MPA news

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International News and Analysis on Marine Protected Areas

Comparing Two Methods of Building MPA Networks: One Site at a Time vs. All at Once

Marine protected areas are designated typically in a piecemeal fashion, one site at a time. A special habitat is identified and protected in an MPA…then another special habitat is identified and protected…then another. Over time, and with enough diligence, a country or region can build a representative system of MPAs this way.

This gradual method, however, may not be the most efficient way of building a representative network of MPAs. It can take a long time to carry out. And the ad hoc planning style can lead to gaps in coverage as planners focus on protecting one site rather than several sites that are ecologically linked.

As the MPA field strives to meet global targets for designating representative networks of MPAs (MPA News 12:3), several jurisdictions are applying more structured strategies for building their MPA systems. Rather than one site at a time, they are designing networks of MPAs all at once, across broad regions. (The Great Barrier Reef Marine Park was one of the first jurisdictions to do this: in 2004 its Representative Areas Program developed a comprehensive network of no-take areas within the park — MPA News 5:10.) Using decision-support tools like MARXAN, this all-at-once approach addresses some of the inefficiencies of the incremental approach. But it is not without its own set of challenges. Here, MPA News examines the benefits and obstacles of each strategy, as applied in two countries.

A. The UK's comprehensive approach: "Giving ourselves the best chance of achieving ecological coherence within the network"

Jen Ashworth is senior MPA specialist with Natural England. Natural England is responsible for advising the British Government on marine conservation and seascape issues in England's territorial waters, including implementing a network of Marine Conservation Zones through the country's Marine and Coastal Access Act (**www.naturalengland.org.uk/mcz**). These new zones, combined with existing designated areas and new MPAs in Scotland and Wales, are intended to provide an ecologically coherent network of MPAs for the UK.

MPA News: The UK is taking a comprehensive, all-at-once approach to designing a national MPA network. What are the benefits to such an approach, compared to a more incremental strategy?

Jen Ashworth: Natural England has previously taken an incremental approach to selecting MPAs. For example our European MPAs (Special Areas of Conservation and Special Protection Areas — www.jncc.gov.uk/page-4165) have been designated in several stages. However, under the *Marine and Coastal Access Act* of 2009, new national MPAs known as Marine Conservation Zones must be identified to contribute to the network, which the Government wants to complete by 2012. To this end, Natural England — alongside the Joint Nature Conservation Committee (JNCC), which has responsibility for UK offshore waters — set up the Marine Conservation Zone (MCZ) Project in England and offshore waters adjacent to England, Wales, and Northern Ireland. The MCZ Project is being delivered through four regional projects. Each regional project is working with sea users and interest groups to identify new MPAs and provide recommendations to Government for sites within its region by late 2011.

The benefit of this more comprehensive approach is that we are giving ourselves the best chance of achieving ecological coherence within the network. The MCZ Project has a series of network design principles and criteria that the regional groups are following to identify possible sites. These principles can be applied in different ways. For example, you could meet them with lots of smaller sites or fewer larger ones. This leads to a socio-economic benefit: stakeholders can be as spatially efficient as they like and minimize the impact on their activities where there are options about site locations. This efficiency may not always happen in an incremental approach.

MPA News: What are the challenges associated with taking the all-at-once approach?

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Ashworth: There are several challenges to this approach. First, a key aim of the project is to use the best available evidence. Gathering evidence over such a large sea area is tricky, especially when evidence includes individuals' knowledge of the sea areas they use. To help with this, the project has been using an online data collection tool: www.mczmapping.org.

Another challenge is that the project is asking stakeholders to do a lot in a relatively short period of time. We want to engage as many people as possible in terms of asking fishers where they fish, divers where they dive, etc. For some stakeholders, they need to be involved in each of the regional groups, which means going to lots of meetings.

As statutory agencies we have also had to make a cultural change in the way we interact with sea users. Within stakeholder groups, we are only one voice and other interests have an equal role in deciding where sites will be.

MPA News: Has your planning process been influenced by MPA planning processes elsewhere?

Ashworth: Natural England and JNCC were heavily influenced by the Marine Life Protection Act (MLPA) process in California and saw that as a good model for our MCZ Project in terms of engaging stakeholders in MPA planning. Similar to the MLPA process (www.dfg.ca.gov/mlpa), we have stakeholder groups identifying MPAs, and we also have the equivalent of the MLPA Science Advisory Team.

