

## What Will MPA Planning and Management Be Like in 10 Years?: MPA Practitioners Forecast the Future

This month marks the 100<sup>th</sup> issue of *MPA News*. From the publication of our first issue nearly a decade ago, the field of marine protected areas has changed in significant ways. Some of these changes have been technological — including new, sophisticated software to help plan MPA networks — and others financial, such as the increased use of endowments to fund sites. The measurement of MPAs' effectiveness has emerged as a widely accepted part of management. And, perhaps most importantly, governments worldwide have agreed on the need for representative systems of MPAs, and set deadlines to meet that goal.

However, in other ways, the MPA field has remained the same. MPA practitioners still face many of the same basic day-to-day challenges they did in the 1990s: ensuring compliance, securing adequate funding, monitoring their resources, building management capacity, etc.

So what should we expect from the MPA field in the next decade? This month, *MPA News* asked several practitioners to forecast what the MPA field might look like by the time of our 200<sup>th</sup> issue. We asked them:

"Ten years from now, how will MPA planning and/or management be different from today?"

The answers below are in their own words and represent their personal views. Their comments do not necessarily reflect the positions of their organizations.

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### MPAs will be part of a "nimble" system of oceans management

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Between now and 2018, world leaders will have realized that declines in ocean health and productivity caused by poor management, and exacerbated by climate change, can no longer be tolerated. Fisheries depletions and jellyfish invasions, harmful algal blooms and dead zones will have threatened so many areas and species — including humans — that priority will be placed on protecting and restoring the ocean's integrity and

resilience. A "nimble" system of oceans management and governance will operate at local, national, regional and global levels to deliver ecosystem-based management in an open, equitable and adaptive manner. Networks of highly protected marine areas will be established to preserve the remaining healthy areas and restore the degraded ones.

By 2018, in marine areas beyond national jurisdiction — commonly referred to as the high seas — an international ocean agency will be established on behalf of all States and the global community. The laws of the sea will be enforced to allow access to the ocean and its resources only to those who abide by internationally and regionally agreed rules. The agency will be advised by a panel of scientific experts whose tasks include the development of bioregionally based spatial management plans. Such plans will allocate certain areas beyond national jurisdiction to specific (well-managed) uses as well as dedicate other areas for protection as part of a coherent network. Illegal activities will no longer thrive due to an effective global surveillance and enforcement system. Instead, the fish and responsible fishers will thrive, and all society will benefit.

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### MPAs will be fully accountable and performance-based

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In ten years' time, all MPA planning and management will be done using decision support tools. The *ad hoc* planning and management of huge natural assets will be seen as inappropriate — as ridiculous as running an engineering firm without modeling and economic software. Some of the more enlightened marine reserve networks will have public and auditable biodiversity accounts that inform us transparently and credibly about their state. These accounts will be derived from cost-effective long-term monitoring regimes. Monitoring with no apparent purpose will be a thing of the past.

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Once we have professional and expert management and accounting for marine reserves then international companies and governments will begin to invest in these natural assets by buying auditable outcomes. For example, countries or agencies that can deliver transparent and credible data that show they are maintaining or restoring biodiversity in their marine ecosystems will be rewarded and become prosperous. The bottom line: MPA management will become a fully accountable and professional enterprise that rewards performance based on outcomes. These professionals will be as highly trained as engineers and be continually retrained.

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### **There will be greater stakeholder engagement in planning**

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One lesson that we have learned (often the hard way) and we are increasingly applying is that stakeholders' engagement in MPA planning and management is key to the success of MPAs. While the need to involve local communities and stakeholders is largely recognized all over the world, and while there are several examples of effective partnerships with various sea users, we still have a long way to go to achieve genuine engagement with stakeholders especially during the planning process. There are numerous examples of recently planned MPAs that still do not consider stakeholders' interests, or where their engagement comes in very late stages — more to comply with an obligation rather than genuinely understand their concerns and needs. This inevitably leads to conflicts and problems in enforcement.

