish Product Board. E-mail: c.markensteijn@pvis.nl

The reason why the MPA has not met its goals should be investigated so that lessons can be learned for the future. If the MPA doesn't function due to lack of enforcement, for example, this reason has to be addressed. If the conclusion is that the MPA cannot meet its goals because the goals were never clear (which happens, unfortunately), or because the dynamics of the marine environment have changed, the MPA should be abolished and the area should be opened, meaning that the area can be used for other purposes.

We should prevent the closure of areas just because people want to close areas, or because it gives the idea that we are doing something good for the environment. An MPA should have clear, verifiable goals and if these goals cannot be met, the MPA is ineffective. There is no reason to maintain an ineffective MPA.

ignored by both managers and their agencies. The special natural, physical, or socioeconomic features that existed when the MPAs were set aside for protection have not been lost...so the MPA should not cease to exist. However, MPA managers and their agencies need to be bold enough to look and work beyond their boundaries. Such an approach requires cooperation. Various technologies such as remote sensing have advanced our ability to step back and get a larger-scale perspective on managing MPAs. Managers need to use these tools and consider the concepts of connectivity and resilience. More effective management may simply rely on different management approaches, including domestic and international networks of MPAs that can benefit one another in a true ecosystem-based approach.

Were the goals realistic?

Martine Landry, advisor on MPAs and ecologically and biologically significant areas, Oceans Policy and Planning Branch, Fisheries and Oceans Canada. E-mail: landrymar@dfo-mpo.gc.ca

Were the goals of the MPA ever realistic? An MPA is not independent of its marine and terrestrial surroundings, no matter how large it is. Its goals and management measures should therefore reflect such a reality.

For some MPAs, what you are trying to protect is severely impacted by factors beyond the MPA manager's control. Eutrophication caused by agricultural runoff, for example, or rising sea surface temperature due to climate change can each cause great loss of habitat and shifting of ecosystems, including migration of species out of the MPA over time. Unless a management body can adaptively move an MPA in response to such variability, it should consider using the site instead as a focal point for a broader management effort, like ecosystem-based/integrated management. This could involve de-listing the MPA: a site that is doomed due to its size in relation to the challenges it faces should not be kept on a "respirator". However, de-listing does not mean that you are giving up. Changing the management tool may be the correct solution. Management bodies need to face the source of the problem in its entirety.

Management effectiveness analysis is necessary

Alan White, The Nature Conservancy (U.S.), and former director of the Marine Protected Area Project, conducted by the Coastal Conservation and Education Foundation, a Philippine NGO. E-mail: alan_white@tnc.org

An MPA, or zone within an MPA, that is not effectively managed or is not functioning as intended should first be analyzed with regard to the MPA management context and objectives, as well as the capacity of the

management body. If we assume that the management body has sufficient capacity to manage the MPA/zone, an important step would be to conduct a management effectiveness analysis to determine what are the factors that are contributing to ineffective management. If done systematically, the key aspects of management that are not functioning would be identified.

By digging deeper, the causes of poor management can be analyzed further and contributing contextual factors isolated. In some cases, the objectives may not be realistic and no amount of support will make the difference to improve management. Some large MPAs designated in countries where fishing is an important source of income for coastal communities are often in conflict with traditional resource use patterns. A management effectiveness analysis might lead to the conclusion that the MPA/zone given its objectives is too large or that a process is needed to engage stakeholders that requires more resources. It might require revising the management plan to address difficult management issues over a longer time period that includes an education component, for example. In the end a management effectiveness analysis in relation to the MPA context will usually lead to potential solutions about how to improve a poorly functioning MPA. The solution might require major changes in the original goals and/or simply refining the management process to address issues.

Options for improving financial performance

Pippa Gravestock, environmental consultant who conducted a global survey of MPA income needs ("The cost of operating an MPA", *MPA News* 5:5). E-mail: pippa.gravestock@btinternet.com

A pernicious limiting factor in MPA performance is insufficient funds. The options available to improve MPA financial performance can be grouped into two categories — raising revenues and introducing cost efficiencies.

