MPA news

International news and analysis on marine protected areas

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How MPAs can help mitigate impacts of climate change via coastal blue carbon, "fish carbon", and more

When nations gathered in Paris last December to forge a pact on climate change, the agreement's original text made no mention at all of oceans. Not only did this oversight ignore 71% of Earth's surface; it also overlooked the fact that marine ecosystems act as an enormous climate control system.

The seas regulate the concentration of atmospheric CO_2 worldwide by absorbing and storing it in a variety of ways. A healthy, resilient ocean — where there is abundant plant life to convert CO_2 to oxygen, and abundant animal populations to store carbon in their shells, bodies, and wastes — may be key to helping mitigate the impacts of climate change.

Marine protected areas can play a role in fostering that healthy, resilient ocean. To be sure, addressing the enormous threat of global climate change will require much, much more than just MPAs. But MPAs do offer legitimate ways to store carbon and to offset some of the impacts of a changing climate. And practitioners are starting to explore some of these opportunities.

MPAs and coastal blue carbon

There is 50 times more carbon in the ocean than in the atmosphere (**https://oct.to/Zk6**). Most of the ocean carbon — about 98% — is dissolved as organic and inorganic matter in the deep ocean and seafloor sediment. Once carbon is at such depths, it generally remains stored for the long term. The rest of the carbon exists in oceans' surface layers, from where there is regular exchange with the atmosphere. For example, at least half of the oxygen we breathe comes from marine plants, which absorb CO_2 and convert it to O_2 through photosynthesis.

When carbon is absorbed *and stored* by oceanic plants, it is called blue carbon: the storage removes carbon from the atmosphere for years or decades or longer, thus helping to counter the impact of climate change. Mangrove forests, salt marshes, and seagrass beds are examples. When these habitats grow, they capture and store carbon as living plant material and in the sediment below them. When the habitats are destroyed, however, much of their carbon is released back to the atmosphere and ocean.

"MPAs as a management tool play a very important role for blue carbon ecosystems," says Dorothée Herr, IUCN's coordinator of the International Blue Carbon Initiative, which helps develop management approaches and engage governments on the issue (**thebluecarboninitiative.org**). "By protecting these areas, MPAs help reduce and avoid carbon emissions from blue carbon ecosystems. And when the MPAs involve active ecosystem restoration — such as of mangroves, saltmarshes, and seagrasses — they also help increase carbon sequestration."

continued on next page

Editor's note: MPAs are relevant to more than just fisheries

Like most government decisions, the designation of marine protected areas often involves politics. And the politics of MPAs usually center around fishing. When no-take MPAs are sited in accustomed fishing areas — typically with a goal of protecting those areas against various impacts of fishing — fishers are impacted and often frustrated.

The political spotlight that accompanies MPAs has fostered an outlook among some that MPAs are applicable only to that one purpose: addressing the effects of fishing. In the 11 December 2015 issue of *Science*, for example, fisheries scientist Ray Hilborn of the University of Washington wrote that MPAs "provide absolutely no protection" against several major threats to the ocean, including global warming, acidification, pollution, illegal fishing, land-based runoff of sediments, and plastics ("Letter: Marine Protected Areas miss the boat").

But that outlook sells MPAs short. In truth, MPAs can play direct or indirect roles in addressing each of the threats listed above — sometimes as a primary tool, more often as a supplemental one.

This year MPA News will help shed more light on these roles. We will start in this issue with how MPAs can help mitigate some of the impacts of climate change.

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A publication of • Marine Affairs Research and Education

Herr cites a 2015 paper by Daniela Miteva of Duke University (**https://oct.to/Zku**) that evaluated the effectiveness of protected areas in Indonesia at conserving mangroves and reducing blue carbon emissions. The findings: MPAs reduced mangrove loss by about 140 km^2 between 2000 and 2010, and avoided blue carbon emissions of approximately 13 million metric tons (CO_2 equivalent).