I think (and hope) that ten years from now, engagement with local communities and stakeholders will be systematic and will have actually incorporated the numerous lessons we have learned from current examples of partnerships with local communities and stakeholders. Their views and interests will be taken into account from the early stages of planning processes. MPA planning and management will also pay attention to building and improving the capacity of local stakeholders so they can effectively engage in decision-making processes and management activities. This will contribute to increasing trust between the various actors, and a greater commitment to complying with MPA regulations.

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### **There will be more, and more-diverse, MPAs**

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From a Norwegian perspective, MPAs in ten years' time will become more common and more diverse in terms of what they protect. The number of MPAs is set to increase considerably. And there is a need to design MPAs so that they match the biological, legal, economic and political circumstances in various regions.

I think we also will see a stronger temporal element, with the level of regulation varying through the year. In terms of decision-making, it seems that the move toward ecosystem-based management by way of comprehensive management plans has fostered a culture of multi-sectoral cooperation.

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### **There will be greater use of management systems that reflect political and economic compromise, and tradeoffs between use and protection**

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MPA management in the tropics will change slowly in the next ten years due to the inertia of the current management training and practices. The benefits of management will be more widely recognized. There will be less resistance to management and more knowledge about the consequences. But greater recognition of tradeoffs and political compromises will produce management systems that reflect these tradeoffs. Management will differ in each socio-economic condition and will often include more restrictions on gear and allowable catch as opposed to the fishing/no-fishing dichotomy.

There will be continued exploration of how to increase the participatory process and to increase the responsibilities and diversity of managers and sharing of responsibilities with users. But effectiveness will continue to be constrained by cost limitations. This will lead to more specific local-level solutions that have low financial, social, and opportunity costs. Management will, therefore, move toward systems reflecting tradeoffs. Restricted-use areas — in which there are regulations on use but not a total ban — will become more politically feasible, supported, and self-managing than large fishing closures. This will help solve the paper park problems, but will also come with the recognition that marine wilderness is only seldom achievable in most countries.

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## There will be greater recognition of the need for strict protection

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Anyone with first-hand experience of establishing MPAs can attest that ten years is not a long time (unless you count it in gray hairs). In many places, ten years is about how long it takes to build sufficient support before proposals to create an MPA get taken seriously.

But individual struggles aside, ten years are enough time for great strides to be taken in MPA policy. I would have been delighted to know in 1992 when I was in my second year of research on MPAs that ten years on, the World Summit on Sustainable Development would commit coastal nations of the world to establish national networks of MPAs by 2012. My hope is that the next

ten years will see a similar step-change in the way nations approach the management of their MPAs.

Many countries, my own included (UK), see MPAs as a means of balancing competing and conflicting activities in the sea. They view them as tools to allocate access to resources among different users, rather than as tools of protection. There is still a great reluctance to admit that past human uses of the sea have seriously compromised the integrity, richness, and value of ocean habitats. We will see little benefit from most MPAs while they remain lightly protected. Ten years from now, I hope that managers will recognize more willingly the need for high-level protection from human impact to redress past losses, recover ecosystems, and rebuild their resilience. I also hope that the scale of our ambitions for coverage of highly protected MPAs will have risen in tandem. 


## US President Bush Considers Major New MPAs for Central and Western Pacific

US President George W. Bush has directed his administration to assess whether large marine areas under US jurisdiction in the central and western Pacific should receive greater protection, such as through designation as MPAs. In the central Pacific, this includes the waters surrounding Johnston Atoll; Howland, Baker, and Jarvis Islands; Kingman Reef; Palmyra Atoll; Wake Island; and Rose Atoll. In the western Pacific, the area includes waters around the northern islands of the Commonwealth of the Northern Mariana Islands, including parts of the Mariana Trench.

The areas in question are enormous. The central Pacific areas, for example, total more than 2 million km<sup>2</sup>. President Bush asked his administration to consider “cultural, environmental, economic, and multiple use implications of any [recommended] measures,” including the measures’ compatibility with various extractive activities, such as fishing, petroleum drilling, and mining. His memo, titled “Potential Marine Conservation Management Areas”, is available at [www.whitehouse.gov/news/releases/2008/08/20080825-2.html](http://www.whitehouse.gov/news/releases/2008/08/20080825-2.html).

“President Bush is on the cusp of conserving more ocean territory than any leader has ever done,” said

Fred Krupp, president of Environmental Defense Fund. “That’s an amazing legacy to leave the nation.”