The number of revenue-generating opportunities for MPAs has increased dramatically in recent years, and the potential for sites to improve their financial position with these tools should not be underestimated (see *Sustainable Financing Of Protected Areas: A Global Review Of Challenges And Options* [IUCN, 2006] at www.conservationfinance.org/Documents/CF_related_papers/sustainable-financing-23feb.pdf). Even with respect to the mundane issue of visitor fees, there is considerable evidence to suggest that many protected areas are systematically under-charging visitors for their services.

To improve an MPA's cost efficiency, the most radical option is to remodel the management plan to align protected area objectives more closely with revenues (perhaps doing fewer things well as opposed to more

activities badly). Other options range from structural cost-sharing — i.e., sharing costs with allied service providers such as fisheries enforcement agencies — to volunteer labor and the achievement of best practice management standards.

The issue of scarce finances looms large over marine conservation management. The projected cost of a functional global MPA network dwarfs what is currently spent on all marine conservation projects worldwide (“Global MPA Network Would Cost \$12-14 Billion Annually”, *MPA News* 6:1). In this context, difficult decisions may be necessary with respect to ineffective and inefficient conservation providers. There may be cases where the drive to allocate scarce resources in a meaningful way leads to protected area re-structuring programs and even eventual site de-listing.

Questions to guide an MPA review

John R. Clark, co-author with Rodney Salm and Erkki Siirila of *Marine and Coastal Protected Areas: A Guide for Planners and Managers* (IUCN 2000). E-mail: JohnRClarkX@cs.com

Management’s approach to fixing an MPA that is not meeting its goals starts with an analysis of the goals themselves and then goes to reviewing the rest of the program:

1. Are the goals realistic in terms of what the MPA should and can accomplish? Are they appropriate to the conditions that exist on site? Are the goals articulated in such a way that an effective management program can be structured under them? Any problems can be solved by reframing the goals.
 2. Is the management program clearly defined as to what actions are to be taken — when, where, how, by whom, and for what purpose? If particular program activities fail the clarity test, they can be redefined to make sure they are clear, implementable, and are responsive to goals.
 3. Are program personnel properly trained for their jobs? If not, appropriate training activities can be initiated.
 4. Are the human dimensions of the program addressed properly? Analysis is needed to better understand social impediments. Do community members feel they were not adequately involved in the process? Do they feel that MPAs just don’t work? Are there religious and cultural issues that negate effectiveness? Is a different communication model (different from mere education) needed? Are there distributive/procedural/participatory/retributive justice issues?
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Privatizing management is an option

Lida Pet Soede, head of program, WWF Coral Triangle Network Initiative, WWF-Indonesia. E-mail: lpet@wallacea.wwf.or.id

If the MPA is considered critical (i.e., to support ecosystem functions for endangered species or to act as a source of larvae for habitats elsewhere, and if it is still in sufficiently good condition to perform these services) but if management is not well enforced, then privatizing management of the MPA is an option. This can be done by establishing formal management and use rights for communities or private sector institutions that commit to implementing sound management. Incentives can be provided in the form of technical or financial support, and can be revoked if audits show insufficient performance. If the MPA is not in sufficient condition to support the ecosystem functions described above, the management body should seriously consider moving attention and effort to those MPAs that do.

MPA removal is an option, but only after all others are tried

Jason Simms, section head, Integrated Oceans Management Program (Newfoundland and Labrador Region), Department of Fisheries and Oceans, Canada. E-mail: SimmsJa@dfo-mpo.gc.ca

It is crucial for management bodies to know the root cause of why the MPA is not meeting its goals. There may be underlying issues that are not apparent at first glance. Illegal activity in the MPA by user groups, for example, could be due to frustration the groups have with the MPA or management body. Or it could be due simply to a lack of awareness of the protected area. It could also result from the departure or retirement of an initial “champion” of the MPA, in which case user groups affiliated with that person may become disconnected from the original arguments for protection.

