MPA news

Vol. 9, No. 8
March 2008

International News and Analysis on Marine Protected Areas

Kiribati Expands Phoenix Islands Protected Area, Creating World's Largest MPA

The Pacific island nation of Kiribati has more than doubled the size of its Phoenix Islands Protected Area (PIPA), creating what is being called the world's largest marine protected area. The expanded MPA, announced by the Government of Kiribati in late January 2008, now encompasses an area of 410,500 km^2 — up from 184,700 km^2.

The vision for the PIPA remains the same as when the site was designated in 2006: commercial fishing will be phased out, although subsistence reef fishing by the fewer than 50 residents of the Phoenix Islands archipelago will be allowed to continue (*MPA News* 7:9). The protected area was developed by Kiribati in cooperation with the New England Aquarium over several years of joint research, with funding and technical assistance from Conservation International (CI). Designated to protect the nation's near-pristine coral reef ecosystem, the PIPA is located halfway between Australia and Hawai'i in the Central Pacific.

Tebwe Ietaake, secretary of the Kiribati environment ministry, says there was no conscious plan to double the size of the MPA. Rather, the expansion allows for greater conservation opportunities. "The new boundaries address two fundamental considerations," says Ietaake. "One was to include two reefs, Winslow and Carondelet, that were outside the 60-mile offshore boundary set around the islands [in 2006]. Second was to make the boundaries more easily described and suitable for navigators by adopting straight-line coordinates rather than circular 60-mile radius coordinates." The expanded MPA also includes tuna spawning grounds, seamounts, and deep sea habitat that were formerly outside its limits.

Although Kiribati is the largest atoll nation in the world, it is geographically isolated. This isolation has historically insulated the nation from outside threats. But foreign fishing fleets have expressed growing interest in its waters, and climate change looms. Sea level rise is a major concern for this low-lying nation, and a prolonged drought has threatened domestic water supplies.

Prior to the PIPA expansion, the 362,000-km^2 Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands (U.S.) was widely considered to be the world's largest MPA, followed by the 344,400-km^2 Great Barrier Reef Marine Park in Australia. Depending on how one defines "marine protected area", however, other (larger) marine areas could also be considered, like the 70 million-km^2 Indian Ocean Whale Sanctuary ("Which MPA Is the World's Largest?", *MPA News* 8:2).

Funded by endowment

The PIPA will be financed through an endowment being initiated with private funding by CI's Global Conservation Fund. The endowment will grow with matching funds from private and public institutions, and will be similar to ones enacted by CI to protect South American rainforests. It will be overseen by a board of managers including CI, the Government of Kiribati, New England Aquarium, and others.

Sue Miller-Taei, CI's marine program manager for Pacific Islands, says the PIPA endowment will have three functions:

- Support the costs of managing the protected area;
- Cover the costs of operating the financing vehicle that holds the endowment; and
- Compensate the Government of Kiribati for lost revenue suffered from cancellation of fishing licenses to foreign tuna fleets.

How large the endowment needs to be to cover these costs will be the focus of discussions this month in Kiribati, says Miller-Taei. As the endowment grows, fishing effort will be phased out. "CI has an initial secured commitment from its Global Conservation Fund for US $2.5 million," she says. "We have a range of other private, multilateral, and bilateral donors interested in supporting the PIPA endowment." She says that the years of planning and the partnerships already in place — as well as the PIPA's profile as the world's largest MPA — will all aid in the fundraising.

Miller-Taei says a key challenge will come in deciding how, in space and time, to phase out the fishing effort. "This will involve working with a range of types of agreements and license arrangements — from annual

continued on next page

For more information

Tebwe Ietaake, Ministry of Environment, Lands, and Agricultural Development, Kiribati. Tel: +686 28507; E-mail: tebwe@melad.gov.ki

Sue Miller-Taei, Conservation International, Samoa. Tel: +685 21593; E-mail: s.taei@conservation.org

Table of Contents

license fees for distant-water fishing fleets, to multilateral fishing treaties," she says.

