

Global Targets for MPA Designations Will Not Be Met; Experts Respond

International goals for the protection of oceans through MPAs will not be met by their set deadlines, according to a study announced at the First International Marine Protected Areas Congress (IMPAC1), held in Geelong, Australia, in October 2005.

Louisa Wood, a Ph.D. candidate of the *Sea Around Us* project at the Fisheries Centre, University of British Columbia (Canada), released data indicating that the World Parks Congress target of creating a global system of MPA networks by 2012 — including “strictly protected areas” amounting to at least 20-30% of each habitat (*MPA News* 5:4) — will not be reached until at least 2085 at the current rate of global MPA designation. The 2085 date in itself represents a best-case scenario that is unlikely to occur. It assumes that all MPAs designated from now onward will be “strictly protected” — *i.e.*, no-take — and that all existing MPAs will be converted to no-take as well. More realistic assumptions would delay the projected achievement date well past 2085, says Wood.

Similarly, a recommendation made earlier this year by a subsidiary body of the UN Convention on Biological Diversity (CBD) — that 10% of all marine and coastal ecological regions be conserved in MPAs by 2012 — will not be met until 2069.

“The current rate of increase in protection is far below what is necessary to meet these targets,” says Wood. Her data were gathered as part of the MPA Global project, which is building an enhanced database of MPAs worldwide (*MPA News* 6:8). Wood is heading the initiative, a collaboration with the UNEP-World Conservation Monitoring Centre (UNEP-WCMC), IUCN World Commission on Protected Areas-Marine, and World Wildlife Fund.

Wood’s projected rates of MPA designation are based on growth of global MPA coverage to date. Her projections were built on a linear regression of cumulative MPA area over time since 1979, and extension of that rate into the future. Wood emphasizes that the rate of designation represents a snapshot based on recent history. As initiatives to increase marine protection are implemented in national waters and on the high seas, the rate of increase in protection — and consequently the time by which targets are met — may also change.

Responses

Delegates to IMPAC1 responded with their thoughts on the implications of these findings, and how rates of MPA designation could be increased.

“There is no doubt that when the targets were set they were considered feasible,” says Nik Lopoukhine, chair of the IUCN World Commission on Protected Areas (WCPA). “But unless there is a concerted effort to create more MPAs — and I would suggest they need to be at a scale that approaches that of the Great Barrier Reef Marine Park — we are staring at failure. Success will be dependent on bringing in the resource sectors, the transportation sectors, and the broader communities to buy into the vision that was forged at the World Parks Congress and the targets under the Convention on Biodiversity.”

Tundi Agardy, executive director of Sound Seas, a US-based NGO, cautions that the push for ambitious MPA targets on very short timeframes risks the danger of rewarding decision-makers for simply picking the “low-hanging fruit”: designating sites that are politically easy rather than ecologically important. Despite this, she says, achieving the CBD and World Parks Congress targets in a meaningful way remains possible. “Many nations are consciously or sub-consciously moving toward ocean zoning, in which designation of special areas as MPAs is a critical step,” she says. “And the world is coming to realize the value of coastal and marine ecosystem services, and will take extraordinary steps to establish regional or multi-lateral frameworks to make high-seas MPAs and regional MPA networks a reality.”

Penelope Figgis, WCPA vice chair for Australia and New Zealand, says the main factor in making progress on MPA designations is communication. “If the general community and decision-makers are adequately exposed to the wonders of the marine world and the truth about its destruction and degradation, they will be moved to act,” she says. “We need communication experts as much as we need scientists.” She acknowledges the likelihood of achieving the World Parks Congress target worldwide is low, but suggests the target still creates momentum for significant gains in

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More IMPAC1 coverage to come


MPA News will report more news from the First International Marine Protected Areas Congress in our December 2005 issue.

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marine protection in various regions. “Targets are a very useful mechanism,” she says. “They create an impetus for a program and allow effort to be measured. Even if we fall short of the World Parks Congress and CBD goals, they will provide a stepping-stone for future targets after 2012.”