If the ineffectiveness is due to poor design (wrong size or place) or poor regulations, then fundamental changes to the MPA are necessary. Management bodies must gather the best available information, including science and traditional ecological knowledge, and engage existing governance structures (steering committees, advisory bodies, etc.). This process — ideally facilitated by a non-biased individual — should identify a way forward including a strategy to address the issue(s), a communications plan, and a timeframe for implementation. Be open and transparent. Management bodies need to respect concerns from stakeholders and interest groups while remaining committed to addressing the problems. Removing or abandoning a designated MPA is an option that should be discussed only when all other avenues have been fully exhausted. 🌊

Special Feature: Insights on Fisheries and Marine Protected Areas from the European Symposium on MPAs

The European Symposium on Marine Protected Areas, held in September 2007 in Murcia, Spain, provided a wide range of findings and perspectives on the use of MPAs for ecosystem conservation and fisheries management (www.mpasyposium2007.eu).

MPA News attended the symposium and featured selected presenters and findings in our October 2007 and November 2007 editions (*MPA News* 9:4 and 9:5).

Coverage of the symposium concludes in this month's edition, in which we examine questions on two aspects of MPA planning:

- A. What is the right amount of fishing industry involvement in MPA planning?
- B. What is the right balance between conventional fisheries management activities and MPAs?

A. How Much, and How Often, Should the Fishing Industry Be Involved in MPA Planning?

Much of the discussion in Murcia addressed the relationship between MPAs and fisheries, with substantial focus on the impacts of no-take areas on the industry. In one panel discussion, a question arose concerning what role the fishing industry should play in MPA planning. That is, should some types of MPA planning be done without significant involvement of industry stakeholders? Or would that go against what some MPA planners have suggested — i.e., that stakeholders should always be involved in MPA planning?

Two panelists who addressed this question have agreed to continue their discussion of it in *MPA News*:

- **Jeff Ardron** is scientific advisor on MPAs for the German Federal Agency for Nature Conservation, and Northeast Atlantic regional coordinator for the Marine Program of the World Commission on Protected Areas (WCPA-Marine);
- **Michael Andersen** is head of the secretariat for the regional Baltic Fishermen's Association, and is scientific advisor to the national Danish Fishermen's Association (Danmarks Fiskeriforening).

The following dialogue between Ardron and Andersen reflects their personal views, and does not necessarily reflect the views of their associated institutions.

Jeff Ardron: Ideally, involving stakeholders such as the fishing industry in MPA planning would always be a good idea. But practically speaking, this is not always easy, and some fishermen simply want nothing to do with MPAs. Furthermore, one has to be careful about what is being promised: that is, in what capacity should they be involved, and what say over the decisions should they have?

Fisheries effects are just one consideration of MPAs among many. There is a continuum of possible MPA purposes, ranging from industry management-oriented at one end, to strictly conservation protection-oriented at the other. I personally believe that the level of

stakeholder involvement should reflect this continuum of purpose, and thus will vary accordingly.

I would be interested in hearing your perspective, Michael. As an industry representative, you might advocate for full participation. But is this realistic? Does the industry really want to be fully involved in every MPA decision? Would it even be appropriate? For example, some fisheries activities are likely to degrade or inhibit recovery of the ecologically significant habitats and species for which some MPAs were established. In these cases, it would appear that the (legal) obligations of states to protect conservation values of the MPAs would supersede industry interests.

Michael Andersen: Of course fishers should be involved — if for no other reason that they are affected directly and to a degree that vastly surpasses the influence on other people. I believe that this is common practice in a democratic society?

I also believe that participation is a prerequisite for success, simply because it is complicated to control marine areas. If fishers are involved in the management, there is a greater chance that they will respect the regulations. This does not imply that fishers shall be given the right to veto. It is obvious that fishing practices that degrade the very habitat for which an MPA is established cannot be allowed to continue. But in my mind it should be equally obvious that fishing practices that do not jeopardize this must be allowed to continue.

Whether the fishing industry shall be involved in all cases should be up to the fishermen who will be affected...not to civil servants. I find it hard to accept that fishers might be excluded from the process, merely because the "right-doers" find it easier without them. Fishers may even bring new knowledge to the process. Or are scientists the only source of information?