The Government of Kiribati anticipates that the expanded PIPA will help draw more tourists to the archipelago. "I am optimistic about the future of tourism development in Kiribati," says Ietaake. "It is one of the untouched, undisturbed places on Earth. The PIPA will enhance the development potential of Kiribati as a place to visit, starting first with cruise lines bringing tourists." Kiribati includes two other, more-populated island groups in addition to the Phoenix Islands.

The PIPA website is http://phoenixislands.org.

MPA Global Database Releases Figures: MPAs Cover Just 0.65% of Oceans

A project to create a global database on marine protected areas has released new figures on the state of the MPA field. Representing the most authoritative figures to date, the findings show the small total area covered by MPAs worldwide — less than 1%.

The figures come from the MPA Global database (http://mpaglobal.org), housed at the University of British Columbia (UBC). Created and managed by Louisa Wood as part of her Ph.D. thesis, MPA Global is a collaboration of the UNEP-World Conservation Monitoring Centre, IUCN World Commission on Protected Areas-Marine, World Wildlife Fund, and the *Sea Around Us* Project at UBC's Fisheries Centre. The MPA Global database originated from the World Database on Protected Areas, and is in the process of being re-incorporated in the latter (*MPA News* 9:7).

The figures at right are from MPA Global; these and other figures from the project are presented in Wood's Ph.D. thesis, which she defended in December 2007. Wood is also lead author on a paper providing more detailed analysis of the global system of MPAs, in press in the journal *Oryx*. (Editor's note: Wood now serves as technical advisor on MPAs for IUCN's Global Marine Programme, working on projects in support of implementing the World Commission on Protected Areas - Marine Plan of Action. These projects include the "Wet List" — a new global partnership to map progress, recognize successes in marine conservation, and identify challenges to building MPA networks and conserving the marine environment ["Global MPA Priorities to Be Set this Month…", *MPA News* 8:9].)

The criterion for inclusion in MPA Global is the IUCN definition of MPA: "an area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment" (IUCN 1992). To date there remains debate over whether some types of spatial management measures, such as permanent fisheries closures, should be included in the database. MPA Global does not include such areas.

Number of MPAs designated worldwide:
4435

Area covered by MPAs worldwide:
2.35 million km^2

Percentage of world oceans covered by MPAs:
0.65%

Percentage of area within Exclusive Economic Zones covered by MPAs:
1.6%

Percentage of global MPA area subject to no-take regulations:
12.8%

Percentage of world's oceans subject to no-take regulations:
0.08% (This is the first estimate of global no-take area that is based directly on no-take data. It improves on previous estimates that relied on the use of sites' IUCN management categories as a proxy for no-take data.)

Mean area of MPAs:
544 km^2

Median area of MPAs:
4.6 km^2 (The substantial difference between mean and median MPA size is largely attributable to 10 very large MPAs, below, constituting 75% of global MPA area.)

Ten largest MPAs:

1. Phoenix Islands Protected Area (country: Kiribati) — 410,500 km^2
2. Papahanaumokuakea Marine National Monument (U.S.) — 362,000 km^2
3. Great Barrier Reef Marine Park (Australia) — 344,400 km^2
4. Macquarie Island Marine Park (Australia) — 162,000 km^2
5. Galápagos Marine Reserve (Ecuador) — 133,000 km^2
6. Greenland National Park (Denmark) — 110,000 km^2, excluding terrestrial area
7. Seaflower Marine Protected Area (Colombia) — 65,000 km^2
8. Heard Island and McDonald Islands Marine Reserve (Australia) — 64,600 km^2
9. Komandorsky Zapovednik (Russia) — 55,800 km^2, including buffer zone
10. Wrangel Island Zapovednik (Russia) — 46,700 km^2, including buffer zone

Percentage of global MPA area located within the tropical latitude belt (between 30°N and 30°S):
65%

Percentage of global MPA area located in latitudes higher than 50°:
31%

For more information: Louisa Wood, IUCN. E-mail: lwood@iucnus.org

MPA Perspective MPAs in Europe — Challenges and Opportunities

By José A. García-Charton, Concepción Marcos, Fuensanta Salas, and Ángel Pérez-Ruzafa

The European Symposium on Marine Protected Areas (www.mpasymposium2007.eu), held in September 2007 in Murcia, Spain, constituted a unique opportunity to bring together researchers, managers, authorities and industry representatives to discuss the advancement of this management tool to achieve fisheries and conservation goals. Here we intend to present, as coordinators of the EMPAFISH project, and thus co-organizers of this event, our personal view about the most important ideas issued from the meeting, and the challenges faced by MPAs in the near future.

