MPA news

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International News and Analysis on Marine Protected Areas

World Summit Calls for MPA Networks by 2012

Representative networks of marine protected areas should be established worldwide by the year 2012, and depleted fish stocks restored by 2015, according to an action plan agreed upon by global leaders at the World Summit on Sustainable Development (WSSD), held earlier this month in Johannesburg, South Africa. The agreement also calls on governments to incorporate an ecosystem approach in fisheries management by 2010, eliminate subsidies that contribute to fishing-industry over-capacity, and protect marine biodiversity on the high seas.

While vague on details for implementation, the fisheries accord represented an early breakthrough at the summit, sidestepping the objections of a group of countries, led by the US, to binding targets. The US, however, did successfully add the phrase "where possible" to the goal for restoring fish stocks, in light of the fact that some stocks could require much longer to recover than the 2015 target, even with little or no fishing occurring.

The full WSSD action plan agreed to by the 189 countries in attendance is available in Word format on the web at *http://www.johannesburgsummit.org*. The 54-page document ("Plan of Implementation") covers a wide range of issues on global sustainable development; the fishing accord begins with Item 29 in the plan.

Reaction to the fisheries accord

Graeme Kelleher, former chairman of the Great Barrier Reef Marine Park Authority and co-editor of the multi-volume work *A Global Representative System of Marine Protected Areas* (1995), said that critics may regard much of the WSSD fisheries accord as a "wish list". However, he said, the document could prove to be very useful.

"The main positive attributes are the setting of a time frame for the establishment of representative systems of MPAs, and the recognition that urgent action is needed on the high seas — beyond national jurisdictions — to protect biodiversity and achieve sustainable fisheries," said Kelleher. "If international agencies, regions, governments and communities adopt these as specific objectives and establish specific work plans to achieve them, together with the provision of the necessary resources, it could make a significant difference to the rate of protecting global marine biodiversity and to achieving sustainable fisheries."

Daniel Pauly, a fisheries biologist at the University of British Columbia (Canada), says the foundation of the fisheries agreement stands on work already done in MPA and fisheries science. Pauly was lead author on a paper published in the 8 August 2002 issue of the journal *Nature*, which called for strong reductions in fishing-related subsidies and the creation of representative networks of no-take MPAs.

"The rapid decline in various fisheries throughout the world makes setting up networks of marine protected areas an obvious step to take," said Pauly in response to the accord. "The science demonstrating their effectiveness is being done, and the arguments of those who oppose them are wearing thin. Thus, various governments and local communities have begun on their own to set up — or at least consider setting up — MPA networks. Later, when more MPAs will have been created, people might say it is because of the [WSSD] declaration that we advanced. But it will have been mainly because of the work in the field of the many people who knew that establishing no-take areas in the ocean was the right thing to do."

A Perspective on the WSSD Accord

By Bud Ehler
Vice-Chair (Marine), IUCN World Commission on Protected Areas

Oceanic, coastal, and island issues were not on the initial WSSD agenda, which emphasized development issues, especially those concerning water and sanitation, energy, health, agriculture, and biodiversity. However, thanks to the mobilization of interested governments, NGOs, and United Nations agencies early in the WSSD preparatory process, advances in ocean, coastal, and island issues represent one of the most important outcomes of the World Summit.

Government delegates negotiated and agreed on an action plan for oceans, coasts, and islands, with

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quite specific targets and timetables for action. Of special interest to the MPA community is the timetable for applying an ecosystem approach to marine areas by 2010 and for establishing a global network of marine protected areas by 2012. Important targets were also established on fishery issues (e.g., managing fishery capacity by 2005 and controlling illegal fishing by 2004), and in other ocean-related areas as well. The targets and timetables found in the WSSD Plan of Implementation represent an important advance over actions taken in Chapter 17 of Agenda 21 at the 1992 Earth Summit that had provided few specific targets and timetables for action.

Two questions should be asked: (1) Is this really significant?; and (2) How can we be sure that such targets and timetables will be implemented?