Ardron: While it is tempting to believe fishers are being "excluded", the reality is more complicated. Long

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before the MPA discussion, fisheries and livelihoods declined. Trust between government and industry is now low. Many fishers are not willing to share data or experiences. Getting constructive participation in processes and studies is challenging. The job of “right-doer” civil servants is to invite participation, certainly, but they cannot achieve it alone.

In Europe, no-take MPAs virtually don't exist (<0.05% of the marine area). Fishing industry's intransigence is one reason why. Above, for example, you argue that fishing in MPAs “must” continue, unless it degrades a protected feature....

What are the ways forward?

- 1) Recognize there is a continuum of MPA purposes.
- 2) Encourage fishers to say proactively where they want to fish. The limitless ocean has already gotten rather small, and these key fishing places need to be identified.
- 3) Fisher associations should assume greater responsibility for addressing the fears of their constituents, and securing fishing areas.

Despite their significant ecosystem impacts, it is not just about commercial fisheries. A “democratic society”, as you put it, includes other societal concerns. In Europe, the conservation role of MPAs, including no-take areas, remains largely unfulfilled. This should also be a priority.

B. Finding a Balance Between Conventional Fisheries Management and MPAs: Interview with Peter Jones

Peter Jones is a lecturer at University College London and recently authored a paper detailing the views of fishermen on no-take MPAs. The paper, “Fishing industry and related views on no-take marine protected area proposals in SW England”, is available online at www.homepages.ucl.ac.uk/~ucfwpej/pdf/SWViews.pdf. In Murcia, Jones delivered a keynote address in which he examined the differences between conventional fisheries management approaches and MPAs, as well as differences in the views between the proponents of both. *MPA News* spoke with him afterward.


MPA News: Your recent paper documents significant opposition from commercial fishermen to the concept of no-take MPAs. Yet you said in Murcia that there may be an opportunity for compromise between fishermen and MPA proponents.

Peter Jones: The fishing industry is increasingly frustrated at complicated and restrictive fisheries management measures, which basically are not working in Europe under the EU Common Fisheries Policy. It seems there could be potential here for streamlining conventional fisheries management approaches

Andersen: The continuum of purposes of MPAs is not questioned. Fishers, too, appreciate that marine protection is important — perhaps more so for the fishers than for others.

But it has yet to be documented that no-take zones as a rule-of-thumb provide benefits that cannot be achieved by less draconian measures. It appears to me that it is the advocates of no-takes that do not appreciate the continuum, by hinting MPAs have no value if they are not no-take zones.

You claim that “the conservation role of MPAs, including no-take areas, remains largely unfulfilled.” I would say that the “no-take” bit does not have to be fulfilled. People who want to promote introduction of MPAs would benefit greatly by showing more willingness to discuss no-take zones on a case-by-case basis, rather than promoting them as a panacea. Fishers are not intransigent, but they refuse to be excluded from areas without being convinced that it will serve a purpose other than “the majority wants it....” The majority has the right, yes — but that does not necessarily make it right!

Whether a particular position is considered constructive or not probably depends — in the absence of scientific documentation — on who gets to define good and bad. 

(CFMAs) in return for a proportion of seas designated as no-take MPAs. The idea would not be to get rid of CFMAs but instead have some practical rationalization — such as, for example, loosening of restrictions on bycatch or days at sea — as a quid pro quo for no-take MPAs. More than half of the south-west England fishermen I have discussed this with are interested in such an approach. So where the fishing industry is concerned, we could be pushing at an open door.

This would also be a means of moving toward the middle ground on the CFMAs vs. no-take MPAs debate. We need to reconcile the different “storylines” and find convergences between the aims of CFMA and no-take MPA advocates, as we need both approaches.