1. Need to integrate fisheries, biodiversity goals

The capacity of the European Common Fisheries Policy alone to solve the problem of fisheries conservation is being called into question. There is an increasing need, particularly in the Mediterranean, for closer collaboration and coordination between environment and fisheries government officials at all administrative levels (from local to European and international). However, fisheries and environmental objectives may not always be completely compatible. For instance, the Natura 2000 network of protected areas — which protect habitats and endangered species — may help indirectly to address fisheries goals through the fishery-habitat importance of particular communities (e.g., *Posidonia oceanica* beds, cold water corals). But because of its limited scope, the Natura 2000 network can be only complementary at best to other management measures in addressing specific fisheries objectives.

2. Participatory process and community involvement

Public participation is one of the key elements in the success of MPAs. Not only must management establish fluid ways of communicating with and informing stakeholders, but there is a need to implement adaptive and bottom-up management schemes, with involvement of stakeholders in all phases of MPA planning, designation, monitoring and evaluation. For such involvement to be effective, stakeholders must be willing to accept other points of view. In other words, fishers must be willing to agree to close certain areas to fishing; tourism managers to admit to being excluded from some areas for diving or recreational fishing; and scientists to acknowledge pragmatic considerations besides biophysical and socio-economic sciences, such as enforcement needs.

3. Role of science to support MPA process

Science is an essential component to MPA success in (i) setting general and operational objectives, (ii) establishing baseline reference levels, (iii) predicting outcomes of alternative management scenarios, and (iv) properly assessing and evaluating the effectiveness of MPAs in relation to planned goals and objectives. MPAs constitute true scientific experiments at the ecosystem scale, and hence a privileged stage for the advancement of knowledge.

A multidisciplinary approach is the most appealing strategy to move forward in MPA science. Concern is often raised against an excessive emphasis on purely natural sciences (which are reductionist, long-term, and can involve a significant amount of uncertainty) to the detriment of the social sciences. The latter are possibly better-adapted to local realities — i.e., to the need to conserve not only resources but also the living conditions and culture of coastal human communities. Scientists are aware of the current limitations of science in terms of unresolved questions and gaps in knowledge, and recognize the merit in establishing priority operational objectives for the next years. The major obstacle is the gap between unrealistically short timeframes required by donors and managers in the planning process (linked to short-term science-funding schemes), and scientists' inclination to think in the long term. Rapprochement requires managers to plan more in the long term and with more of a precautionary perspective, and scientists to think more in the short term — such as giving answers to managers even without absolute sureness on their conclusions, in the face of urgent situations.

4. The future of the MPA tool

We need to be much more ambitious when stating the goals and objectives of fisheries conservation and biodiversity protection because of the highly degraded state of marine populations and ecosystems. Although many benefits will become apparent soon after protection, full ecosystem recovery will require decades to centuries to occur. In addition, there is the mandate to protect a very significant part of the marine areas within MPA networks — bearing in mind the 2012 target.

Regarding the role of scientific advice in the MPA process, a dichotomy exists between "low-tech and local knowledge-based" vs. "high-tech and high-quality data-based" methodologies. Due to urgency reasons, there is a need to develop the first type of methods to be applied in certain situations, as already done by some international agencies. But, importantly, scientists should improve their capacity to translate the results of MPA research into readily applicable management measures.

Finally, it appears necessary to broaden our thinking to larger geographical scales beyond MPA limits. MPAs offer a smaller-scale model for development of a true Oceans Policy, based on interdisciplinary spatial planning and ecosystem-based management of the littoral areas and the high seas. Such a policy is the only solution to the present fisheries and environmental crises.