"The goal of coastal blue carbon efforts is to incentivize better management of these systems using a variety of climate change policies and financial incentives," says Herr. These approaches include the UN's Reducing Emissions from Deforestation and Forest Degradation (REDD+) program, which creates a financial value for the carbon stored in forests, and offers financial incentives for developing nations to foster conservation and enhancement of their forest carbon stocks (**http://www.un-redd.org**). IUCN released a report in January 2016 on using climate finance and other financial mechanisms to support coastal wetland programs and projects: **https://oct.to/ZkL**

Some MPAs are already assessing how blue carbon can factor in their sites' services and, potentially, finances. In the Dominican Republic, the 550-km^2 Montecristi National Park hosted blue carbon research conducted by Counterpart International, a US-based NGO. That research, which quantified the amount of carbon stored in the park's mangroves, has served as a cornerstone for the ongoing development of a Blue Carbon NAMA (Nationally Appropriate Mitigation Action) for the Dominican Republic. The NAMA will eventually provide financial mechanisms and incentives for local communities to sustain and expand mangrove coverage in and around protected areas nationwide.

"Most of the Dominican Republic's mangrove resources are located in protected areas," says Paul Guggenheim, Counterpart's country representative. He notes a national ban on clearing of mangroves within protected areas is regularly enforced. The designation of the MPAs has allowed local stakeholders and government agencies to develop a clear institutional and legal framework to conserve the mangroves.

Guggenheim adds, though, that other blue carbon ecosystems such as estuarial wetlands and seagrasses are in both protected *and* unprotected areas in the Dominican Republic. Thus unprotected areas must also be considered as part of a holistic national strategy. "While MPAs are a valuable tool, complementary national laws and international agreements are also invoked in the country's approach to conserving sources of blue carbon," he says. For example, the national law that created the Ministry of Environmental and Natural Resources repeatedly states the importance of conserving mangrove ecosystems.

In Costa Rica, the 306-km^2 Térraba-Sierpe National Wetland, which contains roughly 40% of the nation's mangrove area, hosted blue carbon research in 2012. The study was the first-ever ecosystem-level carbon inventory conducted in the Central America/Caribbean region.

Miguel Cifuentes Jara, a scientist with Costa Rica's Tropical Agricultural Research and Higher Education Center (CATIE), led the Térraba-Sierpe research, as well as later studies of other mangroves in Costa Rica, El Salvador, and Panama. "As I've collected more data and shared it with other researchers and decision-makers, interest in blue carbon has increased," he says. "My working group supported the development of a draft blue carbon policy statement for Costa Rica in 2014-2015."

He notes that because Costa Rica's forestry law is so stringent — no land use change from forest to other uses is allowed, inside or outside protected areas — it is difficult to say whether protected area status is essential for blue carbon in Costa Rica ("…although it may very well be essential elsewhere in Central America," he says). Costa Rica's net balance of forest cover is positive. That being said, blue carbon could eventually be good for Térraba-Sierpe's management: there is an independent initiative underway, promoted by Germany's international development organization, to develop a blue carbon-based financial mechanism for the park and other MPAs in Costa Rica (**https://oct.to/Zkz**)

There is no "one size fits all" blue carbon solution or mechanism suitable for every country or project, says IUCN's Herr. It is up to countries, with the help of IUCN and others, to assess what type of blue carbon policy and financial incentives best fit their national circumstances, taking into account the coastal management policies and practices — including MPAs — that are in place already. "Blue carbon cannot happen in isolation to the conservation and management efforts already happening on the ground," she says.

The emerging science of "fish carbon"

A 2014 report by GRID-Arendal and Blue Climate Solutions added a new term to the field of climate change mitigation: fish carbon. The report — *Fish Carbon: Exploring Marine Vertebrate Carbon Services* (**http://www.grida.no/publications/fish-carbon/**) — looked beyond the blue carbon of coastal areas. It highlighted the direct relevance of marine vertebrates, including fish and marine mammals in the open ocean, to climate change mitigation via an array of natural mechanisms. It also stressed the importance of conserving marine vertebrates in order to protect their mitigation services.

Protecting healthy wetlands as a defense against extreme weather events

Coastal wetlands can be an important source of blue carbon, as described in the adjacent article. But that's not the only role they can play in helping to mitigate climate change. Mangrove forests in particular protect upland areas against flooding and erosion, as caused by sea level rise and storms. With extreme weather events expected to become more frequent due to climate change, and with sea levels already increasing, healthy mangrove ecosystems will grow ever more important to coastal communities.