Our seas, though, are even busier than California's. In addition to commercial fishing, recreational sea angling, and other recreational use, the UK has a big program to build offshore wind farms. There is also shipping to and from many large ports, marine aggregate extraction, cables and pipelines, and oil and gas. This means the stakeholder groups have to make sure they accommodate a wide range of interests in the MPA planning.

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B. Canada's incremental approach: Allowing new data and information to be incorporated in planning

Maxine Westhead is section head for protected areas and conservation planning in the Maritimes Region for Canada's Department of Fisheries and Oceans (DFO). Since 1997, DFO has been adding sites (under the country's *Oceans Act*) to a representative system of Canadian MPAs. The planning process has typically involved engaging with local stakeholders to identify and assess individual MPA candidates — "areas of interest" under the *Oceans Act* — then guiding each site through a multi-year public consultation process in preparation for final designation.

DFO is now leading development of a more comprehensive MPA planning process based on the concept of bioregional networks (see box below). Under consideration is the contribution of a range of federal, provincial, and territorial site designations as well as other marine management tools (not just MPAs). The approach could lead to the planning of several ecologically linked MPA sites at once.

MPA News: So far, Canada has taken an incremental, one-site-at-a-time approach to building a national MPA network. What have been the benefits from such an approach?

Maxine Westhead: The Department of Fisheries and Oceans launched a number of MPA pilot projects shortly after Canada's *Oceans Act* was passed. Our experience since then in the DFO Maritimes Region demonstrates several benefits to the one-site-at-a-time approach. A major social upside to the pilot phase (1998-2006) was that it allowed us to introduce MPAs to industry, stakeholders, and other government agencies at a time when there was still great uncertainty, fear, and resistance to the concept. In retrospect, the first decade of the regional MPA program witnessed a growth in stakeholder knowledge of MPAs as a result of early candidate sites. We now encounter more acceptance of MPA legitimacy.

A critical ecological benefit to such an approach is the ability to incorporate new data and information into our planning process. As the Maritimes Region advances the MPA program and refines the goals and objectives for the forthcoming bioregional MPA network, there will be flexibility to respond to new research findings. For example, our knowledge of sensitive benthic environments and cold-water coral grows incrementally every time a researcher lowers a camera to the seabed. The findings and associated conservation needs will inevitably shape the selection of future MPA candidates. Developments in other conservation frontiers, such as designations under Canada's *Species at Risk Act*, will also influence the site selection process. In addition, a one-site-at-a-time approach allows the MPA program to address evolving pressures arising from changing patterns of ocean use.

Open for comment: draft framework for Canada's MPA network

Fisheries and Oceans Canada has posted a draft *National Framework for Canada's Network of Marine Protected Areas* online for public review. The draft framework provides direction for the design of a national network of MPAs, including the proposed overarching vision and goals; design properties; eligibility criteria for inclusion in the network; network governance structure; and guidance for promoting national consistency in bioregional network planning. The document was drafted in collaboration with a federal-provincial-territorial government Oceans Task Group that reports to the Canadian Council of Fisheries and Aquaculture Ministers.

The draft is open for public comment until 3 February 2011 and is available at **www.isdm-gdsi.gc.ca/oceans/publications/dmpaf-eczpm/form-eng.asp**.

One of the biggest overall benefits for our region has been the opportunity for learning, reflection, and program adaptation as experience is gained with each MPA. This is especially true for developments in regulatory best practice. In Canada, *Oceans Act* MPAs are long-term statutory declarations. Each time a site is designated, practitioners learn a bit more about the nuance of legal intent as well as the importance of language and terminology. We improve the regulatory wording and ultimately the ease of management and enforcement.

MPA News: What are the challenges of the one-site-at-a-time approach?

Westhead: Ecologically speaking, one obvious drawback to the approach we have taken is the potential risk to seabed features, special areas, and significant habitats posed by unrestrained human activity. Regional practitioners believe we could prevent unforeseen damage, lessen adverse disturbances, and alleviate biodiversity losses by protecting a lot more ocean all at once in a comprehensive network of MPAs. Unfortunately, despite good intentions on our part for over a decade, and broad support to develop an overarching network plan, our capacity and resources have limited us to assessing and establishing MPAs one at a time.