Elliott Norse, president of Marine Conservation Biology Institute, says protection of these areas will depend on the amount of public support the Bush administration receives in favor of conservation. “This is not a done deal,” says Norse. “Everything will depend on who the administration hears from and the quality and quantity of information it receives.” Norse says safe havens in the Pacific are needed for corals, migratory species, and big fish species that are in decline. He would like to see the administration protect the entire EEZ of the central Pacific areas in question (with the exception of Rose Atoll, whose governor supports a smaller area), and to apply full no-take regulations. Norse encourages US citizens to let the Bush administration know their position on this issue. 

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Juan Carlos Huitron Baca is subdirector of Isla Mujeres-Cancún National Park in Mexico.

## **MPA Perspective** Managing the “Nemo Effect” of Globalization in the Reef Fish Community

By Juan Carlos Huitron Baca

Isla Mujeres and Cancún, on the Yucatan Peninsula of Mexico, are popular destinations for tourists from all around the world. Development of the area began in the 1970s with a project to create the infrastructure for a massive tourism resort. In 1996 a national marine park — Isla Mujeres-Cancún National Park — was decreed for the protection of the coral reefs used by visitors. The main threats to these reefs were sewage, fishing, and uncontrolled underwater activities.

After 12 years, this National Park has systematic surveillance, mooring buoys, monitoring programs (including water quality, biological and sociological data), an environmental education program, alternative sites with artificial reefs for inexperienced divers, and a restoration program for boat groundings and hurricane impacts.

On several occasions, rangers of the Park have received reports of “rare” fishes at some of the diving sites — fish that were unlike native Caribbean species. The reports were not confirmed until 14 June 2008, when Park staff sighted an angelfish from the Indo-Pacific region on a reef zoned for non-use. A photograph of the fish was taken and it appears to be an individual of *Pomacanthus semicirculatus*. We believe this fish was liberated by an aquarist (aquarium owner) with the good intention of giving it a new home. We call this the “Nemo Effect”. Since that sighting, a three spot damselfish from Australia has also been sighted and confirmed in the Park.

Aquariums around the world demand fishes of different sizes, colors and prices. Modern transportation facilities and commercial trade allow aquarists to obtain almost any kind of fish. Fishes from the Indo-Pacific oceans are in high demand at aquariums in the Americas, and aquarium shops are multiplying in the fast-growing city of Cancún. There are, however, several ecological threats posed by introducing exotic species in any ecosystem: resource competition, predation and, in some cases, hybridization. Angelfish, for example, are known to be able to hybridize between some species.

To address these threats, the strategy that Isla Mujeres-Cancún Park will follow is twofold, consisting of a monitoring program to detect and remove exotic fishes in the protected reefs and an educational program to prevent aquarists from liberating the fish they do not want anymore.

For the monitoring program, the Park is providing underwater cameras to its personnel in case they see a fish they cannot identify. The Park rangers are trained to identify coral reef fish from the Caribbean and, as such, are able to notice a “strange” fish. The more challenging aspect is removal, especially in Isla Mujeres Bay where we have several patch reefs and fishes can move a lot in search for food.

The educational program has not yet started, but the objective is to inform aquarists about the ecological problems if they release non-native fishes to our reefs. We plan to put this information in every pet shop and veterinary facility in the area. Another part of the program is to collaborate with dive shops in a volunteer program to report any strange fish on the reef. This will require some training for divemasters and scuba instructors. We want to combine this volunteer program with a bleach-watch program we are going to start in 2009.

The management plan for the Park strictly prohibits the introduction of any exotic animal or plant, with a penalty. However, to apply this penalty we need to catch the person in the act, and this is difficult considering all the possible sites along the coastline. So far there is no rule or law in place outside the park to require aquarists to consult an environmental authority before relocating their pets. I am suggesting that such a law be instituted, and the educational program will provide a procedure for such consultation. 🌊

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**Structures in Declared Fish Habitat Areas**

By Mary Lawrence, Dave Sully, John Beumer, and Dawn Couchman

The Department of Primary Industries and Fisheries (DPI&F) in the state of Queensland, Australia, is developing a framework and guidelines for conducting an inventory of man-made, instream structures in Queensland's declared Fish Habitat Areas. The project, "Targeted Collection of Inventory Data for Wetlands Fish Barriers in the Great Barrier Reef Catchment", is being funded by the Australian Government's Natural Heritage Trust and is a component of the Queensland Wetlands Programme. Outcomes are to lead to informed management decisions for strategic modification or removal of problem structures in cooperation with investment strategies of regional natural resource management (NRM) groups and other key stakeholders.

