

Educating Stakeholders about MPAs: Practitioners Use an Array of Methods

Public awareness plays a central role in the success of coastal and marine conservation. Where MPAs are effective, there is usually strong community understanding of the benefits that can come from resource protection. By educating stakeholders on these benefits, and by honestly acknowledging and addressing an MPA's potential costs, practitioners can build a base of public support for conservation. That support translates to stakeholder compliance with MPA regulations, and greater trust between site managers and the community.

Effective MPA education programs can take many forms depending on the target audiences and program objectives. Public meetings, visitor centers, posters, brochures, radio programs, and other tools may all play important educational roles. This month, *MPA News* examines how practitioners have employed a variety of approaches to inform and educate stakeholders.

Tailoring education materials to local audiences

In the Philippines, hundreds of community-based MPAs have been designated over the past three decades. The planning process for each has required informing local stakeholders on what to expect from the conservation effort.

Liza Eisma-Osorio is executive director of the Coastal Conservation and Education Foundation (CCEF), a Philippine NGO that assists MPA planning processes and oversees a government-supported project on nationwide MPA effectiveness (*MPA News* 6:3). She views education as an essential component of conservation. "If a conservation project does not include education, it will be much harder for beneficiaries to understand the project and why conservation is necessary in their area," she says. "Without education, the project will be a losing battle."

In a country where dynamite fishing and overfishing have been chronic problems, education often starts with pointing out the destructive effects of these activities. Education materials developed by CCEF include posters, billboards, flipcharts, brochures, newsletters, and videos. Some materials are in cartoon style to reach out to younger audiences, while others are more text-intensive to explain processes in greater detail. Sheryll

Tesch, CCEF education coordinator, says design is usually dependent on what each community needs. "We get a lot of requests for material development," she says. "We use these as an opportunity for participatory work, and involve the requestors in the design and content of their material."

Due in part to the cost of creating such materials, CCEF does not develop new ones if adequate examples from other organizations already exist. "By reproducing other organizations' education materials with proper citation, CCEF not only spends less but also enhances better relationships with those organizations," says Tesch. Examples of materials CCEF has reproduced and disseminated include those of the Coastal Resource Management Project (CRMP), from which CCEF was formed. The CRMP website offers several media, from comic books to posters to interactive movies, in multiple languages (<http://www.oneocean.org/download> — nontechnical documents are listed at the bottom of the CRMP webpage, under "IEC Resources").

CCEF's education work is also exemplified by people, not just materials. The organization provides personnel, called community officers, to coastal villages to inform planning processes and share expertise gained by other communities. "CCEF's community officers have proven to be the strongest educational tool of the foundation, and are key to the many successes of our programs," says Tesch.

Educating communities in low-literacy areas

In the Pacific island nation of Papua New Guinea (PNG), one-quarter of the country's five million people live in relatively isolated coastal areas. When the PNG government launched a project three years ago to promote sustainable, community-based management of coastal waters, education of these communities was a fundamental part. The initiative, called the Coastal Fisheries Management and Development Project (CFMDP), has had to overcome several challenges.

"In these coastal areas, communication systems are poor, unreliable, or do not work at all, and towns of any size are often accessible only by boat," says Kim Des Rochers, CFMDP fisheries information advisor. "Literacy rates in the more isolated communities are

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Building “ocean literacy”

A new report published by the (US) National Marine Sanctuary Foundation provides recommendations for building “a nation of ocean-literate citizens”. Based on presentations and discussions from the Conference on Ocean Literacy, held in June 2006 in Washington, DC, the report provides specific suggestions for strengthening ocean science education in the US and increasing citizens’ knowledge of oceans and their value. The *Conference on Ocean Literacy Report* is available in PDF format at <http://www.nmsfocean.org/chow2006/cool.html>.

quite low, particularly among girls and women. In addition, hundreds of distinct languages are spoken in the coastal areas, and there are vastly different cultural practices.” In initial meetings with stakeholders, CFMDP organizers realized that no single form of communication would work in a country as diverse as PNG. Similar to the array of media produced by CCEF in the Philippines, CFMDP’s materials take many forms, including comic books and posters for general audiences, and technical reports and manuals for technicians. The project has also employed traditional dance and song to spread information in villages. (The project is funded by the PNG government through a concessionary loan from the Asian Development Bank. It is being implemented through the PNG National Fisheries Authority by Gillett, Preston and Associates, Inc., a Pacific Islands-based consulting firm.)