For resources on how mangroves reduce wind swell and waves and reduce storm surge along coasts, go to **http://coastalresilience.org/our-work/habitats**

The report, which aimed to stimulate further work on the topic, outlined eight mechanisms for fish carbon:

1. Trophic Cascade Carbon: Food web dynamics help maintain the carbon storage and sequestration function of coastal marine ecosystems (e.g., how a kelp forest is maintained by herbivory and predation).

2. Biomixing Carbon: Turbulence and drag, associated with the movement of marine vertebrates, causes enhanced mixing of nutrient rich water from deeper in the water column toward the surface, where it enhances primary production by phytoplankton and thus the uptake of dissolved CO_2.

3. Bony Fish Carbonate: Bony fish excrete metabolized carbon as calcium carbonate ($CaCO_3$) enhancing oceanic alkalinity, potentially providing a buffer against ocean acidification.

4. Whale Pump: Nutrients from the fecal material of whales stimulate enhanced primary production by phytoplankton, and thus uptake of dissolved CO_2.

5. Twilight Zone Carbon: Mesopelagic fish feed in the upper ocean layers during the night and transport consumed organic carbon to deeper waters during daylight hours, where it is released as fecal pellets.

6. Biomass Carbon: Marine vertebrates accumulate and store carbon in the ocean as biomass throughout their natural lifetimes, with larger individuals storing proportionally greater amounts over prolonged timescales.

7. Deadfall Carbon: The carcasses of large pelagic marine vertebrates sink through the water column, exporting carbon to the ocean floor where it becomes incorporated into the benthic food web and is sometimes buried in sediments (a net carbon sink).

8. Marine Vertebrate Mediated Carbon: Marine vertebrates consume and repackage organic carbon through marine food webs, which is transported to deep waters by rapidly sinking fecal material.

"Although in very early stages, the science suggests that the contribution of marine vertebrates to carbon capture and storage may be significant," says Angela Martin, co-author of the report with Steven Lutz. "This would potentially allow for protection of marine biodiversity for carbon services, using the precautionary principle."

It is not hard to see the potential links between fish carbon mechanisms and the protection that can be provided for vertebrates by MPAs. Lutz says MPAs will be a very important management option for conserving, restoring, and enhancing fish carbon services. "MPAs and fish carbon could benefit each other if the financial and intrinsic value of fish carbon can be harnessed to support and inform sustainable management policies such as MPAs," he says.

It may take some time to get there: quantification of any one species's contribution to carbon capture and storage, and net carbon impacts, remains to be done. Martin and Lutz say the scientific community and policy-makers are not yet ready to make the leap to action on fish carbon. "In this vein, we have developed a number of targeted research projects, including one that will consider the spectrum of specifically whale carbon services in the Cook Islands, which can be used to inform MPA management there," says Lutz. They are currently seeking funding for these projects.

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http://openchannels.org/node/12405

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More resources on climate change and the relevance of MPAs

"Protection of our oceans must go hand-in-hand with the fight against climate change", editorial by Tommy Remengesau, Jr., President of Palau
https://oct.to/ZkD

The Blue Carbon Initiative
http://thebluecarboninitiative.org

Blue Carbon Portal
http://bluecarbonportal.org

GEF Blue Forests Project
http://www.gefblueforests.com/

CAKE (Climate Adaptation Knowledge Exchange)
http://cakex.org

Coastal Blue Carbon manual: methods for assessing carbon stocks and emissions factors in mangroves, tidal salt marshes, and seagrass meadows
https://oct.to/ZkR

Paris Climate Agreement
http://unfccc.int/files/home/application/pdf/paris_agreement.pdf

Seychelles project combines ocean planning, climate change adaptation, and debt restructure

In Seychelles, a unique project is underway. It links a restructuring of some of the island nation's international debt with a financial mechanism to support adaptation to climate change, namely through improved marine and coastal ecosystem management. That management will include a marine spatial plan for the Seychelles' 1.37-million-km^2 EEZ in which up to 30% of the area will be designated for high and medium levels of biodiversity protection.

Presented by Seychelles officials at the Paris climate summit in December 2015, the project is fairly complex. The debt restructuring, facilitated by The Nature Conservancy with the involvement of the Paris Club of creditor nations and South Africa, includes using private investment to buy back US $30 million of Seychelles debt at a discounted rate.