Specialized groups such as the IUCN World Commission on Protected Areas (WCPA) and specialized agencies such as the FAO have, of course, over the years effectively argued about the need, for example, to take an ecosystem approach to marine areas and for creating a globally representative network of marine protected areas. A consensus on these issues by the "expert community" has been clearly in evidence for some time now. What is certainly significant about the adoption of the MPA targets and timetables at the WSSD is that the expert consensus has now been enshrined as a global imperative by the world's political leaders.

The WSSD targets and timetables, of course, are not "self-implementing". Instead, governments around the world will need much assistance and support from groups such as the World Commission on Protected Areas to identify and make operational what needs to be done, and to maintain the high-level political support that will be required to achieve the sorely needed "on-the-ground" changes in the health and condition of marine ecosystems.

Toward this end, the WCPA will be mobilizing with other groups to work together with governments, international and intergovernmental organizations, nongovernmental organizations, and others to implement the commitments made in the Plan of Implementation of the WSSD as well as to implement the so-called "Type II initiatives" (voluntary partnerships among governments, nongovernmental organizations, industry, and others).

An important outcome of the World Summit has been the formation of a "Global Forum on Oceans, Coasts, and Islands," involving a wide number of NGOs, international organizations, and governmental ocean leaders who will work with the world's governments in ensuring that the targets and timetables are met and in integrating the related voluntary initiatives. The Global Forum will, among other activities, hold periodic meetings to review progress in WSSD implementation, starting with a November 2003 conference at UNESCO in Paris. A first step in this process will be to analyze, for each major target, the knowledge and other resources that countries will need to meet the WSSD commitments, and to develop a strategy for assisting the countries in accomplishing these goals. The World Parks Congress, to be held in September 2003, in Durban, South Africa, will also be an opportunity to examine progress toward the WSSD targets and timetables related to marine protected areas.

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Report details steps to reduce impacts of fishing

To improve management of marine fisheries and prevent the further decline in health of marine ecosystems, resource managers should pursue a plan of action that includes the designation of a global system of fully protected marine reserves, according to a new report published by WWF, an international NGO. The 80-page report *Policy Proposals and Operational Guidance for Ecosystem-Based Management of Marine Capture Fisheries* also calls on managers to conduct an ecological audit of major fisheries and develop a "global fishery restructure fund" to help reduce fishing-fleet overcapacity, among other actions.

Released in July, the publication guides managers of large and small fisheries in restructuring their efforts to include such issues as avoiding economic damage to fishing communities and conserving migratory fish stocks. "We have researched and explored the concept and application of ecosystem-based management in detail, and defined achievable objects and targets," said Katherine Short, fisheries officer for WWF Australia and a co-author of the report. The additional major authors were Trevor Ward of the University of Western Australia (Perth) and Diane Tarte and Eddie Hegerl, both of Marine Ecosystem Policy Advisors, a consultancy in Brisbane, Australia. The report is available for free online in PDF format at *http://www.panda.org/endangeredseas/pubs.cfm*, or e-mail *publications@wwf.org.au*.

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Involvement of the Private Sector in a Community-Based MPA: Case Example from Fiji

Think of a community-based MPA and you might well imagine a rural coastal village managing its ocean resources with little, if any, outside involvement. In Fiji, however, a unique mix of geographic, environmental, and political conditions has helped foster a partnership for the protection of small community-based MPAs, uniting the interests of community members and a nearby private resort. Now, as that partnership has shown positive results, other Fijian resorts are looking to follow its lead. This month, MPA News examines this case and its lessons.

Shangri-La's Fijian Resort stands alone on a 109-acre island, linked by a 150-meter causeway to the "mainland" (or Viti-Levu, the largest island in Fiji). The 436-room luxury resort attracts visitors from around the world who come to swim, snorkel and dive the reefs and clear waters rimming the island. Among the principal features now is a 1.7-km^2 marine protected area adjacent to the island, where no fishing or destructive activities are allowed.