MPA News: In Murcia, you suggested that some conventional fisheries scientists seem to want to err on the side of “over-researching” MPAs — wanting to determine with near certainty, for example, that no-take MPAs can or cannot improve nearby fisheries. You said these people are “trying to know the unknowable.” What is unknowable about it?

continued on next page

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Jones: The complexity and variability of marine ecosystems make it practically impossible to determine the relative cause-effect relationships of CFMAs and no-take MPAs on the sustainability of fisheries and marine ecosystems, given that there are many other potential ecological and human factors that could be involved. Scientific studies of such cause-effect relationships will always be open to challenges from other experts within the scientific, fishing and other communities. Therefore we must accept taking decisions under uncertainty rather than striving for deterministic approaches based on scientific certainty.

MPA News: You make it clear, though, that you are not disregarding the need for scientific study of MPAs. Along this line, some people have criticized those who seem willing to accept the need for MPAs on the basis

simply of “faith” and not necessarily science. Where is the middle ground between over-researching MPAs and under-researching them?

Jones: A key priority is to move toward developing accepted principles, “rules of thumb”, and transferable examples of MPA good practice and benefits — e.g., on different approaches to MPA network designation and governance, and their various actual benefits. This can be achieved through case study-driven comparative analyses that recognize the critical importance of context. Future MPA research should emphasize this rather than focusing on studying density gradients across no-take MPA boundaries. We know those gradients are there, so let’s stop studying them and move on! 

Notes & News

Reserve network completed for Channel Islands (U.S.) with closure of jurisdictional gaps

The designation of a network of marine reserves in the Channel Islands National Marine Sanctuary (CINMS) in the U.S. is now complete, following a vote by the California Fish and Game Commission to close several small jurisdictional gaps between reserves in state and federal waters of the sanctuary. The state-level commission voted in October 2007 to extend the boundaries of its state reserves to 3 nm from shore — the outer limit of state jurisdiction. As a whole, the marine reserve network totals 21% of the 3869-km² CINMS.

The state and federal portions of the reserve network cover 129 nm² (442 km²) and 112 nm² (384 km²) respectively, and are adjacent to each other. However, the state portion took effect much earlier — in 2003 (*MPA News* 4:6) as opposed to July 2007 for the federal portion. When the state of California originally designated its portion of the reserve network, it wanted to ensure the boundaries of its reserves would be easily identifiable and enforceable in case the federal portion were delayed. “For this reason, offshore boundaries were ‘squared off’ inside the state water line,” says John Ugoretz, senior biologist with the California Department of Fish and Game. “This led to a gap between the squared-off boundary and the state water line when the federal areas went into place.”

Sean Hastings, resource protection coordinator for CINMS, says such jurisdictional issues require agencies to collaborate to ensure that there are consistent, effective regulations and implementation. “I am a fan of co-management and co-jurisdiction because I believe it obligates agencies to make a commitment to each other and to the mission of conservation,” he says. All extractive activities are prohibited in nearly the entire

marine reserve network. The regulations and boundaries of the reserves are available online at <http://channelislands.noaa.gov/marineres/main.html>.

Canada designates conservation area in Lake Superior

On 25 October, Canada announced its designation of the Lake Superior National Marine Conservation Area, marking the culmination of a decade of studies and negotiations involving federal, provincial, local, and indigenous governments. Termed the “largest freshwater marine protected area in the world” by the Canadian government, the protected area covers more than 10,000 km² and includes lakebed, overlying waters, islands, and shorelands. Preparation of an interim management plan for the site is now underway, led by Parks Canada, the national parks agency. Canada’s national marine conservation areas are intended to balance environmental protection with responsible, ecologically sustainable economic activity. Lake Superior, bounded by Canada and the U.S., is the largest of the Great Lakes in North America, and has the largest surface area of any freshwater lake in the world. A press release and backgrounder on the designation are available at www.pc.gc.ca/agen/super/index_E.asp.