In printed materials for the general public, CFMDP carefully chooses the level of language so that the publications are free of scientific jargon and technical terms. “We have several posters and comics, for example, that discuss reproduction or spawning, but we do not use those terms,” says Des Rochers. “We say ‘making baby fish’ because that is what the least educated person reading our materials will understand. If project personnel go into the field to talk with villagers about ‘spawning aggregations’, no one will understand the words. The concept needs to be explained in other terms, such as likening spawning grounds to a hospital where a pregnant mother goes to give birth. In the hospital, she is protected and looked after and allowed to recover afterwards, allowing her child the best possible chance of survival and good health. Likewise, spawning aggregations should be protected so that juvenile fish may mature and eventually reproduce.”

CFMDP also attempts to use a minimum of text. “With the low literacy rates in these remote areas, images can be far more useful and effective than text,” says Des Rochers. “It becomes a balancing act between text and images. Our project is aware that messages can sometimes be too abbreviated. Communities in PNG and elsewhere in the Pacific, for example, are bombarded with messages about ‘saving reefs’, but receive little information about the process by which to do this.” CFMDP’s poster images and text focus on the underlying goal of changing people’s behavior and attitudes, and encourage them to consider how their actions affect their communities and environment. Examples of CFMDP materials are available online at http://www.fisheries.gov.pg/publications_coastal_fisheries_management_dev_project.htm.

CFMDP aims for its materials to be lively and colorful in both text and image, with an entertaining story that serves as a vehicle for the conservation message. Preaching is avoided. The project hires local artists to design and illustrate the education materials, giving

them a distinctively local flavor. This avoids what Des Rochers calls “the western look” sometimes seen in materials from international agencies. PNG nationals on the project staff review all information materials to ensure the appeal of images and text to village communities. “In this way, our materials are ‘pre-trialed’ before they are printed and distributed,” says Des Rochers.

Using radio as an educational tool

Because of its range, its wide availability, and the relative simplicity of its technology, radio can be an effective tool in conservation education. CFMDP produces a weekly radio program in English and Tok Pisin (one of PNG’s official languages) that covers a variety of marine resource-related topics: destructive fishing practices, HIV/AIDS in the fishing sector, reef conservation, and the importance of mangroves and spawning aggregation sites, among other subjects. The 15-minute programs take the form of either a radio interview (with local people, fisheries officers, or marine resource experts) or a radio play in which the week’s theme is acted out. “Radio is one of the few options for reaching remote villages in many third-world countries, and this is certainly the case in PNG,” says Des Rochers.

Rare (<http://www.rareconservation.org>), a US-based conservation NGO, has taken this idea a step further, developing radio programs to spread conservation awareness in countries throughout Micronesia and the Caribbean. The radio programs all take the form of soap operas — what Rare calls “entertainment education”. Characters and storylines are linked to real issues that threaten the biological diversity of each country or region. Locally written, produced, and acted, the dramas use recognizable characters and contexts to engage people and motivate change. Some have become quite popular: in Palau, the listenership rate for Rare’s radio drama is greater than 40% of the total population. The dramas are often paired with Rare’s other education programs, including Rare Pride campaigns (using charismatic flagship species to build community pride in natural resources) and Rare Enterprises (developing alternative livelihoods in rural communities).

In the Australian state of Victoria, a program called Radio Marinara has been broadcast for 10 years on a community radio station. Launched by a group of friends and funded initially through a conservation NGO (the Marine and Coastal Community Network, or MCCN), the weekly program is run by a team that includes Anthony Boxshall, a marine research manager for a state agency in Victoria and vice president of the Australian Marine Sciences Association. Radio Marinara (<http://www.radiomarinara.com>) covers everything from major global and local marine issues to such topics as shipwrecks, surfing, books, film, art displays, and more. “Broad marine education is one of the best ways to build capacity for maintaining the health of our

oceans, and developing stewardship for the marine and coastal environments,” says Boxshall, who co-hosts the program. “We like to make marine stuff fun and accessible. But most of all, we want people to think. Whether it is a silly quiz about the world’s worst underwater movie or a serious piece about ocean acidification, listeners are encouraged in a non-confrontational way to explore the wonders of the marine environment.” The weekly audience is estimated at between 20,000 and 30,000 people, including local news media.