A Fish Habitat Area (FHA) is a form of multiple-use marine protected area, protecting natural fish habitats (e.g., vegetation, sand bars, rocky headlands) from alteration and degradation related to development. FHAs allow for natural processes and community use, including community access, boating, commercial, and recreational and traditional fishing. First designated in the late 1960s (and previously referred to as Reserves for Fisheries Purposes), there are now 73 FHAs along the Queensland coast, providing protection for about 881,400 hectares of high-quality fish habitats.


As the human population along Queensland's coast continues to grow, the installation of instream structures increasingly impacts FHAs. Examples include weirs, levee banks, road crossings, and floodgates that may act as complete or partial barriers to fish movement, as well as jetties, pontoons, moorings, revetment walls, and boat ramps that have a range of impacts on fish habitats — locally, upstream, and downstream. The diversity of instream and crossing structures, and their locations within catchments, can modify flow regimes, causing permanent physical disturbances that result in direct habitat loss. This leads to fish population declines, reduced distributions of species, and degraded fish habitats, which can have detrimental effects on commercial, recreational, and indigenous fisheries.

The guidelines will be based on trial inventories within two declared FHAs in north Queensland: Trinity Inlet (7212 hectares) and Hinchinbrook (12,268 hectares). The guidelines will provide NRM groups and other key stakeholders with step-by-step instructions on undertak-

ing structure inventory projects throughout Queensland's declared FHA network, and will consist of two user-friendly parts:

- An inventory protocol that describes how to assess the impacts of instream structures and conduct inventory fieldwork; and
- A response protocol including a decision support system (DSS) that outlines the prioritization for identification of problem structures to deliver enhanced management outcomes. These outcomes may include removal, modification, or relocation of the structures.

If legal structures are considered a high priority for management response (such as relocation), any such response will be undertaken only in cooperation and collaboration with key stakeholders including landholders, structure owners, and relevant government agencies. The selected management response will depend on the type of structure and nature of impacts, as well as the availability of funding to carry out remediation works. The project is not about removing justified and legal private and public infrastructure, but rather to mitigate the impacts of problem structures on fish habitats and/or fish movement wherever possible.

The goal is to facilitate a systematic, integrated approach to identifying and prioritizing a management response to all man-made instream structures that have negative development impacts on fish habitats. In doing so, the guidelines will contribute significantly to enhancing fish habitats and their management within Queensland's FHAs. The project is due to finish by the end of 2008, and the guidelines are expected to be ready for use within the first half of 2009. 

**For more information**

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The authors of this essay — Mary Lawrence, Dave Sully, John Beumer, and Dawn Couchman — are all with the Queensland (Australia) Department of Primary Industries and Fisheries.

## **MPA Tip:**


### **Tracking ships to avoid damage to sensitive areas**

In "MPA Tip", we present advice on MPA planning and management. Below, a technique for monitoring ship traffic is described. The purpose is to help avoid vessel damage to sensitive areas, such as through groundings or illegal anchoring.

This tip was adapted by *MPA News* with permission from Duncan Vaughan, who described the technique on the Coral ListServer (<http://coral.aoml.noaa.gov>) in September 2007. Vaughan is the deputy clerk and fishery officer for the Eastern Sea Fisheries Joint Committee in the UK.

**Tip:** MPAs should consider using the Automatic Identification System, or AIS, to monitor ship traffic. Since December 2004, AIS has been required by the International Maritime Organization to be installed on virtually all large commercial ships worldwide, including tankers and cruise liners. The technology uses a normal VHF signal and automatically transmits the vessel's name, position, course, speed, and rate of turn. Other information, even the type of cargo it is carrying, can be input by the crew of the vessel.