In turn, the Seychelles government agrees to: complete a legislated marine spatial plan; create the Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) to fund implementation of the plan as well as other conservation and climate adaptation projects; and pay back the private investors over 20 years. The flow of funds is explained here: **https://oct.to/ZkE**

The main outcomes of the marine planning process will be a legislated marine spatial plan with gazetted marine protected areas and management conditions, and an implementation plan that includes monitoring and enforcement connected to funding from SeyCCAT. The climate adaptation elements may involve coastal defense strategies, coral reef restoration, and other mechanisms.

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The Seychelles Marine Spatial Planning website
http://www.seychellesmarinespatialplanning.com/

The Seychelles Debt Swap: https://oct.to/ZkC

Swapping Seychelles debt for ocean conservation
https://oct.to/Zka

To comment on this article:
http://openchannels.org/node/12406

Notes & News

Correction: Bill Ballantine

In our October-November 2015 issue, MPA News misidentified the nationality of marine scientist and MPA advocate Bill Ballantine, who died on 1 November. Although Ballantine spent most of his adulthood and career in New Zealand and was considered by many as the "father of marine conservation" in his adopted country, he was born in Leicester, England.

"Blue growth" of maritime activities in Mediterranean will conflict with MPA efforts

A new report provides the first integrated picture of the "blue growth" of maritime activities in the Mediterranean and how this growth aligns or conflicts with conservation — including the goal of setting aside 10% of the region in MPAs by 2020 as agreed under the UN Convention on Biological Diversity (CBD).

Produced by WWF, the report outlines the findings of the organization's MedTrends project. MedTrends analyzed 10 key maritime economic sectors, illustrating and mapping their current status and future development trends, drivers, interactions, and environmental impact. The report features multiple maps showing shipping routes, fishing zones, aquaculture locations, hydrocarbon exploration areas, and MPAs, among other topics.

Several of the maps indicate that the growing competition for space between priority areas for conservation and developing economic sectors will make the CBD target more difficult to achieve. As of 2015, MPA coverage in the Mediterranean was 3.27%, well short of the 10% goal. MedTrends anticipates growth for all of the maritime sectors except commercial fisheries.

"It is highly possible that the growth in maritime sector activities and the increasing competition over space may slow down or even hinder the designation process of new MPAs," states the report. "It is likely that some pressures and, more importantly, cumulative impacts on marine ecosystems generated by the increasing exploitation of the sea will grow at a faster rate than the solutions developed and implemented to mitigate them."

Blue Growth in the Mediterranean Sea: The Challenge of Good Environmental Status is available on the MedTrends website at **http://www.medtrends.org**. In addition, MedTrends has produced national reports with unique content, datasets, and maps for Cyprus, France, Greece, Italy, Malta and Spain. A report is also available on the Adriatic-Ionian region.

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UK intends to designate large no-take MPA around part of Ascension Island; UK's Pitcairn Islands MPA on track for 2016 designation

The UK Government has announced its intent to designate a large no-take MPA around part of Ascension Island, a remote and lightly populated UK territory in the mid-Atlantic Ocean, just south of the Equator.

Although formal declaration of the MPA's boundaries may not happen until 2017 or later, the UK Government and Ascension Island Government are taking a first step this year, closing an area covering 234,291 km^2 (or 52.6%) of the island's waters. This closure is intended to allow research to scope the eventual boundaries of the MPA.

The UK Government promised last year to create a "blue belt" around each of the country's 14 overseas territories. The Ascension announcement is the latest move in that direction. The UK designated an MPA around the Chagos Archipelago in the Indian Ocean in 2010 (MPA News 11:6) and around the South Georgia and South Sandwich Islands in 2012 (MPA News 13:5). In 2015 the Government announced its intent to designate one around the Pitcairn Islands in the South Pacific (MPA News 16:4).

Ascension's newly closed area comprises everything within 50 nautical miles of the island and all waters south of 8 degrees south. The area was selected to create a buffer around ecologically important inshore areas, while also including seamounts.

Commercial fishing will still be allowed north of Ascension

Commercial fishing, primarily by foreign longline fleets, will continue to be allowed to the north of the island but will be monitored to ensure best practices are used, including a ban on shark finning and catch restrictions on certain vulnerable shark species. Vessels will be required to carry de-hookers and dip nets to support the live release of incidentally caught seabirds, turtles, and sharks.