Richard Kenchington, board chair of the International Coral Reef Action Network (ICRAN), says achieving the World Parks Congress target for strictly protected areas is unlikely to occur “for some decades”, as it would require a scale and complexity of policy development and planning that is improbable within the next several years. Although he considers strictly protected areas to be an essential component of marine conservation, he questions whether the focus on them is more of a distraction than an aid. Where marine habitat protection is regarded simply as a conservation sector “use”, he says, it can polarize (i.e., “no-take areas versus fisheries”) rather than foster a coherent pursuit of both conservation and ecologically sustainable use of natural resources. He would like to see greater appreciation for the habitat protection afforded by other kinds of management measures, such as areas that are closed to certain gear types but open to others. “Conservation is more likely to be achieved through marine ecosystem and resource management organizations providing multi-objective policy, planning, and management than through continuing sectoral confrontations between

conservation and fisheries,” he says. By recognizing that other management regimes beyond no-take zones can protect habitat effectively, he says, our conception of “marine protected areas” will broaden, as will our appreciation for the true extent of global marine conservation efforts. 

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Notes & News

Canada designates three MPAs following years of cooperative planning

Canada has designated three new MPAs along its Atlantic coast. The MPAs at Gilbert Bay, Eastport, and Basin Head protect unique ecosystems, and their designations conclude years of public consultation on each. Consultation with stakeholders on the Gilbert Bay MPA, for example, lasted seven years; this MPA in the province of Newfoundland and Labrador will protect a genetically distinct population of northern cod (*MPA News* 4:1). The Eastport MPA, initiated by local lobster fishermen, will help to conserve two prime lobster spawning and rearing grounds, also in the province of Newfoundland and Labrador. The Basin Head location, in the province of Prince Edward Island, has been designated primarily to protect a unique strain of Irish moss. Press releases on the designations and background information on Canada’s Federal Marine Protected Area Strategy are available at http://www.dfo-mpo.gc.ca/media/infocus/2005/20051011_e.htm.

Fiji designates five MPAs as part of network

Local chiefs of Fiji’s Great Sea Reef have established five MPAs with permanent no-take “tabu zones” as a step toward meeting the nation’s commitment to build an MPA network protecting 30% of Fijian waters by 2020. The Great Sea Reef, locally known as *Cakaulevu*, stretches over 200 km in length and is among the longest barrier reefs in the world. It is home to thousands of marine species and is an important fishing ground for local communities. Planning for the new MPAs was assisted by WWF and by the Locally Managed Marine Areas (LMMA) Network, a program to help locally managed marine areas in the Western Pacific benefit from the collective experience of traditional leaders, conservation staff, and others (*MPA News* 5:8). For more information on the new Fiji MPAs and the LMMA Network, visit <http://www.lmmanetwork.org>.

MPA Perspective What Qualities Make a “Great Park”

By Artie Jacobson

Imagine your ideal protected area. What qualities would its management have, and what actions would management take? In short, what would make it a *Great Park*? I have given thought to this, based both on my experience in the Whitsundays over 18-odd years and my recent travels to several parks in different countries. Below are some of the qualities that I believe comprise excellence:

- A Great Park protects and presents a broad range of values or attributes that are obvious and unique in the region, nation, or world.
- A Great Park emanates a strong sense of welcome or “arrival” to the visitor through appropriately presented and designed infrastructure: e.g., a strategically placed and state-of-the-art information center; appropriately placed signs; relevant educational material; and ranger-guided tours.
- A Great Park has a progressive natural resource management program in place that sustains existing values. The program is science-based, and recovery programs are underway where required.
- A Great Park encourages the expectation by management, park users, and the community that all parties utilizing the resource have a sincere desire to conduct their business in sustainable ways, with programs in place that provide for continual improvement in resource management and ongoing responsible use.
- A Great Park provides a range of recreational opportunities for visitors, supported through sustainable planning programs including social and physical carrying capacity limits.
- A Great Park has a successful commercial tourism industry that actively supports the park presentation program. Commercial tourism opportunity and subsequent growth should be identified and well-planned prior to opening the park “for sale” via tourism.
- A Great Park requires tourist programs to be formally accredited against a set of criteria that encourage an eco-friendly style of operation, are aligned with a recognized accreditation program, and are supported by management agencies to help maintain the standards. Compliance with standards should be self-regulatory, again with ongoing support from management agencies. The management agencies are seen as “service providers” to the industry as well as regulators — the regulatory component is not the “be all and end all”.
- A Great Park has a management system that deals with non-compliant users fairly and appropriately to impress upon the community and other resource users that low tolerance exists for any form of disrespect toward this special place.
- A Great Park generates substantial revenue for park management through providing high-order opportunity for the commercial tourism industry and visitors, and partnership arrangements that allow for other park management contributions to be made (i.e., funding of additional rangers by industry). The revenue supports ongoing maintenance and further development of the park’s management program. Ranger services build “real time” partnerships.
- A Great Park has a seamless management program across the different tenures (marine and terrestrial) in the eyes of the visitor, tourist operator, and other resource user. The user-permit administration and payment systems will be considerate of the needs of permit-holders, placing minimal administrative burden on operators.
- A Great Park has a workforce with a staff management structure suited to both agency and local park management needs. It has sufficient flexibility within the structure to adapt to change, and consists of individuals who possess a strong conservation ethic, care for one another, and are able to work effectively and efficiently as a team to meet agency outcomes.
- A Great Park has a management team that performs to the highest presentation standards at all times, including but not limited to: professional and friendly attitude of staff; conformity with dress standards (particularly the wearing of the dress uniform); and good maintenance and presentation of vehicles, vessels, and other equipment and park infrastructure.
- A Great Park demonstrates a government-wide approach to park management through shared resource arrangements with other departments.
- A Great Park generates a feeling within the community that the park is a part of the community: a special place that contributes to the social, economic, and cultural well-being of the community as a whole. As a consequence, the park is afforded ongoing care and protection by all.
- A Great Park generates within the community a strong sense of ownership of the park. The park fosters an equally strong confidence within the community of the park management capacity.
- A Great Park contributes to providing meaningful local employment opportunities both inside and outside the park, adding to the sense of community ownership of the park.
- A Great Park has a strong influence on the greater community such that a voluntary desire is established within the community for the greater area to become a “Great Place”.
- A Great Park becomes a model for other parks to follow. 