The MPA represents a re-institution of the traditional Pacific-island concept of *tabu*, in which a local chief places areas of the sea off-limits to fishing. Full ownership of Fiji's nearshore marine resources are in the process of transfer from the Fiji Government to the customary Fijian owners, thanks in part to a policy change that arose subsequent to a government coup in 2000. The *tabu* area next to the resort — along with two other coral reef *tabu* areas and a mangrove *tabu* — received ratification from the Paramount Chief of the local Cuvu District in 2001.

Building a community-based process

In 2000, senior management at Shangri-La's Fijian Resort became concerned about the degrading state of the environment surrounding the island, with declining coral populations and reductions in the numbers of fish. The resort requested the assistance of a local NGO, FSP Fiji (the Fiji affiliate of Foundation for the Peoples of the South Pacific/Counterpart International), as FSP was becoming active in coral reef restoration. Following negotiations, the resort agreed to match project funds that FSP would raise from outside donors, enabling the next step: facilitating a community-based process with the resource-owning villages to identify and address the causes of the environmental problems.

After an initial public presentation, FSP was accepted as the project facilitator by the district chiefs. A "Cuvu District Environment Committee" was appointed by the high chiefs to carry out the work, and consisted of representatives of villages, clans, families, the resort, FSP, and various governmental sectors.

FSP facilitators led a series of workshops in the seven villages of the district. These workshops enabled the communities to document the process of reef degradation and determine root causes, in order to identify and apply solutions. As some 70-80% of the fishers of the district are women, the participation of the women in decision-making was a vital component of the process.

A long-term management plan to solve the problems of the district was developed, with the designation of marine protected areas as a key element of the comprehensive restoration efforts. Other particulars included the banning of destructive practices such as the use of fish poison and small gill nets, and rubbish disposal directly into the sea. Project activities included the removal of infestations of crown-of-thorns starfish (over 4,000 removed), restocking *tabu* areas with overfished shellfish species (giant clams, trochus, spider conch), mangrove replanting, tree planting in villages to absorb polluted groundwater leaking onto reefs, and coral transplanting to enhance fish habitat.

As part of the agreement, the resort is developing an environmental trust fund to support the *tabu* areas and the environmental restoration plans of the environment committee. Still under development, the fund will generate money through such means as fees for snorkeling tours of the no-fishing areas, a possible room surcharge fee, and guest donations. Revenues from the fund will be earmarked for activities prioritized by the environment committee and approved by a trust fund board, composed of resort, community, government, and NGO representatives. Such activities could include low-tech reef restoration, further restocking, training of reef guides, night duty for fish wardens, and deployment of marker buoys.

A local consultant, Resort Support, has been hired to train the resort water-activities staff as snorkeling guides, and, with FSP, has produced reef-awareness materials for display in the resort.

In addition to the reef work, the resort matched another FSP grant to solve a waste problem, and constructed a series of artificial wetlands to filter the resort's wastewater and reuse it for irrigation, with wetland plants absorbing nitrates and phosphates and keeping them from leaking onto the reefs. On its own, the resort also updated its pre-existing sewage plant. John Rice, general manager of Shangri-La's Fijian Resort, estimates that the resort has spent in excess of FJ $150,000 (US $70,000) in cash and in kind on activities to benefit the marine environment. The expense is worth it, he said. "A large degree of the success of our resort has to do with the health of the environment," he said.

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Austin Bowden-Kerby, a marine biologist who has worked on behalf of FSP Fiji on its reef restoration and community- and resort-based MPA work, says the partnership between the resort and the local villages presents a win-win situation for both parties. The resort has tame and abundant fish populations to enchant visitors, he said, while local fishers get secure breeding populations of fish to restore stocks on the fishing grounds. "Locals are already seeing increased numbers of fish and other coral reef species," he said. "Fijian culture is tightly linked with the natural environment. When particular fish are gone, traditional stories about them tend to loose meaning. Prior to the project, health was also being affected by overfishing, as protein was no longer readily available to the poorer families. Social problems were resulting from widespread reef decline, as the youth were deprived of their traditional roles in fishing and food preparation. The restoration of the coral reefs of Cuvu District has thus helped restore the traditional Fijian culture and has resulted in great pride among the community."