In parallel, Ascension Island has enacted a strengthened Fisheries (Conservation and Management) Ordinance 2015. This new legislation provides the legal framework to prosecute any illegal vessel, or any licensed vessel fishing in contradiction to its licensing terms, with a maximum fine of £2 million (US $2.8 million). The improved licensing regime also ensures adequate safety provisions (e.g., mandatory life jackets for all on board, in-date flares, life rafts, etc.), thereby improving vessel standards.

James Duddridge, UK Minister for Overseas Territories, said the eventual fully protected reserve will comprise at least 50% of Ascension's maritime zone.

The Ascension news was announced in a press release by the UK-based Blue Marine Foundation, which negotiated the plan with the UK and Ascension Island Governments (**https://oct.to/ZkK**). The Blue Marine Foundation also helped secure a £300,000 (US $420,000) grant from The Bacon Foundation to cover costs related to enforcing the closure (via satellite and patrol vessel) and conducting research.

Ascension Island is located roughly midway between Brazil and West Africa, and has fewer than 1000 human residents. It is home to several endemic fish species and one of the world's largest populations of green turtles.

Status of Pitcairn MPA plans

The UK Government's plan to designate an 834,334-km^2 MPA around the Pitcairn Islands, with nearly all of it no-take, is on track for designation later this year (2016), according to a source in the UK Government. However, the source told MPA News that Pitcairn's remote location means designating an MPA poses significant challenges around surveillance and enforcement.

"The UK and the Government of the Pitcairn Islands are currently undertaking a test to evaluate the effectiveness of various [surveillance/enforcement] options," said the source. "The trial has been timed to coincide with the peak fishing season — October 2015 to March 2016. We will analyze the results to identify the level of threat and determine how to implement an effective monitoring and enforcement plan."

The UK Government indicated in early 2015 that designation of the Pitcairn MPA would rely in part on identifying adequate enforcement methods at a cost that can be accommodated within existing naval expenditure limits.

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https://openchannels.org/node/12407

UK designates second tranche of Marine Conservation Zones

In January 2016, the UK's Department for Environment, Food, and Rural Affairs (Defra) designated 23 new Marine Conservation Zones around England's coast, adding to the 27 MCZs designated in November 2013 (MPA News 15:4).

With the new designations, 20% of English waters are now considered protected. However, the new MCZs do not yet have management plans, which are still under development. A third tranche of MCZs will be submitted to consultation in 2017 and designated in 2018.

More information on the MCZs is at **http://jncc.defra.gov.uk/page-4525**

South Africa's oldest MPA may be reopened to fishing

South Africa's oldest MPA is in limbo now as it awaits a government decision on whether to reopen it to fishing, as requested by local anglers.

Designated in 1964, the 639-km^2 Tsitsikamma National Park (TNP) protects healthy intertidal and subtidal ecosystems and associated populations of reef fish and invertebrates. Fish populations in TNP are between 5 and 21 times more abundant than in adjacent fished areas. Since 2000, all of TNP has been no-take.

In 2007 and again in 2010, proposals were made by communities living adjacent to the reserve to allow limited shore fishing. In both cases the relevant environment ministers at the time followed advice from scientists that the marine resources protected within TNP were too valuable to be fished. Opening the reserve to fishing, according to the ministers, would provide only short-term benefits to relatively few people.

However, on 19 November 2015, in response to continued pressure from local communities, including threats by fishers to close down the park and to harass hikers and tourists, the South African Department of Environmental Affairs (DEA) gazetted a proposed rezoning and opening of four areas of TNP for recreational shore fishing, exclusively by communities adjacent to the park (**https://oct.to/Zkr**). The four areas represent about 20% of the park. The deadline for public comments on the proposal was 1 February 2016.

Taking matters further, on 29-30 November, South African National Parks (SANParks, which manages TNP) announced it had signed an agreement with the local fishing forum to open the four areas even before the conclusion of the public consultation, as a trial. The four areas were then opened on 15 December. SANParks rushed a monitoring program into effect to oversee this, with monitors recruited, trained, and deployed within a period of five days.

On 8 January 2016, a court order halted the fishing again to allow time for the full public consultation to occur and for a formal decision on rezoning to be made. The ruling was spurred by a lawsuit by Friends of Tsitsikamma, a conservation NGO.