Editor’s note

Artie Jacobson, author of this essay, has spent nearly two decades as a ranger and manager in the Whitsunday Region of the Great Barrier Reef for the Queensland (Australia) Parks and Wildlife Service. The Whitsunday region, comprising 1% of the area of the Great Barrier Reef Marine Park, accounts for 60% of the park’s tourism activity.

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Editor's note

The authors of this essay have been involved, directly or indirectly, in processes to plan a system of no-take marine reserves within the Channel Islands National Marine Sanctuary (*MPA News* 4:6) in the US. Michael Robinson is a doctoral student in geography at the University of California at Santa Barbara (UCSB). Chris Miller is a commercial fisherman and vice president of the California Lobster and Trap Fisherman's Association. Chris Hoeflinger is a commercial fisherman and fishery issues organizer. Barbara Walker is a geographer with the National Center for Geographic Information and Analysis at UCSB.

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MPA Perspective Problems and Recommendations for Using GIS to Improve Decision-Making in California's Channel Islands Marine Reserves

By Michael Robinson, Chris Miller, Chris Hoeflinger, and Barbara Walker

In October 2002, the California Fish and Game Commission adopted a regulatory action for state waters of the multiple-use, 4292-km² Channel Islands National Marine Sanctuary (CINMS) in the US. The action closed approximately 10% of CINMS to all or most fishing. Following this, a related process was initiated to expand the reserve system to federal waters of CINMS, with the possibility of closing an additional 15% of the sanctuary. The latter process is ongoing.

To determine optimal locations for the closures in state waters, planners analyzed a variety of data layers in a geographic information system (GIS) decision-making tool. They mapped alternative MPA systems to examine theoretical impacts, with each system based on biodiversity and/or economic criteria. In an attempt by planners to minimize the economic impact of potential closures, local stakeholders were asked to participate in two surveys designed to assign values to fishing areas and habitats:

- A *value distribution survey* collected economic data via a grid of 3000 1x1 square mile boxes superimposed over an area map. The grid was displayed on 8.5-inch by 11-inch pages, which allowed for little detail and did not include bathymetry or substrate information, both significant factors in determining fishing and habitat locations. Economic data were collected for target species that together comprised over 99% of the ex-vessel value of the 1999 CINMS commercial catch. Each fisherman was allocated 50 X's to be placed over his best area, using the 1x1 mile grid system. A value was then assigned to each block by comparing selected areas to confidential landing receipt information collected in standard 10x10 mile grids, which participants had released to a social scientist. This scientist assigned a value to each 1x1 block for each participant, based on the participant's ten-year average revenue generated in corresponding 10x10 block landing receipts.
- A *Traditional Ecological Knowledge (TEK) survey* asked a variety of stakeholders — including commercial and recreational fishermen, marine tour operators, and recreational users — to identify areas of good habitat for specific species or marine activities. This information was combined to create an aggregate "use" map, which identified areas of good habitat and, consequently, fishing area for each species.


