

Issue PDF archive:

From the Editor: How to pay for marine conservation and management ^[1]

Dear MEAM readers,

Please join us for two webinars on innovative finance mechanisms for marine conservation and management, based on some of MEAM's recent coverage of these topics.

- On February 15, join Robert Weary of TNC to learn about [debt swaps to finance climate change adaptation and marine conservation](#) ^[2]. The webinar will be held on 1 PM US EST/10 AM US PST/6 pm UTC. [Register for the webinar](#) ^[3].
- On February 2, join Kelly Wachowicz of Catch Invest to learn about [impact investing to fund marine conservation](#) ^[4] and [sustainable fisheries](#) ^[5]. The webinar will be held at 1 PM US EST/10 AM US PST/6 pm UTC. [Register for the webinar](#) ^[6].

Best wishes for your work,
Sarah Carr
MEAM Editor

Turning science into actions: What scientists can do to inform marine resource management ^[7]

A primary goal for many marine scientists in academia or non-governmental research organizations is improving understanding of marine ecosystems so they can be better managed and conserved. But remaining primarily in the academic realm and publishing relevant findings in academic journals alone may not be sufficient (or timely enough) to inform on-the-ground and in-the-water decision making. A [study of the utility of primary scientific literature to coral reef MPA managers in Australia, Kenya and Belize](#) ^[8] found average publication lag times of more than three years for relevant scientific research and more than half of relevant scientific articles behind paywalls (arrangements in which access to a website or document is restricted to users who have paid to subscribe to the site).

Ideally, a [wide range of organizations and institutions should contribute](#) ^[9] to connecting scientists with marine resource managers to work on pressing knowledge needs. Academic institutions need to recognize the value of and reward knowledge sharing activities in their hiring and promotion decisions. Funding organizations should – and many already do – promote and support collaboration and knowledge sharing as well as research. And scientists can become involved with “[boundary organizations](#) ^[10]” that already facilitate collaboration and information flow between researchers and managers in many regions and scientific study areas. (Read about the work of a [boundary organization working in the Western Indian Ocean](#).)

Even in the face of institutional constraints, however, there are many things that marine scientists as individuals can do to work more effectively with marine managers and to inform marine management. In this article, marine scientists, communicators, and funders who are successfully bridging the gap between scientific research and management in locations around the world share what they have learned about informing marine resource management.

“A best guess based on incomplete science is often an improvement over the status quo”: Three tips for marine scientists for making their research more useful for managers

By Elizabeth McLeod

Editor's Note: Elizabeth (Lizzie) McLeod is The Nature Conservancy's climate adaptation scientist for the Asia Pacific region and science lead for the Reef Resilience Network which provides scientific guidance and resources to help coral reef managers globally address the impacts of climate change and local threats. She can be reached at emcleod@tnc.org.

1. Engage marine managers at the design stage of research and throughout the process. Ideally, project proposals should include managers as partners and a funding source to cover their time and costs in support of the research. Research objectives, timing, and outputs should be developed jointly with managers. By doing so, researchers will develop an understanding of local conditions, existing science, what science is actually needed to inform management, and opportunities to link their research with ongoing policy and management developments (e.g., the rezoning of an MPA).

Aligning the timing of research deliverables and management and policy opportunities is key. Understanding the timing of when research outputs will be needed and when key conservation actions or policy decisions, for example, will occur is critical to ensuring application of the outputs. If the research outputs come too late, then they are unlikely to be used and may undermine any management decisions made while the research was underway. Also, managers should participate in research and data collection to ensure that their expertise and local data are built upon and that they fully understand and can interpret the science. Finally, managers should be involved in helping to communicate the outcomes of the research to local stakeholders to ensure that they understand and have ownership over the research outputs.