Now everyone awaits the government decision. "Unfortunately there have been a number of dangerous precedents set here," says Bruce Mann, senior scientist at the Oceanographic Research Institute in Durban, South Africa. "These include a lack of due process (the fishing started prior to completion of public consultation) and the granting of exclusive extractive rights for recreational fishing to a limited number of people living adjacent to a protected area." The threat to disrupt the park if extractive rights are not granted, he adds, is also not a good precedent for protected areas, marine or terrestrial, in South Africa.

To comment on this article:
https://openchannels.org/node/12408

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Spotlight on surfing reserves: Protecting surf spots through local community engagement

In March 2016, a 16-km-long swath of the Gold Coast in Queensland, Australia, will become the eighth World Surfing Reserve, joining other iconic surf spots in Australia, Chile, Mexico, Peru, Portugal, and the US.

The designation of a world surfing reserve — and similar *national surfing reserves* in Australia — is part ecolabel, part community organization. The designation aims to highlight and protect outstanding waves, surf zones, and their surrounding environments, including the economic and cultural attributes of those areas. A strong commitment to local involvement in a surf area's management, through a council, is required for designation.

The concept of surfing reserves first arose in Australia, where 18 national surfing reserves have been designated in the past 10 years. That effort, overseen by an independent group called National Surfing Reserves (**http://www.surfingreserves.org**), has since been exported. A US-based group called Saves the Waves Coalition now oversees the world surfing reserves (**https://oct.to/ZkH**).

Although national surfing reserves in Australia are generally gazetted under various state-level protected area laws, world surfing reserves are not designated by governments. Rather the designation process is similar to how the UNESCO World Heritage Programme designates World Heritage sites: a government nominates its surf area for designation, and the Save the Waves Coalition judges whether it merits the status. The adjudication involves extensive discussions with local communities and elected officials, and can be

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competitive. The Gold Coast outcompeted applications this year from Noosa, Australia, and Guarda do Embáo, Brazil.

The designation raises the profile of high-quality surf spots and fosters an environment of consideration for the area's ongoing wellbeing. "Surfing reserves here in Australia have vastly improved social, environmental, and cultural aspects of locations around the coast," says Chris Tola of National Surfing Reserves.

What surfing reserve management looks like on the ground

The Daly Head National Surfing Reserve in South Australia was designated in 2013. Ed Satanek heads its community-based management committee. Here he describes the committee's work and goals:

> "The Daly Head National Surfing Reserve Committee is driven by a clear vision of what it wants the reserve to become. This was shaped from surfers realizing the impact our access to the surf was having on the narrow fragile coastal environment. We now promote respect for our pristine beaches through events like Cleanup Days, as well as everyday individual acts like surfers' taking their rubbish with them when climbing the hundreds of steps back up to their vehicles. We also re-vegetate coastline areas with provenance plantings, raised in our nursery by volunteers.
>
> "Part of this vision is that we strive to develop a strong sense of community in the district. We believe in the ethos of developing stewardship amongst our young people. The next generation of young surfers are involved in our social and environmental focused events so they will one day carry on the traditions.
>
> "We also believe in sustainable processes. Partnerships are integral to everything we do. We work cooperatively with the district council, associations, clubs, and other groups with aims similar to ours. We view raising awareness about coastline concerns with the non-surfing community and national resource management and coast protection bodies as our responsibility."

For more information:

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Notes & News

New report outlines how global conservation finance could grow to $300-$400 billion per year

When a report describes how annual conservation financing worldwide could be grown from its current level of US $52 billion to as much as $400 billion per year, it gets your attention. When that report is written by top experts in global finance and business — Credit Suisse Group AG and the McKinsey Center for Business and Environment — it deserves wide reading in the conservation field.

The new 28-page report "Conservation Finance from Niche to Mainstream: The Building of an Institutional Asset Class" proposes a toolkit with a number of scalable, repeatable, and investable ideas for substantially growing investment into the conservation sector.

Credit Suisse CEO Tidjane Thiem writes in the foreword, "The continuing disappearance of Earth's last healthy ecosystems is sadly no longer news. What is news is that saving these ecosystems is not only affordable, but profitable. Nature must not be turned into a commodity, but rather into an asset treasured by the mainstream investment market."