This was the first exposure to GIS mapping for most fishermen involved. It appears that many fishermen did not understand how the GIS tool would work, and either deliberately misrepresented their best fishing holes (to hide them from government and competitors) or unintentionally did so due to the grid system's inability to capture fine detail. This misrepresentation complicated the ground-truthing using the fish landing receipts. In addition, in the value distribution survey, many fishermen struggled when they were allocated only 50 X's for an area containing 3000 1x1 mile boxes. Lastly, the TEK data were consistently termed "anecdotal" in the decision-making process, and, from our understanding, were not directly incorporated in the GIS decision-making tool. The combination of these factors resulted in official economic impact data that, at least according to two primary commercial fisherman advocates, fell short of the intended purpose to calculate realistic financial impacts of MPA scenarios at CINMS.

In light of the above, the following are key factors that should be incorporated in the federal MPA consideration process and future MPA planning efforts:

1. Include bathymetric and substrate information in economic and habitat surveys, since this information plays a significant role in fish location and distribution.
2. Combine ecological and economic considerations in one process. Separation of these processes prevents planners from considering economic impacts and fishermen from understanding ecological considerations.
3. Use large maps to view bathymetric information, habitat information, and fishing effort — for example, one island per 11-inch by 17-inch map.
4. Update and ground-truth economic data by removing any 1x1 mile boxes that do not contain suitable habitat for target species. The map used in the economic process overgeneralized habitat, resulting in misstatement of many catch locations. Thus, much of the economic data appeared in wrong locations. Admittedly, some of this was due to misrepresentation by some fishermen, but it was also due to the difficulty of identifying proper squares on such a small map without bathymetry and substrate information. Economic impact analysis and final MPA placement were based on these incorrect catch locations.

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5. Examine overlap of existing regulations and no-fish areas: California conservation zone, trawl exclusion zone, areas closed to gill-net fishing, etc. Identify redundancies in regulations, simplify monitoring, and determine the best locations for reserves.

6. Make the GIS software, data sets, and a GIS technician available to all stakeholders. This allows stakeholders to become an active part of the decision-making process. As a result, they are less likely to feel that the technology is being used against them. 

Notes & News

Report: MPAs can protect against coral bleaching

A new report from IUCN states that, within the next 40 years, up to half of the world's warm-water coral reefs could be lost to coral bleaching unless measures are taken to protect reefs and make them more resilient. Co-authored by Rod Salm and Gabriel Grimsditch, the report *Coral Reef Resilience and Resistance to Bleaching* offers approaches for protecting reefs against climate change — a major cause of coral bleaching. These approaches include MPAs, which can relieve coral reef ecosystems from other stressors that can lead to bleaching, including pollution, sediment run-off, and overfishing. The report is available in PDF format at http://www.iucn.org/themes/marine/pdf/coral_reef_resilience_gg-rs.pdf.

Papers available on ecosystem-based management

The journal *Marine Ecology Progress Series* (MEPS) has published 13 papers under the theme "Politics and socio-economics of ecosystem-based management of marine resources". Although the journal is traditionally available by subscription only, this theme section is available online for free at http://www.int-res.com/articles/meps_oa/m300p241.pdf.

Guidelines available for applying precautionary principle

An international initiative to determine best practices for interpreting and applying the precautionary principle to natural resource management has released a set of 12 guidelines, based on the results of a consultative process carried out from 2002 to 2005. The precautionary principle states that action to protect the

environment may be necessary before scientific certainty of harm is established. The "Guidelines for Applying the Precautionary Principle to Biodiversity Conservation and Natural Resource Management" are available in English, French, and Spanish at <http://www.pprinciple.net>. The initiative is co-sponsored by IUCN, Fauna & Flora International, ResourceAfrica, and TRAFFIC.

Report available on socioeconomic monitoring in Western Indian Ocean

With the goal of improving the integration of social and economic concerns in marine resource management, an initiative is underway in the Western Indian Ocean to develop regional guidelines for socioeconomic monitoring. A new report documents the progress of this initiative, with results from a June 2005 project workshop in Mombasa, Kenya, organized by CORDIO, an international research program to respond to coral reef degradation in the Indian Ocean. The report describes potential roles of socioeconomic monitoring in the region, obstacles to establishing effective monitoring, indicators for measurement, and more. The monitoring guidelines are expected to be developed by late 2006. The 39-page *Report of the Partnership Workshop on Socio-Economic Monitoring (SocMon) in the Western Indian Ocean* is available online from ReefBase, at http://www.reefbase.org/References/ref_literature_detail.asp?refID=24451.