Five years ago, Radio Marinara entered the statewide debate on designating a network of no-take MPAs (see box on this page), airing interviews with several high-profile proponents of such a network. A partner NGO distributed a CD of those pro-network interviews to every member of the Victorian Parliament. Now, however, with some of the program’s hosts working in government, care must be taken to avoid crossing any lines. “Almost all of the active presenters on the show have jobs in related fields off-air, so there is the potential for conflict of interest,” says Boxshall. “We openly discuss with our employers that we know where the line is and that we intend not to cross it. Sometimes you hear something at work that you would love to say on the air, but you simply cannot. And sometimes one of us sits out a story while others, who are not involved in it, will cover it for the program.”

MCCN launched radio programs in other states as well. Its program in South Australia — Making Waves, which ran from 1996-2001 — focused largely on community issues. Financed in part by commonwealth and state grants, the half-hour program presented interviews,

documentaries, and reports on the coastal and marine environment. Marine species conservation and MPAs, in particular, comprised a significant portion of the programming. Tony Flaherty, who hosted the show for MCCN and now works for the South Australia Department of Natural Resources Management, notes that farmers were among the show’s target audiences. Plowing or harvesting their fields with just a radio to keep them company, farmers could learn about the downstream connections between their work and the sea. “The show looked at how everyday actions by the public can affect our ocean environment,” says Flaherty.

Educating children about MPAs

Many MPAs worldwide have focused on the education of school groups. By engaging children with conservation messages, MPAs can help build a future constituency of conservation-minded citizens and community leaders. The children, in turn, can help spread those conservation messages to their family members at home.

The Reef Guardian Schools program of the Great Barrier Reef Marine Park Authority encourages schools to “commit to the protection and conservation of the Great Barrier Reef”. In return for that commitment, schools receive curricula and projects to help students promote the idea of reef protection in their communities, such as by conserving energy and water (<http://www.reefed.edu.au/guardians>). In Zanzibar, Chumbe Island Coral Park sponsors excursions to the park for local secondary school students, and provides teachers with training and a curriculum on coral reefs. The organization that manages the park is partnering

Informing stakeholders during a public planning process

In 2002, the Australian state government of Victoria designated a network of two-dozen MPAs, concluding 10 years of public consultations on the subject (*MPA News* 4:7). The designations were a success for the Marine and Coastal Community Network (MCCN), an NGO that had employed several methods to raise public awareness of Victoria’s marine assets. Tim Allen coordinated MCCN’s Victoria branch at the time; he now works for the Australian Government in its Natural Resource Management Division. Below, he describes the array of education tools that MCCN used.

“In addition to the radio program Radio Marinara [described in the above article], our public education methods included:

- “Collecting and distributing high-quality broadcast footage for TV stations to showcase the values of particular areas. The footage could be retained by the TV stations for their future use. This proved to be very useful as TV stations did not have access to this type of footage, and after we provided them with carefully edited footage for ‘rushes’ (3-4 minute grabs of key localities), they used it repeatedly. The key was to be focused with the rushes provided — i.e., we selected the imagery that created or reinforced the message we wanted to present, such as clear water, beauty and diversity of key habitats, and people interacting with the environment (such as divers with lots of fish). This is what our market research told us would engage the broader public’s interest and increase the level of commitment to seeing the reserves implemented.

- “Developing a series of high-quality educational inserts (large posters and associated educational materials) with a major daily newspaper that promoted the natural values of specific localities along the Victorian coast. This series of inserts was distributed to more than 1.2 million Victorians.

- “Developing stewardship projects within the dive community such as Reef Watch (<http://www.reefwatchvic.asn.au>) and the Great Victorian Fish Count, a spin-off of a similar project in the US.