2. Understand how much science is actually needed to inform a management decision. In some cases, research projects produce outputs that are too complex to be understood or applied in the field, or require significant investments in data collection that do not change the management response. An expensive coastal modeling project

incorporating numerous datasets may provide detailed projections of inundation based on multiple scenarios of sea-level rise, when the management decision (relocate to higher ground) would be the same regardless of the scenario. A simpler and cheaper coastal assessment could have led to the same management outcome. Further, researchers need to understand that managers and researchers require different degrees of certainty in the science to make a management decision. Management decisions are sometimes made opportunistically, or more often, with limited scientific support. Thus a best guess based on incomplete science (with its uncertainties) is often an improvement over the status quo.

3. Ensure project goals are management priorities. The goal of a collaborative project with managers should be a conservation/management outcome, not a publication. Peer reviewed publications are important. However, in some cases, presentation of the research is held up (embargoed by a science journal), and important opportunities to share the data to inform and leverage management actions are missed. In other cases, significant effort is placed in developing the publication, when a project report that is simple and well-illustrated is likely to have greater relevance to managers and decision makers and, therefore, more likely to be adopted and used to inform management. Understanding not only the needs on the ground, but also the most relevant content, who will access and use the results, and formats for sharing project results is important to ensuring research results are applied. Finally, researchers can participate in regional networks of marine managers (e.g., [PIMPAC](#) ^[11], [WIOMSA](#) ^[12], [CaMPAM](#) ^[13]) and global networks that link scientists together with marine managers (e.g., [Reef Resilience Network](#) ^[14]). Doing so can help them to learn more about local threats and management challenges and contribute to ongoing management activities. Further, sharing project results through these networks helps to leverage research outcomes and can also create additional opportunities to work with managers in the region.

Academic journals are where good ideas go to die

By Nick Wehner

Editor's Note: Nick Wehner is project manager for OpenChannels, the knowledge hub for the global community of practice on ocean planning, EBM, and MPAs. In 2016, he wrote a series of blogs on the topic of "making your marine science matter" ^[15]. He can be reached at nwehner@openchannels.org.

Have you ever struck up a conversation with your grandmother about an academic journal article you both read? Me neither. It probably doesn't help that academic journals articles are (generally) behind [prohibitive paywalls](#) ^[16], often contain few figures to aid explanation, and are written solely for scientific audiences. Until journals realize that selling bound volumes almost exclusively to academic libraries is about as useful to today's world as selling rotary telephones, publishing your results that are relevant to conservation and management in an academic journal alone is akin to "idea suicide". First, only academics use academic journals. Second, the big journals are primarily in English. And third, nonprofits doing the actual conservation work often can't afford academic journal subscriptions. If you would like your hard work to be read, shared, and perhaps even used for real-life conservation and management, then you need to put your ideas in a place and format that is *accessible*.

What does accessibility mean in this case?

- Formats like blogs, podcasts, and editorials can get your work out to much [larger audiences](#) ^[16] than journal articles.
- Use [social media](#) ^[17] to spread the word about your research and results.
- Tailor your message and writing style to your intended audience. (Hint: it shouldn't be the "general public" ^[18]!) Consider getting translations of your blogs, etc. into languages other than English.
- Make it easy to find your work electronically. For instance, don't use acronyms in your titles. (Try setting a Google Alert for "MPA" and you will see what I mean.)
- Where [figures](#) ^[19] tell the story better than text, use them.

In short: let your common sense lead you, not your tenure committee.

The Science for Active Management Program: Bridging the gap between science and management in Western Indian Ocean MPAs

By Jennifer O'Leary

Editor's note: Jennifer O'Leary is a marine conservation biologist with the California Polytechnic State University and California Sea Grant as well as a 2016 Pew Marine Fellow. She has worked with communities in the western United States, coastal East Africa, and Pacific Islands for 20 years to put in place science-based management of marine resources. She can be reached at joleary@calpoly.edu.