FSP Fiji would like to see other resorts adopt the model. Chiefs from two nearby districts with resorts have come to FSP requesting assistance for marine restoration projects and resort partnerships. The NGO is presently in discussions with a hoteliers association that represents 15 resorts in Fiji, whose members have expressed interest in their each "sponsoring" a no-take MPA. "That is one of our goals at FSP," said Bowden-Kerby. And now that the reefs belong fully to customary Fijian owners, he said, the tourism industry realizes it could soon face usage fees for the waters and reefs, in addition to the high leases for the islands on which the resorts are now built. More than ever, it makes sense for these resorts to team up with local communities.

Challenges faced in partnering

Reviving the concept of *tabu* areas, particularly in the context of tourism, has presented a challenge, said Bowden-Kerby. "The traditional concept of *tabu* was that the reef was sacred, that no one would even set foot within the *tabu* areas," he said. "Adapting the concept of *tabu* to allow for tourism is a cultural challenge. We have coined some new terms to begin this transformation in thinking: *cakau taqomaki* for permanent reef reserve, and *cakau vuavua*, or 'fallow reef', for a temporary closure."

Restoring trust between the resorts and the reef-owning communities has also been a challenge, but it is crucial. "That is why having an experienced third-party NGO involved [like FSP Fiji] works best," said Bowden-Kerby.

The Government has also very much been a partner in this work, donating 500 giant clams for restocking and training 16 "fish wardens" in the communities. These fish wardens have badges and the authority to arrest violators, and although they are not paid, they have a heightened status in the community and are effective at enforcement. Bowden-Kerby says that because the plans were collectively developed by the fishers themselves, a high level of compliance has been evident.

Rice anticipates that the resort will use its partnership arrangement to position itself as an environmentally responsible operator in the international tourism marketplace, which should attract more business. More business would also help the local community, as the land-lease that the resort pays to the local village is pinned to the number of visitors it attracts.

Rice is also interested in exporting the lessons learned from the experience within the country, so that other resorts and communities in Fiji may benefit. As for exporting the lessons outside of Fiji, he wonders whether that is possible. "I think the success of this is largely due to the unique situation that we're in here," he said, citing the presence of a community 150 meters from the resort, a committed NGO, and the political driver of the ownership transfer. "I don't know whether you'd be able to find that set-up anywhere else in the world. However, if it is possible to export the lessons learned here, we will definitely do so."

The Cuvu project was recently chosen by UNEP as an International Coral Reef Action Network "model site for coral reef conservation", the first such designation for Melanesia.

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US closes large areas to groundfishing off Pacific Coast

Federal fisheries managers have voted to ban fishing for groundfish in 2003 on most of the continental shelf along the Pacific coast of the US. Designed to protect overfished groundfish species from incidental harvest, the approved limitations expand on emergency closures imposed in June 2002. The approved measures are considered to be the strictest regulation of US Pacific coast fishing in history.

The measures introduce a new depth-based management regime intended to keep fishing vessels from operating in waters where overfished species are commonly found: fishermen will have to abide by a series of minimum and maximum allowed depths. Deepwater fisheries on the continental slope and nearshore fisheries remain open, but under more restrictive management. Even with the new restrictions, say fisheries managers, it is unlikely that all nine overfished groundfish stocks will rebound soon due to slow species growth rates and other factors, so depth-based restrictions will probably continue for some time.

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MPA Perspective: Existing Small Marine Reserves Can Indicate Whether a Larger Network Is Feasible: Case Study from the West Coast of the United States

By Mark A. Hixon

Two of the greatest concerns of the fishing community regarding fully protected marine reserves are, first, whether reserves will work in their particular part of the ocean, and second, whether a network of reserves would truly help to replenish and sustain fisheries. Such issues are critical in regions such as the US West Coast, where an ongoing fishery crisis has resulted in closure of a substantial portion of the continental shelf [*see page 4 in this issue — Editor*]. As in many regions worldwide, the difficulty of addressing fishermen's concerns is that existing reserves are much too small and too few to benefit fisheries in ways that are directly detectable statistically. Indeed, there are only about a half-dozen fully-protected reserves in Washington (all in Puget Sound, accounting for only about 0.003% of state waters), only 1 in Oregon (about 0.003% of state waters), and 11 scattered along the California coast (about 0.2% of state waters). Ultimately, the effectiveness of a network of reserves can be tested rigorously only after implementation. However, it is nonetheless possible to use existing reserves as indicators of whether a scaled-up network would provide fishery benefits.