- “Taking internationally recognized and respected scientists into regional areas for meetings and briefings with key local community leaders.

- “Conducting briefings and ongoing meetings with key journalists (the gatekeepers in providing information to the wider public) to increase their knowledge about marine issues and guide them in staying ‘on message.’”

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with government officials to develop additional curricula on ecotourism, biodiversity, and conservation (<http://www.chumbeisland.com/education/education.html>).

In Belize, Hol Chan Marine Reserve holds “Reef Week”, a celebration of environmental activities. The principal goal, says reserve manager Miguel Alamilla, is to engage school children and the greater community in meaningful events. “These activities teach them the value of coral reefs and allow them to understand conservation principles,” says Alamilla. The events include beach and mangrove cleanup campaigns, games for school children, glass-bottom boat trips to the reef, puppet shows, displays, environmental films, and more. The week culminates with a kayak race and party sponsored by a local NGO.

Creating an annual event such as this provides two main benefits for Hol Chan Marine Reserve. First, it reliably focuses local attention on the site for a certain period each year, encouraging community interaction with the reef and educating about the need for its protection. Second, the event allows the entire staff of the MPA — rangers, biologists, administrators — to concentrate on education for one week, magnifying the informational impact. MPA personnel who might normally have limited public interaction in their jobs have an opportunity to discuss their work with the community, and how that work is important for the health of the reef.

“Reef Week requires an investment of both human and financial resources, but education is a vital component of our management activities,” says Alamilla. In addition to Reef Week, Hol Chan’s other education programs include visits by education staff to local elementary schools, field trips for elementary school children to snorkel in the reserve (nearly 500 students participated in 2004), and the development of a volunteer group of local secondary school students who help conduct cleanup campaigns, SCUBA training, and coral reef monitoring.

Establishing a state-of-the-art visitor center

Visitor centers at protected areas allow management to centralize its education programs, providing visitors and community members a “one-stop shop” for information on the MPA. Such centers can also serve as tourism destinations in themselves. Reef HQ, the national education center for the Great Barrier Reef, is an example of this, featuring the world’s largest living coral reef aquarium and a virtual tour of the Great Barrier Reef Marine Park (<http://www.reefhq.com.au>).


In January 2007, the multi-use Florida Keys National Marine Sanctuary in the US opened its new Eco-Discovery Center, which it describes as representing the state of the art in park visitor education (http://floridakeys.noaa.gov/eco_discovery.html). Aiming to inform visitors about the Florida Keys ecosystem and inspire a sense of personal stewardship, the center features a variety of media and tools. One exhibit,

called “You Be the Manager”, allows visitors to play the role of a resource manager under various scenarios, each involving competing interest groups. Scenarios include (1) whether a shopping center should be built in the habitat of an endangered species; (2) whether motorboats should be allowed in shallow areas with sensitive seagrass; and (3) how a user conflict should be resolved between recreational fishing guides and personal watercraft users. The “manager” listens to stakeholder views, then must choose from a brief list of management options. Mary Tagliareni, sanctuary education and outreach coordinator, says there are no right or wrong answers. “Visitors get to see the issues from the various points of view and how these decisions will impact the various stakeholders,” she says.

Other exhibits include interactive kiosks with videos, maps, and photos about various habitats, and a simulated dive camera with a built-in video screen that allows visitors to play the role of a videographer on the reef. There is also a walk-through model of the Aquarius underwater laboratory (profiled in *MPA News* 8:5, “Bringing MPAs Online...”), with sound recordings from inside Aquarius and video footage from outside its portholes. The real Aquarius lab is located in one of the sanctuary’s no-take zones, and is operated by the National Oceanic and Atmospheric Administration’s Undersea Research Center. Says Tagliareni, “People can learn what it is like to be a scientist living underwater.”

By creating a centralized outlet for information on the Florida Keys ecosystem, the Eco-Discovery Center avoids the bureaucratic boundaries that defined the sanctuary’s education programs in the past. Multiple government agencies at the state and federal levels are involved in managing the ecosystem, and previously their education programs were scattered. Now, staff from each of the agencies work together at the center and provide coordinated outreach to the public.