Editor's note

The authors of this piece are faculty members of the Department of Ecology and Hydrology at the University of Murcia, Spain. They serve as coordinators of EMPAFISH (www.um.es/empafish), a project funded by the European Commission to study MPAs as tools for fisheries management and conservation.

This article does not necessarily reflect the European Commission's views and in no way anticipates the Commission's future policy in this area.

For more information

José Antonio García Charton, Departamento de Ecología e Hidrología, Universidad de Murcia, Campus de Espinardo, 30100 Murcia, Spain. Tel: +34 968 364326; E-mail: jcharton@um.es

Editor's note

Joseph Uravitch is director of the U.S. National Marine Protected Areas Center. The MPA Center is a division of the Office of Ocean and Coastal Resource Management within the National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service.

MPA Perspective Climate Change and the U.S. National System of MPAs — Why Places Are Important

By Joseph A. Uravitch

After seven years of public and agency engagement, information gathering and analysis, and system design, the National Oceanic and Atmospheric Administration's (NOAA) National Marine Protected Areas Center (MPA Center) is moving forward to establish the initial U.S. National System of Marine Protected Areas (National System) by late 2008. The *Revised Draft Framework for Developing the National System of Marine Protected Areas* will be available soon for public comment. The *Final Framework* is planned for publication this summer. Underpinning the National System are the Framework's conservation goals and objectives, developed with the advice of the MPA Federal Advisory Committee. These are intended to help guide the protection, preservation and restoration of the nation's natural heritage, cultural heritage, and sustainable production of marine resources. This initial National System will be based on the participation of existing federal MPAs and voluntary participation by state, territorial, and tribal MPAs, followed over time by regional gap analyses to determine if additional areas should be designated as MPAs.

In the context of climate change and changing ecosystems, we can reasonably assume that geologic features are the most likely places where new species assemblages and ecosystems will form over time.

The past several years also have seen a growing consensus about the reality of climate change. Although much is unknown, such as the rate of change, or specificity about intensity and timing of effects, reports such as the Intergovernmental Panel on Climate Change's recent publication on Impacts, Adaptation and Vulnerability[1] note that "observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases." Expected changes, among others noted, are sea level rise, damage to corals and coastal wetlands, ocean acidification, and a "high confidence" in "shifts in the ranges and changes in algal, plankton, and fish abundance in high latitude oceans."

Given these observable and predicted changes, do these affect the establishment of the U.S. National System, and can the National System assist in adaptation to such change? I believe the answer is "yes" in both instances. The National System also can be an important contributor to helping NOAA achieve its climate goal, to "understand and describe climate variability and change to enhance society's ability to plan and respond." Perhaps the most obvious and direct linkage is to the National System Framework's proposed near-term objective of conserving "important geological and persistent oceanographic features." I believe this is a critical objective to address because:

- We know that the oceans are changing;
- We know sea levels are rising, even if we're unsure of the rate and the ultimate increase;
- We know that species compositions and ecosystems are changing, and likely to continue to change for the foreseeable future;
- We know that there is a question about the long-term persistence of some oceanographic features, such as specific upwellings and currents;
- We know that while submerged features may change physically at geological time scales, they rarely change on the human timescale on which we plan;
- We know that the depth of submergence of these geologic features will change, and some coastal lands will become submerged lands; and, most importantly,
- We know that submerged geologic features such as reefs, hard bottoms, canyons, seamounts, etc., are often areas of high biological diversity, and sometimes, endemism, as studies of places such as New Zealand seamounts has shown.

One need only look at existing MPAs to see that most of them are built around such features. U.S. examples include National Marine Sanctuaries such as Stellwagen Bank and Cordell Bank; Monterey Bay and its canyon; the reefs of the Florida Keys; the hard bottoms of Grays Reef; the salt domes of Flower Garden Banks; the state and federal MPA complex around the Channel Islands (which includes a National Park, a National Marine Sanctuary, Federal Fisheries Management Zones, and California State Marine Reserves and Marine Conservation Areas); and the extensive NOAA Fisheries trawl closures established in the Gulf of Alaska to protect deep, cold water corals, to name just a few.