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Editor's note

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MPA Perspective Developing Guidelines for “Fish-Friendly” Aquatic Infrastructure

By Kurt Derbyshire

The Department of Primary Industries and Fisheries (DPI&F) in Queensland, Australia, is in the process of developing guidelines for “fish-friendly” structures. The guidelines will apply to aquatic infrastructure commonly developed along urbanized coastlines and waterways: piers, seawalls, marinas, boat ramps, boardwalks, and the like. Fish-friendly structures will:

- Cause minimal disturbance to natural fish habitats, and
- Provide an enhanced artificial habitat for fish, through innovative design features.

Here, the term “fish” is used in its broadest sense, and includes finfish, crustaceans, molluscs, etc.

The guidelines will apply to all Queensland waters, and will not be specific to MPAs. However, they will be particularly relevant to our set of MPAs called Fish Habitat Areas, discussed later. They may also be of interest to MPA managers elsewhere, particularly in regions with similarly growing coastal populations.

Aquatic infrastructure is widespread and is likely to expand with increasing coastal population pressure. Most of the Queensland population lives near the coast, and this is where most development occurs. Over the next 20 years, the southeast corner of the state (including the Sunshine Coast, Brisbane and the Gold Coast) is expected to absorb more than one-quarter of Australia's population growth. We believe that to achieve sustainable development, it is important that coastal infrastructure be designed for minimal impact on fish and their habitats, and that opportunities for beneficial use of artificial structures be capitalized upon.

The guidelines will emphasize the importance of minimizing damage to the natural habitats on which fish rely. Locating structures to avoid disturbance of critical fish habitats is a good place to start. Scheduling construction to avoid critical biological events (e.g., fish migration for spawning or recruitment) is also important. Once it has been determined that a particular location and time are appropriate for development, the challenge becomes how to enhance artificial structures as fish habitats, while still fulfilling their primary infrastructure purpose. Increased physical complexity may provide the key to enhanced artificial habitat for colonizing organisms and fish that feed and shelter there. Possible enhancements on structures include:


- Irregular surfaces that provide more interstitial spaces and increased surface area to allow colonization by marine flora and fauna;
- Grate decking to provide “skylights” that allow light penetration to the substrate;

- Crevices in seawalls to house cryptic species;
- Floating rather than fixed breakwaters to maintain water circulation regimes;
- Adding habitat modules to structures to provide additional habitat. Examples of commercially-available enhancement modules include the Reef Ball (<http://www.reefball.org>) and the Fish Hab (<http://www.berkeley-fishing.com/new/story.cfm?WhatsNewId=1&Position=1>).

One difficult subject that the guidelines need to address is the potential for aquatic infrastructure to facilitate “biological pollution”. It is possible that artificial structures can provide stepping-stones for pest species to invade environments that would otherwise not support them. The guidelines will suggest measures for minimizing this risk.

Research into fish-friendly structures, and monitoring of the impacts of aquatic infrastructure, will be encouraged. Monitoring of habitat-enhanced structures may provide useful information to help guide future fish habitat management decisions. The guidelines will link to DPI&F's Urban Fish Habitat Management Research Program (<http://www.dpi.qld.gov.au/fishweb/13347.html>), which identifies potential research projects, including the use of artificial structures as fish habitats.

As mentioned above, the guidelines will apply to all waters in Queensland — including Fish Habitat Areas (FHAs), a type of MPA declared under the *Fisheries Act 1994*. FHAs are an important component of the state's strategy for sustaining fish stocks and their dependent fisheries (*MPA News* 6:3, “Urban MPAs: Protecting Marine Habitats in the Midst of Human Populations”). Development in FHAs is severely restricted, being largely limited to maintenance of existing structures and to development of community facilities such as public boat ramps and jetties. A network of 71 FHAs protects some 8000 km² of critical coastal and estuarine fish habitats in Queensland, while allowing day-to-day community uses such as lawful fishing and boating activities.

The fish-friendly guidelines will emphasize that the potential benefits of artificial structures should not be used as justification for disturbing natural habitats; rather, infrastructure approval should be justified on the basis of need and benefit to the community. We hope that the guidelines will help to provide a balance between urban development and maintenance, or enhancement, of the productive capacity of fish habitats for Queensland's fisheries resources. We invite readers to contact us with comments or suggestions that could assist us in developing the guidelines. 

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