“Rather than focusing on the individual agencies and their specific missions, the center gives us an opportunity to focus on the ecosystem: what it is, how the different components are related, and how residents and visitors can be good stewards,” says Tagliareni.

The center also allows people to interact with the sanctuary in a new way, with no direct environmental impact. Amid the region’s growing human population and expanding tourism base, this is significant. Says Tagliareni, “It provides an alternative means of accessing the environment, especially those sensitive areas that are closed to the public.” 

In next month’s MPA News: Phil Dearden, leader of the MPA Working Group for Canada’s Ocean Management Research Network, explains why educating MPA visitors is essential, and offers tips for managers on how to harness “teachable moments”.

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MPA Perspective **Aligning the Interests of Anglers and**

Conservation Groups on MPAs

By Leon Roskilly

According to government reports, there are two- to three-million recreational sea anglers in the UK alone. Worldwide, there are likely tens of millions more. Most anglers are very conscious of marine conservation issues and have seen first-hand the degradation of fish stocks and the marine environment. They are anxious that action be taken to reverse the damage that has been done.

Because of this, anglers are instinctively in favor of creating protected areas. This includes MPAs that place restrictions on angling activity. However, such restrictions must be proportionate and necessary: restrictions proposed on the basis of dogma or politics, or on which anglers are not properly involved in the consultation process, will be opposed.

If the environmental NGO community is looking for public support for protection of the marine environment, the recreational sea angling community represents a powerful potential ally open to lending a hand and taking ownership for what happens in those waters. Below are two ways this alliance can be built.

Creating compensatory areas

Anglers are aware that the best places to fish often involve structure of some kind: an underwater reef or gully, a rocky area, a slightly raised gravel bank, etc. These areas can be particularly rich in biodiversity and are often the places that fish come to feed. They are also the places where MPAs are most likely to be established.

If it is necessary to take away a productive angling area — which threatens a backlash from anglers — then this situation can be turned into a “win-win” situation by involving sea anglers in creating a compensatory area for them nearby. In this compensatory area, a previously unproductive site will be enhanced artificially to create a new angling area. An example of this would be building a rocky outcrop off a beach, thus creating a near-inshore artificial reef or gravel bank.

Such a project — involving anglers and angling interests in planning and perhaps financing — will produce a double benefit for the marine environment. While the ecologically important area is protected inside an MPA (with which everybody would be onboard), there will be an “enhanced” area that anglers can enjoy. This enhanced area can also provide research opportunities and help address the overall aim of restoring the marine environment.

Restoring ecologically damaged areas

The reverse of the above is also an option. Nearly all proposals for protected areas involve protecting existing

fishing sites and displacing existing fishing effort. It may be more productive, and more politically acceptable, to focus protection efforts instead on an area that has been damaged — by beam trawling, for example — and take physical action to restore its original characteristics.


Because the area will have been of little or no socio-economic value due to its damaged state, there is unlikely to be any great problem with excluding activities during the recovery process and beyond. At the same time, there is likely to be interest in the additional productivity benefits accruing to the overall marine environment — and to stakeholders — from the site’s recovery.

It could be argued that such intervention in a “natural” environment is not in accordance with nature conservation. But what has to be realized is that there are no “natural” areas in the seas around the UK. Just as the modern countryside is the result of agricultural activity, so our underwater seascapes and communities have been totally transformed by human activity. Just as previously used land can be enhanced by planting hedges, and reintroducing plants known to improve biodiversity, there should be no reason not to consider similarly enhancing (or restoring) the structure of the underwater land.

Working together

Anglers have demonstrated that they can organize and successfully scupper plans for MPAs. In the UK, this has happened in at least two instances (Whitsand Bay and Skomer). The tragedy has been that in both cases, opposition arose because of a lack of consultation. Once planning was underway, it became impossible for government to engage objectively with the angling lobby, explore the benefits available, or explain the need to displace angling activity.

The greater tragedy is that now there are a number of people within the angling lobby who are firmly committed to opposing marine protected areas in principle, and who have experience in organizing opposition.