To track AIS signals, an MPA needs to install a VHF antenna and base station, both on land. The base station is then connected to a computer that can store the movements of vessels that come into range (the range depends on the height of the antenna, although 20 nautical miles is not uncommon). Should there be an enforcement incident involving a vessel fitted with AIS, the recorded movements of the vessel can be submitted as evidence. It is possible to link the AIS to a pager or cell phone, so that when a ship enters a no-go zone it gives automatic notice and managers can respond accordingly. To make the set-up process easier, you may want to subscribe to an AIS provider, such as AIS Live ([www.aislive.com](http://www.aislive.com)) or others. The cost of an installation kit is about US \$2500. The use of AIS was recently promoted as a management tool by St. Eustatius Marine Park in the Caribbean to combat illegal anchoring in the MPA.

Although commercial fishing vessels are not required under international law to carry an AIS, licensed fisheries can make it a condition to have the technology on board. This provides nearby MPA managers with a tool for monitoring fishing activity inside their protected areas. 

#### **For more information**

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#### **International Maritime Organization AIS website**

[www.imo.org/Safety/mainframe.asp?topic\\_id=754](http://www.imo.org/Safety/mainframe.asp?topic_id=754)

#### **US Department of Homeland Security AIS website**

[www.navcen.uscg.gov/enav/ais/AISFAQ.htm](http://www.navcen.uscg.gov/enav/ais/AISFAQ.htm)

#### **St. Eustatius Marine Park**

[www.statiapark.org/downloads/downloads/St%20Eustatius%20Marine%20Park%20Tanker%20Impact%20Report-October%202007.pdf](http://www.statiapark.org/downloads/downloads/St%20Eustatius%20Marine%20Park%20Tanker%20Impact%20Report-October%202007.pdf)

## **Notes & News**

### **First call for oral presentations at International Marine Conservation Congress**

The International Marine Conservation Congress (IMCC), to occur 20-24 May 2009, has announced its first call for oral presentations, posters, and 4-minute "speed presentations". The deadline for submissions is 15 October 2008. Details are available on the IMCC website at [www2.cedarcrest.edu/imcc/proposals.html](http://www2.cedarcrest.edu/imcc/proposals.html). The IMCC will encompass the Second International Marine Protected Areas Congress, and will be held in Washington, DC, in the US.

### **WCPA – Marine launches MPA blog**

The World Commission on Protected Areas – Marine has launched a new web-based news platform to provide up-to-date information on the commission's MPA-related work. Called The Official MPA Blog, the website allows users to access new information and search through archived news from WCPA – Marine. Information is being updated every 1-3 weeks, says Dan Laffoley, vice-chair of WCPA – Marine. In the first two weeks since its launch on 13 August 2008, the blog received visitors from 83 countries, says Laffoley. The blog is at <http://officialmpa.blogspot.com>.

### **Report released by a European project on fisheries management in MPAs**

The report of the third and final workshop of the Environmentally Sound Fishery Management in Protected Areas project (EMPAS) is now available. Coordinated by the International Council for the Exploration of the Sea (ICES), the three-year EMPAS project has aimed to develop fisheries management plans for Natura 2000 sites within the German EEZ of the North Sea and Baltic Sea. It is also meant to serve as a pilot for development of similar plans throughout offshore EU waters. The publication *Report of the Workshop on Fisheries Management in Marine Protected Areas* can be downloaded at [www.ices.dk/iceswork/wgdetail.asp?wg=WKFMMPA](http://www.ices.dk/iceswork/wgdetail.asp?wg=WKFMMPA). The EMPAS project website is [www.ices.dk/projects/empas.asp](http://www.ices.dk/projects/empas.asp).

### **Proceedings available from Mediterranean MPA network conference**

Proceedings from the First Conference of the Mediterranean Marine Protected Areas Network (MedPAN), held 24-27 October 2007 in France, are now available online. The conference objective was to promote the development of a comprehensive, representative, and effectively managed network of MPAs throughout the Mediterranean region. The proceedings are available in English and French at [www.medpan.org/?arbo=article&sel=ID&val=424&language=en](http://www.medpan.org/?arbo=article&sel=ID&val=424&language=en).