The report is available for free at **https://oct.to/Zkb**

New guide available on enforcement of nearshore artisanal fisheries

WildAid and The Nature Conservancy have published a guide to help resource managers design cost-effective enforcement strategies for nearshore artisanal fisheries, including inside and outside of MPAs. Drawing on experience in the Eastern and Western Pacific regions, the 48-page guide walks readers through different enforcement systems, intervention tools, outreach methods, and performance indicators. *Enforcement Guide: Near Shore Artisanal Fisheries* is available at **https://oct.to/ZkV**

Wildlife Crime Tech Challenge announces winners

The Wildlife Crime Tech Challenge, which rewards innovative science and technology solutions to tackle specific wildlife trafficking issues, has announced its first 16 winning innovators (**https://wildlifecrimetech.org**). These individuals will each receive US $10,000 and technical assistance. They are also now in the running for a grand prize of $500,000.

Examples of winning innovations include a global multilingual wildlife whistle-blower reward program; a smartphone app to educate consumers on which

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aquarium fish species are wild-caught with potentially harmful practices; and even a project to construct artificial sea turtle eggs that contain covert tracking devices, to be placed in nests at high risk of poaching.

The Tech Challenge is an initiative of the US Agency for International Development, the National Geographic Society, the Smithsonian Institution, and TRAFFIC.

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https://openchannels.org/node/12410

Study: ship noise should be considered in MPA planning

A new study published in Marine Pollution Bulletin outlines the ways that ocean noise (particularly from ships) can impact marine wildlife, and recommends the use of area-based planning to reduce exposure of animals to chronic ocean noise. The paper introduces the idea of "opportunity sites" — ecologically important habitats that experience low ship noise — as good candidates for MPA designation. "Keeping quiet habitats quiet will be easier than making noisy habitats quiet," write the authors. The study "Quiet(er) marine protected areas" is available for free at **https://oct.to/Zkj**

From the MPA News vault:
Features and news items from yesteryear

Five years ago: Jan-Feb 2011 (MPA News 12:4)
- Comparing Two Methods of Building MPA Networks: One Site at a Time vs. All at Once
- Autonomous Vessels Offer New Tool for MPA Research and Enforcement

Ten years ago: January 2006 (MPA News 7:6)
- Sacred MPAs: Where Protected Areas Hold Spiritual Value for Stakeholders, and How This Affects Management
- A Year After the Tsunami: Surin Marine National Park, Thailand

Fifteen years ago: January 2001 (MPA News 2:6)
- In Galápagos, Clashes Between Fishers and Managers Jeopardize Conservation Efforts
- Coelacanths Discovered In S. African MPA; Tourism to Follow?

For these and all other issues of MPA News, go to **www.mpanews.org/issues.html**

Upcoming webinars on OpenChannels.org

- **What Social Marketing Can Offer to Conservation and Management**
With Diogo Veríssimo of Rare and Georgia State Univ.
March 24
Time: 5 pm UTC / 1 pm US EDT / 10 am US PDT

- **Ocean Exploration and MPAs: Priorities, Technological Advances, and Partnerships**
With Alan Leonardi of NOAA
April 14
Time: 5 pm UTC / 1 pm US EDT / 10 am US PDT

- **Project Eyes on the Seas**
With Mark Young of Pew Charitable Trusts
May 12
Time: 5 pm UTC / 1 pm US EDT / 10 am US PDT

- **Alternative Livelihood Opportunities for Coastal Communities in the Eastern Caribbean**
June 23
Time: 5 pm UTC / 1 pm US EDT / 10 am US PDT

For more information on these or other upcoming events:
https://www.openchannels.org/upcoming-events-list

Book on MPA governance now available in paperback

The book *Governing MPAs: resilience through diversity* by Peter Jones of University College London is now available in paperback. By using the discount code DC361 when ordering online (**http://tinyurl.com/GoverningMPAs**), you can get 20% off the regular price — US $40 instead of $49.95. MPA News interviewed Jones about his research on MPA governance in our May-June 2014 issue (MPA News 15:5).

Article on use of satellite data to combat illegal fishing

The New York Times has published an article on fisheries enforcement in Palau and the growing role that satellite technology is playing in that enforcement. The article "Palau vs. the Poachers" is at **https://oct.to/Zk9**. Palau passed legislation in 2015 to designate a 500,000-km^2 no-take marine reserve, closing roughly 80% of the nation's waters to fishing and mining. The closure is being phased in over five years.