This has led to a damaging and unnecessary split between the otherwise environmentally aware angling lobby and the “green movement”, which then has to realign its own resources and energies to meet the opposition from the angling lobby. Both movements should be, and could easily have been, working together for the same ends. 

Editor’s note:

Leon Roskilly is national coordinator of the Sea Anglers’ Conservation Network (SACN), a UK-based organization committed to sustainable recreational fishing. He adapted the following essay from a longer article of his, “Marine Protected Areas and Angling — A Discussion Document”, posted on the SACN website in November 2006 (http://www.sacn.org.uk/Articles/Marine_Protected_Areas_and_Angling.html).

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Notes & News**Scientific consensus: sea level could rise half a meter this century**

The latest assessment from the UN's Intergovernmental Panel on Climate Change (IPCC) projects that sea level will rise between 18 cm and 59 cm over the course of this century, due to human-caused global warming and the resultant thermal expansion of sea water. The range reflects six different models, each based on various assumptions. The IPCC notes that these models do not include the possibility that the melting of polar ice sheets could be nonlinear. That is, ice sheets might reach a point at which the speed of their melting accelerates rapidly, leading to faster sea level rise than forecasted by the IPCC. Although recent observations of polar ecosystems suggest such acceleration could occur, current scientific understanding of the phenomenon was too limited for inclusion in the report's models. The report is available at <http://www.ipcc.ch>. For experts' recommendations on how MPA managers can ensure their sites remain relevant in the face of climate change, see the December 2006/January 2007 edition of *MPA News*.

Report examines links between marine pollution and resilience to climate change

A new report from the UN Environment Programme highlights links between sustainability of coastal ecosystems and levels of pollution in a changing climate. The report cites recent research in the Seychelles: there, coral reefs that were bleached in the late 1990s by high sea-surface temperatures have generally recovered faster when facing lower levels of pollution, dredging, and other human-induced disturbance. Recovery was slower in more polluted waters. Christian Nelleman, senior officer of the report team, said, "We were well aware of the fact that land reclamation and coastal development could damage reefs in most tropical waters. What is really concerning is the fact that coastal pollution effectively may reduce the ability of reefs to recover." The report *Our Precious Coasts: Marine Pollution, Climate Change and Resilience of Coastal Ecosystems* is available in PDF format at http://www.grida.no/climate/coastal/screenfile/vitalcoastreport_lr.pdf.

Survey launched for marine area managers; opportunity to win US\$300 for participating

Managers and researchers of coral-reef marine managed areas (MMAs) are invited to participate in a survey of costs and benefits generated by MMAs and how these correspond with conservation success. Participants will be entered in a prize draw, from which ten individuals will be awarded US\$300 each. The survey, in English and Spanish, is part of ongoing research by doctoral candidate Venetia Hargreaves-Allen at Imperial College London (UK), with support from Reefbase and the WorldFish Center. The English version is at <http://www.iccs.org.uk/mmamanagerquestionnaire.htm>; the Spanish version is at <http://www.iccs.org.uk/mmamanagerquestionnaireesp.htm>. The deadline for participation is 1 June 2007. A follow-up report, including best practice guidelines, will be available by e-mail to those who request one in the survey.

Presentations available on fisheries management in Mediterranean MPAs

Presentations are available online from an October 2006 workshop on the management of fisheries inside several Mediterranean MPAs. The workshop was led by MedPAN, the network of MPA managers in the Mediterranean. The presentations, most of which are in French only, are in PDF format at <http://www.medpan.org/?arbo=telecharger&sel=THEMA&val=55>.

Article available on MPAs in Puerto Rico

A recent article in *Ocean & Coastal Management* journal (Volume 49 [2006]) describes past and present-day development of MPAs in the US commonwealth of Puerto Rico, from historically "top-down" designations to today's public participatory processes. The first MPA in Puerto Rico was designated in 1918. Paper reprints of the article "Marine protected areas in Puerto Rico: Historical and current perspectives" are available from the authors: Alfonso Aguilar-Perera (alfaguilar@gmail.com), Michelle Schärer (m_scharer@hotmail.com), and Manuel Valdés-Pizzini (m_pizzini@hotmail.com).

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