We can logically assume that ecosystems and species assemblages in these particular locations will change as

[1] IPCC: Summary for Policy Makers. In: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, UK, 7-22.

species move poleward or die off. But we can also reasonably assume that the geologic features upon which these MPAs were established are the most likely places on which and around which new species assemblages and ecosystems will form over time. We may not know what these assemblages and ecosystems will look like, but we probably know where they will exist.

Knowing this, we move forward practically in establishing the National System. We will use this opportunity to work with MPA and marine resource management and research programs to better understand existing resources of these key places (both existing and potential sites); establish monitoring capabilities to understand change over time; and help our MPAs practice adaptive management to ensure that our nation and our neighbors will have vibrant, resilient ecosystems in the future.

For more information
Joseph Uravitch, National Marine Protected Areas Center, 1305 East West Highway, Silver Spring, MD 20910-3281, U.S.
Tel: +1 301 563 1195; E-mail: joseph.uravitch@noaa.gov

Seabirds as surrogates for siting MPAs

The above essay by Joseph Uravitch recommends the use of geologic features as surrogates for biodiversity in siting MPAs. Australian researchers Jane Harris and Eric Woehler suggest another possible surrogate that could be particularly useful for siting MPAs on the open ocean: seabirds. In a paper published last year in *Antarctic Science* (Vol. 19, No.2, pp. 189-194), Harris and Woehler analyzed 20 years of seabird-sighting data in the Southern Ocean to identify several high-priority areas for conservation in the region.

"Seabirds are top-order predators," says Woehler. "There are numerous studies throughout the world's oceans that have demonstrated seabird distributions at sea reflect the distribution, abundance, and availability of their prey. Our study demonstrated that high densities of seabirds and/or seabird species diversity were observable in specific areas over decadal scales."

Woehler acknowledges that climate change could conceivably cause prey and predator species to migrate over the course of coming decades, thus shifting the priority areas for conservation. In that case, he says, the study could be repeated in, say, 50 years' time. "If the at-sea distributions of seabirds change in response to rising sea-surface temperatures, the same methodology could be re-applied to identify candidate MPAs," he says.

For a copy of the paper "A New Approach to Selecting Marine Protected Areas (MPAs) in the Southern Ocean", e-mail Eric Woehler at eric_woe@iprimus.com.au

Notes & News

New manual available on Marxan

A new user's manual is available for Marxan, a software program that provides support for decision-making on MPA design. The manual provides readers with the basic knowledge needed to use the software, including the questions it can help to answer, its limitations, and what data inputs are required.

In most reserve-design processes, a planner has several potential sites from which to select new conservation areas, subject to various constraints. Marxan helps planners find a range of near-optimal solutions quickly, even for very large planning projects. The software has been instrumental in the design of multiple marine reserve networks in recent years, including for the Great Barrier Reef Marine Park (Australia) and the Channel Islands National Marine Sanctuary (U.S.). Use of Marxan by MPA planners was discussed in our October 2004 edition (*MPA News* 6:4).

The *Marxan User Manual for Marxan Version 1.8.10* is published by the University of Queensland and the Pacific Marine Analysis and Research Association (PacMARA). It is available online at www.pacmara.org.

Website: social dimensions of MPAs

The International Collective in Support of Fishworkers (ICSF) has launched a new website on MPAs, providing perspectives on the planning tool from local and traditional fishing communities. The website currently includes an overview of MPAs, an outline of international legal instruments protecting the resource rights of local communities, and summaries of case studies from five countries (Brazil, India, Mexico, South Africa, and Thailand).

"For MPAs to yield positive outcomes both for biodiversity conservation and livelihoods, implementa-

MPA News

Editor-in-Chief
John B. Davis
Project Assistant
Anna Varney

Editorial Board
Chair - David Fluharty, Ph.D.
U.W. School of Marine Affairs
Patrick Christie, Ph.D.
U.W. School of Marine Affairs
Michael Murray
Channel Islands National Marine Sanctuary

Direct correspondence to: MPA News, School of Marine Affairs, University of Washington, 3707 Brooklyn Ave. NE, Seattle, WA 98105, USA. Tel: +1 206 685 1582; Fax: +1 206 543 1417; E-mail: *mpanews@u.washington.edu*

.....