Second edition available of booklet on marine reserve science

The 2007 edition of a booklet on the science of no-take marine reserves provides a synopsis of the latest scientific information on the subject, updating a previous 2002 edition. Produced by the Partnership for Interdisciplinary Studies for Coastal Oceans (PISCO), the booklet features case studies to illustrate reserve

effects, considerations in design and siting, and sociological issues, among other aspects of marine reserves. It is intended for use by natural resource managers, government officials, scientists, and stakeholders. PISCO is a consortium of academic scientists at several U.S. universities. "The Science of Marine Reserves (2007 Booklet)", as well as the 2002 edition and a related 2002 video, are available at www.piscoweb.org/outreach/pubs/reserves.

Report: MPAs can help reduce poverty

A new report offers evidence of how MPAs have helped reduce poverty at locations across the Asia-Pacific region. Published by The Nature Conservancy, an international NGO, the study features four sites located in Fiji, Indonesia, the Philippines, and the Solomon Islands. Researchers interviewed more than 1000 local people about changes in their quality of life since creation of these MPAs. The interviews revealed benefits including improved fish catches and new jobs (mostly in tourism), as well as stronger local governance and benefits to health and women. Report co-author Craig Leisher says, "We should not artificially separate conservation and poverty reduction — they are almost always inextricably linked." *Nature's Investment Bank: How Marine Protected Areas Contribute to Poverty Reduction* is available online at www.nature.org/initiatives/protectedareas/howwework/art23185.html.

Recommendations released for U.S. MPAs

In November, the U.S. Marine Protected Areas Federal Advisory Committee delivered its latest set of recommendations to assist the Department of Commerce and Department of the Interior with their joint goal of developing a national system of MPAs. The November recommendations pertain to determining which existing MPA sites will constitute the initial national system; developing effective MPA management plans; offering incentives for participation in the national system; and enhancing regional approaches to planning and coordinating MPAs. The recommendations, as well as past products of the advisory committee, are available at www.mpa.gov.

Second International MPA Congress to be in 2009

The Second International Marine Protected Areas Congress, or IMPAC2, will be held in May 2009 in Washington, D.C. (U.S.). It will occur in conjunction with the inaugural International Marine Conservation Congress, hosted by the Society for Conservation Biology. Preliminary information is available at www.conbio.org/Sections/Marine/imcc.cfm. The first International Marine Protected Areas Congress (IMPAC1) was held in Geelong, Australia, in 2005.

MPA Tip: Managing MPAs for resilience amid climate change

"MPA Tip" is a recurring feature that presents advice on MPA planning and management gathered from various publications. The advice below, from Heidi Schuttenberg, appeared in the December 2006 edition of MPA News, which featured insights from practitioners on managing MPAs in an era of climate change (<http://depts.washington.edu/mpanews/MPA81.htm>). Schuttenberg is co-author, with Paul Marshall, of *A Reef Manager's Guide to Coral Bleaching*, available at www.coris.noaa.gov/activities/reef_managers_guide.

Tip: Managing for ecological and social resilience recognizes that a process of uncertain change is underway, and aims to support the ability of the environment and dependent human communities to absorb shocks, regenerate, and reorganize so as to maintain key functions and processes. Rather than having a goal of maintaining circumstances as they are today, managing for resilience emphasizes protecting the factors that allow recovery after disturbance events. Additionally, this strategy recognizes that the future may be determined by unexpected changes, and it values the ability to be responsive to surprises.

On the social side, actions can be taken to support the human communities that depend on marine environments, such as fishers and tourism operators. Changes in resource condition are likely to cause changes in resource use patterns. Engaging with stakeholders during this reorganization will allow managers to build alliances, knowledge, and influence that can assist in effectively adapting management regimes to the new circumstances. Managers and resource users may wish to develop a climate change action plan that could include strategies for supporting ecological resilience, diversifying economic activities, enhancing human resource skills, making investments in capital and technology, or reworking related government policies. As climate change makes life less predictable, such cooperative, adaptive approaches may be essential to achieving responsive, effective MPA planning and management.

MPA Spotlight Tubbataha Reefs Natural Park, a World Heritage Site, Addresses Illegal Fishing and Seismic Exploration

Tubbataha Reefs Natural Park, located in the Sulu Sea of the Philippines, is considered to have among the biologically richest ecosystems on Earth. Equal in biodiversity to any coral reef of its size worldwide, the park is a 968-km² no-take area, and listed as a UNESCO World Heritage site (www.tubbatahareef.org).