The predicted fishery benefits of fully-protected reserves are twofold: (1) the "seeding effect," whereby reserves function as a source of eggs and larvae that replenish fish and shellfish populations outside reserves via dispersal in ocean currents, and (2) the "spillover effect," whereby reserves function as a source of juvenile and adult emigrants that literally swim or crawl out of reserves into adjacent fished areas. The seeding effect occurs only if the *number* and especially the *size* of organisms inside reserves is substantially greater than outside, so that abundant eggs and larvae produced inside reserves can effectively seed a large area outside. The spillover effect occurs if (a) the *number* of mobile animals inside reserves becomes great enough that crowding occurs and a substantial number of animals consequently emigrates to adjacent fished areas, or (b) the life history of mobile animals is such that they gradually move from habitat to habitat as they grow, so that the early stages of the life history can be protected within reserves, and older animals later move into fished areas. Thus, comparisons inside vs. outside reserves provide indicators of whether seeding and spillover effects are probable, and examination of *movement* patterns can further suggest whether spillover is likely.

There have been scientifically rigorous comparisons inside vs. outside about a dozen existing reserves in Washington, Oregon, and California that were studied at least 10 years after the reserves were established. In all studies — which span unpublished graduate theses and technical reports to articles in peer-reviewed journals — SCUBA divers compared areas inside and outside reserves in similar seafloor habitat by visually censusing plots or transects. Compared indicators included the number and size of fish and shellfish, and sometimes calculated egg production. Egg production is well-documented to increase dramatically with body size in these fish and invertebrates, so areas with high abundance and large sizes of animals clearly produce numerous eggs that may contribute to the seeding effect.

A total of 22 species-specific comparisons involving 17 fished species (red sea urchin, red and pink abalone, and 14 species of fish, mostly rockfishes) were conducted among 13 reserves. Considering cases where statistical differences were detectable, in 15 of 17 comparisons (88%), animals were more abundant inside reserves than outside. In 12 of 15 comparisons (80%), animals were larger inside reserves than outside. In 15 of 17 comparisons (88%), animals were inferred to produce more eggs inside reserves than outside. The exceptions may be cases of smaller species that are out-competed or eaten by more abundant or larger fish inside reserves, although there are presently no definitive data.

A variety of studies have also examined movement patterns of West Coast groundfishes using tag-and-recapture methods. A common life history of species such as lingcod, rockfishes, and some flatfishes is that juveniles live in shallow water, then slowly migrate to deeper water as they grow, eventually living within relatively limited home ranges as adults. Published movement distances suggest that these fishes could spillover from marine reserves of substantial size. Exceptions include exclusively shallow species that inhabit coastal rocky reefs for their entire juvenile and adult life.

Overall, for a broad variety of fished species along the U.S. West Coast, available data indicate that the existing few and small marine reserves are effective in supporting substantially more abundant, larger, and more fecund animals (i.e., more eggs) than comparable fished areas outside. Moreover, many groundfish move sufficiently during their lifetimes to allow for spillover to occur from reserves of substantial size. These results are consistent with the prediction that a scaled-up network of numerous larger reserves would produce detectable fishery benefits via both the spillover and seeding effects.

Editor's note:

Mark Hixon is a professor of marine ecology and conservation biology at Oregon State University (USA). Hixon excerpted this piece from a report he prepared for the Oregon Ocean Policy Advisory Council and the California Fish and Game Commission. His full report, entitled *Fishery Effects of Existing West Coast Marine Reserves: The Scientific Evidence*, can be obtained via e-mail directly from Dr. Hixon. The report contains full citations for studies mentioned in the adjoining piece.