Management effectiveness studies of MPAs in the Western Indian Ocean (WIO) have revealed that [management decisions are often made without sufficient data](#) ^[20]. In response to this and other problems with MPA management, the [Science for Active Management \(SAM\) Program](#) ^[21] launched as a pilot program in Mombasa, Kenya, in 2009. The goal of the program was to help management agencies use scientific data in an adaptive management framework to assess MPA status, determine where management action is needed, and assess the impact of management actions in a system of continual learning and community engagement. The success of the program in increasing conservation action, engaging communities, and improving ecosystem status has led to its expansion to all national MPAs in Kenya and Tanzania and a pilot program in the Seychelles.

Over the past eight years, SAM has learned that incorporation of science into management decision making requires investment of scientists in five key areas:

1. Building capacity of managers to understand scientific methods and results
2. Developing management frameworks that make it clear to managers what types of data are needed and how they can be used
3. Increasing managers' access to data
4. Focusing science on management needs
5. Providing long-term mentoring and support to guide managers' transition to data-based, adaptive management. In the WIO context and at the scale of national MPA networks, this has meant 5-10 years of mentoring to implement sustainable, agency-wide change.

Some examples of changes that we have been able to document through the SAM program include:

- *Development of measurable objectives:* In the nations using the SAM approach (Kenya, Tanzania, and Seychelles), each nation has gone through a process involving MPA staff, community members, and scientists to elect a suite of management priorities and develop measurable targets for these. The presence of targeted objectives has helped focus management and drive management action. It has also provided transparency in the management process and helped communities engage in aspects of MPA management that interest or concern them.
- *Implementation of monthly monitoring:* In all three nations, MPA staff members conduct monthly beach and marine monitoring (using standardized methods) and enter and summarize their own data. By doing this, they have moved from "black box" management where managers did not know the ecological and social status of their MPA systems, to a more empirical understanding of their system.
- *Data-based management actions:* By using data to assess status, managers have become clear about where action is needed to improve status. Dozens of successful conservation initiatives have occurred in SAM MPAs in the last three years, but a few warrant special mention. In Mombasa Marine Park and Reserve, as bleaching observations increased due to warming water, MPA staff worked with fishing communities to remove illegal fishing (seine nets) from the fished reserve surrounding the fisheries closure. In Mafia Island Marine Park, during SAM monitoring, staff noticed a major outbreak of crown-of-thorns. The MPA staff mobilized the local diving community and carried out a removal, stopping the outbreak and protecting corals. In Kisite Marine Park and Reserve in Kenya, the MPA staff initiated a monthly island trash clean up event following increases in marine litter. The trash arrives on the island via currents and is a major hazard to marine life. The MPA warden helped the community link with retailers willing to buy used flip flops, benefitting the local economy. Thousands of kilograms of trash have been removed.
- *Development of staff passion and skills:* Perhaps most importantly, the SAM program has energized MPAs. At the inception of the program, staff knowledge of marine

systems was low and there was little problem-solving or investment in MPAs by staff. Staff members are now actively engaged in understanding marine ecological and social systems, and continuously try new approaches to enhance conservation. Further, staff skills in basic areas such as swimming have dramatically increased. For example, in Kenyan MPAs, previously, only 20% of staff were able to swim, but all MPAs now have 80-90% of staff swimming and participating in monthly monitoring.

- *Improved ecological status:* Though ecological change can be slow, especially for corals that are notoriously slow-growing, there have been notable improvements. The removal of harmful fishing gear around the Mombasa Marine Park has resulted in a measurable increase in seagrass and the revival of species that have not been seen in that region for a decade. In Tanzania, the MPA managers at Mafia Island Marine Park and Reserve were the first in the nation to document coral bleaching during a recent warming event, but also documented remarkable levels of coral recovery from bleaching as waters cooled.

The SAM program's long-term mentoring of managers in the use of science and support of active conservation partnerships between managers, stakeholders, and scientists now provides a tested, globally relevant model for making science work for conservation.