MPA News is published monthly by Marine Affairs Research and Education (MARE), a 501(c)(3) not-for-profit corporation, in association with the School of Marine Affairs, Univ. of Washington.

All content has been written by the *MPA News* editorial staff unless otherwise attributed.
Financial support for *MPA News* is provided in part by grants from:
• David and Lucile Packard Foundation; and
• Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration (NOAA), Silver Spring, MD (USA), under the Federal Coastal Zone Management Act.

The views expressed herein are those of the author(s) and should not be interpreted as representing the opinions or policies of the Packard Foundation, NOAA, or NOAA's sub-agencies.

Subscriptions to *MPA News* are free.

To subscribe, send an e-mail to *mpanews@u.washington.edu.* Type "subscribe" on the subject line, and include your name, mailing address, and daytime phone number in the text of the message. Also, please note whether you would like your subscription to be delivered electronically or in paper form. Thank you.

tion efforts need to take into account, and strengthen, traditional rights of communities to use resources in sustainable ways," states ICSF. "They also need to recognize and support local systems of governance, take into account traditional knowledge systems, and ensure that communities benefit. This website attempts to explore these issues." The website is http://mpa.icsf.net.

Researchers calculate costs, benefits of high seas marine reserves

Closure of 20% of the high seas may lead to the loss of just 1.8% of the current global reported marine fisheries catch, and a decrease in profits to the high seas fleet of about US $270 million per year, according to a study in the journal *Marine Ecology Progress Series*. The paper's authors — a team of researchers at the University of British Columbia (Canada) — conclude, "At globally minimal costs, the international community could benefit substantially by securing insurance against extinctions and the loss of the spectacular marine diversity in the high and deep seas." The paper "Potential costs and benefits of marine reserves in the high seas" is in Vol. 345, pp. 305-310, of the journal.

For more information: Ussif Rashid Sumaila, Fisheries Centre, University of British Columbia, Canada. E-mail: r.sumaila@fisheries.ubc.ca

Report: Quantifying environmental benefits of UK Marine Bill

A new report quantifies the environmental benefits to come from implementing a network of MPAs in UK waters, as recommended last year in a proposed Marine Bill to introduce a national marine planning system (*MPA News* 8:9). Commissioned by the UK Department for Environment, Food, and Rural Affairs (Defra), the report determines a monetary estimate of environmental benefits, measuring projected changes in the provision of ecosystem goods and services as compared to a status quo scenario. The report claims to be the first appraisal of protected areas to derive values for all ecosystem goods and services arising from area designation and regulatory restrictions. *Marine Bill — Marine Nature Conservation Proposals — Valuing the Benefits (Final Report)* is available at http://randd.defra.gov.uk/Document.aspx?Document=WC0603_6772_FRP.pdf.

Report describes state of deep coral ecosystems of U.S.

A new publication from the U.S. National Oceanic and Atmospheric Administration (NOAA) describes the state of the nation's deep sea coral ecosystems, and profiles management actions to protect more than 500,000 square miles of seafloor in the Pacific region, including coral habitats. *The State of Deep Coral Ecosystems of the United States 2007* is available in PDF format at www.nmfs.noaa.gov/habitat/dce.html.

U.S. congressional body releases report on MPAs

The U.S. Congressional Research Service has produced an overview report on MPAs, describing the tool's benefits and challenges as well as relevant federal laws and programs. The report cites the likelihood that the current Congress will consider MPAs during its reauthorization of laws to manage coastal zone and marine protection designations, as well as appropriations for marine programs. The report *Marine Protected Areas: An Overview* is available at www.ncseonline.org/NLE/CRSreports/07Dec/RL32154.pdf.

Please make sure your e-mail account accepts messages from us

To ensure that you receive *MPA News* and its sister publication *Marine Ecosystems and Management* in a timely manner, please make sure that our e-mail addresses — mpanews@u.washington.edu and meam@u.washington.edu — are both on your e-mail account's address list. Thank you very much. If you have had difficulty receiving either publication, please let us know.

www.mpanews.org
searchable back issues, MPA-related conference calendar, and more