A persistent social challenge raised by the incremental approach is resentment from user groups most likely to be impacted by an MPA. The NIMBY syndrome (Not In My Back Yard) is to be expected anywhere, but the one-site-at-a-time approach seems to create a particular feeling of inequity within the region. For example, we are often asked, "Why select and prioritize THIS site in OUR area? Couldn't you find a different site somewhere else in the region for your next MPA?" An all-at-once approach would demonstrate that every part of the region was being given equal treatment and attention by MPA planners.

Another message raised consistently by stakeholders is the desire to move away from one-off designations toward a more systematic approach. This challenging demand has always been there, and not just from conservationists as might be expected. Marine industries and other regulators have long sought a regional MPA network plan in hopes that it would lend some certainty and predictability to their own plans, investments, and endeavors. Not knowing where and when the next MPA will be sited introduces some economic and liability risk factors for industry proponents.

One major drawback of the incremental approach for practitioners is the need to re-acquaint ourselves with the industries and key representatives whenever we embark on a new site. Despite the growing public awareness of MPAs, we often have to re-introduce the concepts and explain what MPAs are and what they are not. This means a lot of visits to communities — which is ultimately a great benefit for the program, but a large upfront investment.

MPA News: What will Canada's upcoming bioregional MPA planning process look like?

Westhead: DFO will soon launch an all-at-once planning process that will be followed by a cycle of site selections. I am pleased to say that we are finally moving in that direction.

It is important to note that any network planned at a given point in time will reflect the current understanding of the marine environment along with knowledge of the existing uses, policy envelopes, and so forth. Just as the sea and marine activities are dynamic, so are the fiscal, bureaucratic, and legal frameworks we work under. All are subject to change.

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Planning MPA networks for connectivity

Marine species often require different habitats at different life stages. Thus a major consideration in the planning of MPA networks is ecological connectivity: how well does the network protect the various linked habitats that a species will need over its lifetime?

Peter Sale, lead author of *Preserving Reef Connectivity: A Handbook for Marine Protected Area Managers* (available at **www.inweh.unu.edu** and **www.gefcoral.org**), says that building connectivity successfully into MPA network planning should not depend on whether the planning process takes a one-site-at-a-time approach or all-at-once approach:

> "Fundamentally, it does not matter if a network is built up one node at a time or all nodes at one time. For connectivity to be adequately achieved within a network of MPAs, it is necessary to space them appropriately for the dispersal capabilities of target species, and this requires due consideration of hydrodynamic patterns and bathymetric patterns in the location where the network is being established.
>
> "Thus to design a network, one must begin with reasonable knowledge of hydrodynamics and bathymetry for the location, and a clear understanding of the species or types of species that are to be of primary concern. Then possible locations must be chosen using a variety of criteria both ecological and socioeconomic, but including information on the dispersal capabilities, and the habitat requirements at different life stages of those species selected as the primary targets. While detailed information on dispersal capabilities (particularly of larval stages) is still quite limited, a number of research teams are building this knowledge for reef species at various sites around the world. We are already able to make approximations that are reasonable for a number of types of fish species.
>
> "In most situations, funding will only be sufficient to implement MPAs sequentially, and 'all at once' will not be an option. In wealthier nations, large regions can be evaluated physically and biologically, a region-wide zoning plan designed, and the MPA protection put in place all at once. In such cases this is a logical and appropriate approach. But in poorer nations, the same long-term goal can be achieved using a gradual approach."

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Network Launched for Managers of Very Large MPAs

A new network has been created to help managers of large-scale MPAs — greater than 250,000 km^2 in area — to share their experience in addressing the unique challenges of overseeing such vast protected areas. The Big Ocean network, as it is called, was launched in December and includes the managers of five MPAs so far: Great Barrier Reef Marine Park (Australia), Marianas Trench Marine National Monument (US), Motu Motiro Hiva Marine Park surrounding Sala y Gómez Island (Chile), Papahānaumokuākea Marine National Monument (US), and Phoenix Islands Protected Area (Kiribati).

Aside from the Great Barrier Reef Marine Park, which was designated in the 1970s, these large-scale MPAs have all been designated in the past decade. Best practice for managing such broad and remote areas, including enforcing them, remains largely unknown. The Big Ocean network managers have launched a website — www.bigoceanmanagers.org — to raise awareness of their common challenges and potential solutions, and they plan additional communication methods to foster knowledge-sharing. A press release on the network is available on the website.