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Canada Designates Trawl Closures to Protect Unique Sponge Reefs

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To protect rare colonies of glass-like, deepwater sponges, the Canadian Department of Fisheries and Oceans (DFO) has banned groundfish trawling at four sites off the Pacific coast of Canada. The non-contiguous sites — about 200 meters in depth and covering nearly 1000 km^2 of seabed — will remain open to other fishing-gear types as DFO officials examine the compatibility of those gear types with sponge protection.

The sponge reefs, discovered in the 1980s, are the only known reefs of their kind in the world, consisting primarily of three sponge species from the class *Hexactinellida* — the "glass sponges". These sponges form a fragile skeleton of silica that can be easily impacted by mobile fishing gear. Sponge reefs such as these were once widespread across the world, back in the Age of Dinosaurs. Now, the Canadian reefs serve as a "living fossil" for researchers for study.

Trawlers support and helped plan the closures. Bruce Turris, executive manager of the Groundfish Trawl Advisory Committee (representing all interests of the industry, including captains, crew, and processors), points out that groundfish trawlers adopted their own voluntary closures for the reefs back in 2000. "When we first heard about the sponge mounds being of significant scientific value, we asked the fleet to avoid fishing those areas, which they did," said Turris.

Trawling occurred on the reefs prior to 2000, and scientists in the 1990s documented significant trawl-related damage to some sponge structures. Because the areas were not particularly productive fishing grounds, voluntary closures were easy for the industry to support. In 2002, when researchers found evidence that a vessel had recently trawled the most pristine of the reefs, trawlers joined other stakeholders in calling for the government to close the areas with regulations.

The sponge closures, which took effect on July 19, will be renewed on an annual basis in the regional groundfish management plan, according to Allan Macdonald, groundfish manager for the DFO's Pacific region. "There is no intent to reopen these closures to trawling in the foreseeable future," he said.

Sabine Jessen, conservation director for the British Columbia chapter of the Canadian Parks and Wilderness Society, said the regulatory closures were a positive step, but is frustrated that they weren't in place earlier to prevent the recent trawl damage. "For something as rare and fragile as these reefs, the voluntary closures were never seen as adequate [by the conservation and scientific communities]," said Jessen. She called for permanent, rather than yearly, protection for the sponges. "The best way to give the reefs the permanent protection that the scientists are calling for is to establish Marine Protected Areas under [Canada's] Oceans Act."

To learn more about the sponge reefs and view photos and video taken by researchers, go to *http://www.pgc.nrcan.gc.ca/marine/9901prog.htm* or *http://www.porifera.org/a/cif1.htm*

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Draft report available on planning coral MPAs for climate change

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Climate change represents a major long-term threat to marine protected areas, but is all too rarely considered during the planning of MPAs. A new draft report addresses this gap for coral reef MPAs, which are susceptible to coral bleaching related to higher sea-surface temperatures. Now open for public comment, the draft aims to develop a series of principles to help planners and managers design coral MPAs to be resilient in the face of this threat. The draft is available online in PDF format at *http://wcpa.iucn.org/biome/marine/docs/MPA_change.pdf*.

Authored by Rod Salm of The Nature Conservancy (an international NGO), the draft builds on concepts first presented at the International Coral Reef Symposium in 2000 (MPA News 3:1). The document suggests that survival prospects of coral reef communities facing large-scale climate events — such as their resistance and resilience to bleaching — should be primary considerations in the design and selection of MPAs. The draft is one product of a collaboration among The Nature Conservancy, the World Wildlife Fund (an NGO), and the IUCN to mitigate the impact of future large-scale bleaching events.

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Correction

Due to an editorial error, the paper version of the August 2002 issue of MPA News misreported the size of the Sian Ka'an Biosphere Reserve in Quintana Roo, Mexico. The correct size of the reserve is 6500 km^2. The editor of MPA News apologizes for this error.

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