This past year the site has faced some significant challenges. Management has had to deal with a major case of illegal fishing and a slow-moving prosecution. Also, there has been the possibility that seismic exploration for petroleum could be carried out either inside or just outside the park — an activity that involves underwater blasts of intense, low-frequency sounds.

Below, *MPA News* speaks with Tubbataha Reefs manager Angelique Songco about these challenges and how the park is addressing them.

MPA News: On 21 December, it will be one year since park rangers apprehended the China-flagged fishing vessel *Hoi Wan* in Tubbataha Reefs Natural Park. Upon boarding the vessel, your rangers found more than 800 live fish, including 350 juvenile Napoleon wrasse, an endangered species. What progress has been made in prosecuting this case?

Angelique Songco: The concerned government agencies filed cases against the Chinese nationals involved in the *Hoi Wan* case of 21 December 2006 for the violation of the Philippine Fisheries Code, the Wildlife Act, and the National Integrated Protected Areas System Act. To this day, the trial has not started. The arraignment of the accused has been scheduled several times but has been postponed as a result of motions filed by their counsel. In the meantime, the Chinese nationals are still here, part of Palawan society — going to market, going for haircuts and dental visits, etc.

MPA News: What are the main challenges you face in monitoring and prosecuting illegal activity in the park?

Songco: The park is offshore and quite extensive, so monitoring it is a major challenge. We use radar for monitoring but this cannot detect the presence of small watercraft, hence manned patrols are necessary. However, the park is also prone to the impacts of tropical storms and atmospheric disturbances, limiting the ability of our rangers to conduct more patrols. The best response we have to our enforcement challenges is the vigilance and commitment of our rangers, who are ready to weather rough conditions if at all humanly possible.

Our prosecutors and courts are saddled with numerous lawsuits and a shortage of judges, hence the very slow progress of our cases. We have been seeking the advice


of legal practitioners in these parts to streamline our procedures and strategies in dealing with illegal fishers. Various institutions — from the private sector, government, and NGOs — are collaborating with us in seeking solutions in the form of policy and other reforms to the poor deterrent value of some of our national statutes.

MPA News: Another challenge you have faced this year is the possibility of seismic exploration for petroleum in your MPA. In 2005, the Philippine government signed a petroleum service contract with an energy exploration company, and the area of that contract overlapped the park by 15,000 hectares. Earlier this year, you convinced the national Department of Energy (DOE) to remove that area from the service contract. How did you convince the DOE to do this?

Songco: The present secretary of the DOE endorsed the expansion [in August 2006] of Tubbataha Reefs Natural Park when he was still secretary of the Department of Environment and Natural Resources in 2006. He has been supportive of our endeavors in the past and we believe that he appreciates the value of the park, hence we did not doubt his support in convincing the energy exploration company to relinquish the overlap area. Even the exploration company did not require a lot of convincing to relinquish its claim to the area — perhaps due to the advice of DOE or, we hope, out of its support for the conservation of Tubbataha Reefs Natural Park. The company had not yet conducted seismic surveys in that area of overlap before it agreed to grant our request.

MPA News: Seismic activity could still occur just outside the park boundary. How are you addressing this?

Songco: We have tried to convince the DOE that the prudent course of action is to establish a 10-nm buffer zone around the park to mitigate the impacts of energy exploration on marine life inside the protected area. The DOE informed us that it cannot unilaterally decide to grant the 43,000-hectare buffer zone we request, having entered into a contract with the private sector. It will conduct a dialogue with the exploration company and forward our request.

Nevertheless, the contract of this particular company expires in a few months and we hope that the DOE will not grant a new contract that will cover our proposed buffer area. We have communicated with DOE several times in the last few months and we hope to receive an answer by early 2008. This particular energy exploration contract covers millions of hectares. We believe that it is not excessive to request that a few thousand hectares be excised and reserved for conservation. 

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