`Aulani Wilhelm, NOAA superintendent of Papahānaumokuākea Marine National Monument and originator of the Big Ocean network concept, talks here about the challenges of large MPAs and how the network will help:

On challenges of managing large-scale MPAs:

Large-scale MPAs — encompassing integrated marine ecosystems across multiple habitats — compound and magnify existing challenges in marine conservation and management. At the same time, they bring a specific set of issues that are unique to such scales, and relatively poorly understood. Examples of these unique challenges include:

- Inadequate enforcement presence and monitoring effort given the large and/or remote scales involved;
- Enormous logistical challenges and travel costs associated with management of large, remote areas, far from population centers and resources;
- Existing management capacity and resource allocation limitations that are compounded when spread across such large geographic areas;
- Public interest and outreach relevance challenges given the physical distance such areas may be from human presence and consistent public awareness; and
- Poor or incomplete understanding of how "source-sink" reproductive and recruitment dynamics relate to native species, particularly for economically valuable highly migratory species that may reside in or travel through the large-scale MPAs during part of their life history.

More often than not, large-scale MPA site managers have been isolated from one another. Until now, they have been operating without the opportunity to regularly and formally share experiences, knowledge, lessons, and unique solutions relating to large-scale MPAs.

On how the Big Ocean network will help:

The hope is that through this network we can improve management across and among geographic areas; identify gaps and provide guidance to better align science, management and community; and aid in the development of future large-scale sites to build upon our experiences. We also hope this network will provide a vehicle to increase engagement with regional and international bodies and NGOs that are involved in marine conservation, and that are particularly interested in supporting the role of large-scale sites.

On growing the network:

The starting definition of "large-scale MPA" that we used to launch Big Ocean is "a marine conservation area over 100,000 square miles (258,998 km^2) in size that is actively managed for protection across the entire geographic boundary of the site." Thus, the primary descriptors that define us are "large" and "managed". This is not a closed network. We welcome other existing or proposed sites to join with us. We also welcome supporters of large-scale MPAs to become part of the network to share in our efforts to bring this relatively new marine conservation community together and strengthen our capacities at the site level.

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MPA Perspective: Autonomous Vessels Offer New Tool for MPA Research and Enforcement

By Brendan Tougher and Philip A. McGillivary

[Editor's note: The authors of this essay have no financial interest in the products they describe here.]

Autonomous vessels — that is, unmanned vessels that can operate independently of human direction or by remote control — offer MPA managers a new tool for research and enforcement. Recently developed autonomous surface vessels (ASVs) are now being tested in marine protected areas to provide a broad range of monitoring capabilities.

Using ASVs in MPAs enables the study of temporally short-lived events, such as the effect of storms, and spatially unpredictable features, such as upwelling and frontal zones. Understanding of these critical events is important for comprehensive ecosystem management but can be difficult to document. In addition, ASVs can provide persistent maritime law enforcement capabilities, which could be particularly useful in remote areas or in situations of low enforcement capacity.

The Wave Glider

The Wave Glider (www.liquidr.com) — a surfboard-like float roughly the length of a human — is an ASV that derives its propulsion from wave energy, and can thus remain at sea for indefinite periods. It can be launched directly from a dock or shore, without requiring a ship. Wave Gliders navigate in real-time with GPS fixes via Iridium burst communications (a satellite-based communication system), and can be directed where needed. This ASV is currently being tested within MPAs for hydrophone studies of marine mammals, and measurement of primary production (chlorophyll) and ocean acidification.

In addition to being useful for research, this ASV can be used for law enforcement monitoring in remote MPAs. ASVs can project a continuous law enforcement presence without the cost of manned patrols, and provide a deterrent to MPA violations. Including ASVs in MPA enforcement allows personnel to focus on law enforcement response rather than merely surveillance.

Wave Gliders have already been developed and tested around Hawaii for autonomous remote surveillance, fitted with digital cameras that stream video footage back to shore in real-time. The Wave Gliders' hydrophones can be used for monitoring vessel activity: sound recordings can be analyzed by software that discriminates transiting vessels from vessels engaged in fishing. Each Wave Glider carries an Automatic Identification System (AIS) that reports its location to shore and to other vessels nearby via satellite.

The WAM-V

Another ASV, the Wave Adaptive Modular Vessel or WAM-V (www.wam-v.com), can also be used for enforcing remote MPAs. This futuristic-looking, double-pontoon vessel differs in a significant way from a Wave Glider in that the WAM-V uses a fuel-based motor for propulsion, allowing it to transit rapidly to areas of concern. Use of a WAM-V for MPA patrols was demonstrated off Italy in 2009; details are on the WAM-V webpage. A hybrid of a WAM-V with a Wave Glider propulsion sub-system is also being discussed to allow rapid transit to and from a location, with the option of remaining on patrol or on station for extensive periods using only wave energy.

Cost involved

Wave Gliders are currently being sold for around US $150,000. The price of the WAM-Vs varies with size. The smallest ones, at 12 feet in length, are around $100,000 for each of the first two that have been constructed; the price may decrease as production increases. A larger 33-foot version is under construction that can be manned or autonomous.

To use these devices, the operator needs to know how to use a computer along with the required software, as well as be able to pan the digital camera to identify any illegal activity. With the Wave Glider, for example, the operator's computer displays the position of the device as a series of waypoints received once a minute, providing a so-called "bread crumb trail" display. The Wave Glider can be assigned pre-programmed tracklines or can be controlled in real time by directing it to GPS waypoints as warranted to investigate possible targets of interest.

Development of ASV systems for research and law enforcement in MPAs will increase temporal and spatial data availability for managers while reducing the cost of enforcement and reducing the attractiveness of no-take areas as sites for illegal fishing. The latter issue is important given the current status of too many MPAs as "paper parks" where maritime law enforcement is inadequate. Additional trial deployments of ASVs in MPAs are planned for 2011.

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Letters to the Editor

Large MPAs are essential

Dear MPA News:

In "Views of Global MPA Coverage and the 10% Target: Interview with Mark Spalding and Kristina Gjerde" (MPA News, November/December 2010), Dr. Spalding acknowledges that while "mega-MPAs are really important," focusing on them threatens to throw "off course" localized efforts to protect our oceans.

Imagine the world today without Yellowstone National Park or the many significant protected areas that followed in its path. Surely the establishment of Yellowstone was a good thing, and its designation did not impede the creation of public and community parks. Similarly, our oceans, like our lands, are vast fragile places teeming with life that require a toolbox of protective approaches.

The food security of millions relies upon coastal resources. Small inshore MPAs are in fact critical for improving local, sustainable use of the ocean. But as important as they are for coastal populations, community-centered MPAs cannot be the only way to ensure healthy oceans. It is widely recognized that permanently protected, very large, no-take marine reserves also are an essential tool for preserving unique biological and geological features, sustaining biodiversity, and maintaining flourishing natural populations of marine life for future research.

Unlike small MPAs, large no-take marine reserves provide safe havens for a wide range of migratory species, many of which are critical for the nutrition of coastal peoples. Because ecosystems in large no-take ocean reserves are generally healthier, they are also more resistant to pollution, climate change, and other threats. These threats are adversely affecting the well-being of the world's oceans, and ultimately endangering the livelihoods, food security, and economic development of millions of people. Very large reserves can help reduce these risks.

Furthermore, using numbers from the interview, if we need to protect 32 million km^2 of ocean in order to reach the 10% goal set forth by the Convention on Biological Diversity for protecting our oceans, and if the median MPA is 1.6 km^2, we would need to designate and manage *20 million* such areas to reach that threshold. Given the plodding pace at which MPAs are being created worldwide (something we are all striving to remedy), the creation of every MPA and marine reserve should be cause for celebration.

Finally, it is difficult to square the importance of creating large MPAs with the comparison to a "stamp collecting" exercise. Earlier this year, more than 260 marine scientists from 39 countries called for the establishment of a worldwide system of very large, highly protected marine reserves as "an essential and long overdue contribution to improving stewardship of the global oceanic environment." (www.globaloceanlegacy.org/GOLsciencestatement.html)

Whether seeking designation of local inshore MPAs or big offshore MPAs, or trying to solve the riddle of sustainable fisheries management, scientists and concerned citizens everywhere need to support each other's contributions to sustain healthy oceans. We support and encourage the work and designation of MPAs in different areas, large or small, and are certain that the readers of MPA News agree that "we need both."

Jay Nelson
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WikiLeaked cable on Chagos MPA reveals "fortress" conservation mindset

Dear MPA News:

In response to your coverage of the Chagos MPA in the British Indian Ocean Territory (BIOT), we would like to highlight recent intelligence that has come to light in the wake of the cables released by the WikiLeaks website. On 1 December 2010, the *Guardian* newspaper published confidential cables (www.guardian.co.uk/world/us-embassy-cables-documents/207149) that highlighted several "diplomatic" conversations regarding this closure, including aspects discussed in an article we recently published in the journal *Marine Policy* entitled "Fortress conservation at sea: a commentary on the Chagos MPA" (available at http://dal.academia.edu/ElizabethDeSanto/Papers).

Contrary to the UK government's public statements, these cables show clearly that the MPA's designation was deliberately pushed through while the native Chagossian case for a right to return to the islands was (and still is) pending judgment in the European Court of Human Rights. In fact the designation was described as "the most effective long-term way to prevent any of the Chagos Islands' former inhabitants or their descendents from resettling in the BIOT."

The Chagos MPA is not only a "fortress" park in the model of so many terrestrial parks before it that have excluded people, but quite literally a military one as well, as this correspondence clearly states that the UK

and US view the entire BIOT as "reserved for military uses" – thus lending a new meaning to the term "fortress" conservation. While we recognize the tremendous ecological value of this near-pristine area and support its conservation, shutting people out of decision-making on protected area designations and aligning marine conservation initiatives with officials who refer to local people as "Man Fridays" is clearly not a constructive way to build support for MPAs globally and meet international conservation targets. This arguably represents a cautionary tale for marine conservationists, in that they should beware of becoming aligned with exclusionary MPAs that have ulterior motives. While the imperative of conserving such pristine marine areas is an urgent one, it is debatable whether this imperative should over-ride equity and human rights concerns. Maybe this is a debate we now need to have?

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Chagossian groups have never denied need for conservation

Dear MPA News:
I have read your item on the MPA around the Chagos Archipelago in the Indian Ocean and I have also read Allen Vincatassin's letter (MPA News 12:3, "Letter: Many Chagossian refugees support the new MPA").

I am a founding member of the UK Chagos Support Association (www.chagossupport.org.uk), which was set up to support all Chagossians in their struggle for justice after a long exile from their homeland. Several very important points need to be made:

1. I have yet to talk to any Chagossians who are against preserving their homeland, which they were achieving before a massive US military base was planted on Diego Garcia. What they wish is to be re-settled and to help with conservation and preservation. No sane person wants to destroy their own environment. The leaders of the larger Chagossian groups in Mauritius, Seychelles, and the UK have never denied the need for conservation; they object to the fact that they have been ignored and marginalized.

2. Although the UK Government proclaimed its sole aim in establishing an MPA was entirely altruistic, we now know — thanks to WikiLeaks — that it was proposed primarily as a means of keeping the Islanders in exile.

3. The human animal needs preservation, too, especially when its rights have been denied for decades.

4. Conservation and settlement can go hand in hand as has been shown by many schemes around the world. A massive military base — and all of the people, construction, planes, and boats involved — can be accommodated in Chagos but not the rightful inhabitants? That is neither logical nor fair.

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Science spotlight: Studies on larval export, MPA impacts on communities

Genetic evidence shows larvae from reserves are reseeding fisheries

Researchers have proven, using DNA analysis, that larvae from adult fish inside a network of no-take marine reserves in Hawai'i are spilling into fished areas and helping to reseed fisheries. Studying more than 1000 juvenile and adult yellow tang — a fish species popular in the aquarium trade — scientists determined that many healthy juvenile fish had spawned from parents long distances away, as far as 184 km, including from MPAs. The research team claims its study is the first direct evidence of large-scale population connectivity within an existing and effective network of MPAs.

The network of nine reserves under study was designated in 1999 on the west coast of the island of Hawai'i. Called fish replenishment areas (FRAs), the closures were intended primarily to address a long-standing user conflict between dive tour operators and aquarium fish collectors (MPA News 11:1, "Updates on MPA Networks in Progress..."). The study "Larval Connectivity in an Effective Network of Marine Protected Areas" appears in the journal PLoS ONE at **www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0015715.**

MPAs generally improve fish catch per unit effort for most, but not all

A review of the scientific literature on marine protected areas has determined that, following MPA designation, catch per unit effort (CPUE) for local fishing groups generally remains stable or increases in cases of older and smaller MPAs. The study, published in *Conservation Biology*, suggests both biological and social factors are at play in this. Older MPAs tend to build up fish biomass over time, and smaller MPAs may experience higher rates of fish spillover to adjacent waters. Meanwhile MPAs may also reduce competition for fish resources by reallocating fishing rights.

However, CPUE did not increase across the board: a minority of fishing subgroups, about 15%, experienced declines in CPUE following MPA designation. "This suggests that MPAs may represent a viable strategy for enhancing food security and empowering local communities, but current MPA practices negatively affect at least a minority of fishers," write the authors. The abstract for the study "Impacts of Marine Protected Areas on Fishing Communities" is available at **http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2010.01523.x/abstract**. For the full article, e-mail lead author Michael Mascia at **michael.mascia@wwfus.org**.

Notes & News

Purse seine closure in Pacific islands takes effect, totaling 4.5 million km²

As of 1 January 2011, purse seining is banned in 4.5 million km² of high seas in the Western Tropical Pacific. The closure — more than 13 times the size of the Great Barrier Reef Marine Park — was first announced last February by the eight nations that are Parties to the Nauru Agreement (PNA), under which management of Central and Western Pacific fisheries is coordinated (MPA News 11:5). The PNA nations are the Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, the Solomon Islands, and Tuvalu.

The intent of the new purse seine closure is to allow tuna stocks in the region to recover. Roughly one-quarter of the global tuna catch is caught in waters under the Nauru Agreement.

To restrict fishing on the high seas, the PNA countries have jointly amended the fishing contracts they sign with foreign fleets. The fleets, in order to remain eligible to fish within waters directly controlled by the islands, agree to refrain from fishing in certain international waters, including the new purse seine closure.

MPAs approved for California's south coast

In December 2010, the Fish and Game Commission of the US state of California adopted regulations to designate 36 new MPAs along the southern portion of California's coastline. The regulations were adopted as part of the state's Marine Life Protection Act (MLPA) initiative, a region-by-region process to reexamine and redesign the state's MPA system. The south coast study region is the third of five state-wide study regions to complete the MLPA planning process. The previous two were the central coast region and north central coast region.

The south coast's new MPAs encompass 187 square miles, or 8% of the region's waters. Most of the new MPAs (covering 4.9% of south coast waters) will be no-take, while the remainder will allow various levels of take. The south coast planning process began in 2008 and involved more than 50 days of meetings and over 12,000 written public comments. For more information on the MLPA process in general and the south coast MPAs in particular, go to www.dfg.ca.gov/mlpa.

Sanctuary announced in Indonesia for sharks, turtles, dugongs

The autonomous regional government of Indonesia's Raja Ampat islands has announced its intent to designate a 46,000-km² marine protected area to protect sharks and other marine life. Once the MPA is formally designated, it is expected to include a ban on fishing for sharks, manta and mobula rays, dugongs, turtles, and live fish for the aquarium trade.

The forthcoming MPA is intended to boost tourism to the region. Some zones within the MPA will be specially set aside for tourism and conservation, and will be completely no-take. In other zones, fishing for some species will be allowed but the use of poison, explosives, and compressors will be banned.

US advisory committee on MPAs seeks nominations

The Marine Protected Areas Federal Advisory Committee is seeking new members to fill six vacancies for October 2011. The Committee advises the Departments of Commerce and the Interior on the development and implementation of a national system of MPAs. Nominations for natural and social scientists; state, territorial and tribal resource managers; cultural resource experts; and representatives of commercial and recreational fishing, ocean industry, and conservation interests are sought by 15 February 2011. For more information, go to www.mpa.gov/fac.

Workshop on role of MPAs in fisheries management

On 29-31 March 2011, a meeting in Bergen, Norway, will examine new findings and strategies for integrating MPAs in fisheries management, specifically as part of applying an ecosystem approach to fisheries. The workshop "Exploring the Role of MPAs in Reconciling Fisheries Management with Conservation" is co-sponsored by the Institute of Marine Research (Norway), the Norwegian Fishery Forum for Development Cooperation, the Norwegian Ministry of Fisheries and Coastal Affairs, the Nordic Council of Ministers, FAO, and UNEP. Attendance will be limited to 120 people. The workshop website is www.imr.no/om_havforskningsinstituttet/arrangementer/konferanser/mpafish2011/en.

Registration open for IMCC2 meeting

Registration is open for the Second International Marine Conservation Congress (IMCC2), to be held 14-18 May 2011 in Victoria, British Columbia, Canada. Instructions for registering are available on the conference website — **www.conbio.org/IMCC2011**.

The IMCC2 steering committee is accepting applications for travel reimbursement. To be eligible for such reimbursement, you must be from a developing country and you must be presenting at the conference. Applications for support must be submitted by 15 March 2011 on the conference website.