Translate scientific jargon into stories managers can use

By Asha de Vos

Editor's Note: Asha de Vos is a Sri Lankan marine biologist and educator. She is the first person from Sri Lanka to earn a doctorate in marine mammal research. Her research on blue whales within the Northern Indian Ocean has led to this population being designated as a species in urgent need of conservation research by the International Whaling Commission. She is a National Geographic Explorer, a TED Fellow, and a Pew Fellow in Marine Conservation. She can be reached at <https://www.facebook.com/ashadevos> [22].

As scientists, we are encouraged and trained to speak 'Science' – and discouraged and untrained from speaking a language without jargon that could easily be understood and digested by the public. We invest most of our writing time preparing peer-reviewed manuscripts that will only be read by our scientific community, and we cruise the conference circuit speaking 'Science' in an attempt to solve pressing global issues. We live in a world where only about 0.1 % of the population is defined as an academic scientist, so these attempts to create change while talking only amongst ourselves are clearly futile. After all, the fire starter for the spread of ideas and the launch of movements is people talking to people, a simple but powerful ingredient.

Solving global issues like protecting the oceans requires a global response – it requires an army. To leave the planet a better place than we found it – a solemn pledge we should all make to our future generations – we need to translate our jargon into stories and conversations that can be used by managers and can be grasped by the 99.99 %. Ultimately it is critical for us as scientists, as conservationists, to make people agents for change and fellow soldiers in our quest for a safer planet.

Tracing shark research results to real world change

Editor's note: An excerpt from the story "Discovering the global payoff of supporting shark research" by the Lenfest Ocean Program is found below. The Lenfest Ocean Program is a grant-making program that funds scientific research on policy-relevant topics concerning the world's oceans and communicates the results of the supported research to decision makers and other interested audiences. Angela Bednarek, project director at the Lenfest Ocean Program, can be reached at abednarek@pewtrusts.org for additional information.

"In 2015, Charlotte Hudson, director of the Lenfest Ocean Program, attended a scientific workshop at Shanghai Ocean University. The scientists who provide information to China's vast high-seas fishing fleet work at the university's fisheries department. There she met a young research scientist whose office walls were lined from floor to ceiling with fishermen's logbooks, which record each boat's itinerary and catch data.

Although Hudson was only permitted to flip through one of the logbooks, she quickly identified unexpected evidence of a significant accomplishment by her program. Inside the front cover were several images of sharks. The scientist explained that these images identified species that fishermen were banned from catching. Hudson realized that she was looking at the real-world result of a project she helped create in 2006: to identify which shark species were most at risk from pelagic longline fishing."

Read how a [funding organization mobilized to increase policy uptake of research it sponsored](#) [23].

Other Tips for Scientists Interested in 'Making Their Marine Science Matter'

- Always go back to people who helped you with your research to let them know what you found as soon as you are able [24]. Even if your results are inconclusive or your analysis has been delayed, let them know.
- Avoid publishing your research in journals that require paid subscriptions if you can. If this is not possible, make every effort to share your results as broadly as possible. Sometimes you can share a galley proof of a publication even if you cannot share a copy of the final publication. Consider making draft research publications available on a pre-print server (e.g., [PeerJ Preprints](#) [25], [OSF PrePrints](#) [26]).
- Write as simply as possible. Put your main points up front. Make management-related conclusions clear [27]. Provide a management-oriented summary in research articles [8] or a separate sheet for managers that summarizes key points.
- Take advantage of knowledge brokers and boundary organizations that facilitate knowledge exchange between researchers and practitioners in the scientific and geographic areas you work in [9].
- Synthesize the state of knowledge in your research area for practitioners [8].
- Remember to take advantage of the two-way flow of communication and learn managers' observations, knowledge, and insights to advance your own ecosystem understanding.

* Several of these tips are derived from suggestions overheard at the 4th International Marine Conservation Congress *Making Marine Science Matter* held in July-August 2016 in St. John's, Newfoundland and Labrador, Canada.

Perspective: The US National Ocean Policy in the Trump Era

 [28]

By Anne Merwin

Editor's note: Anne Merwin is the director of ocean planning at Ocean Conservancy. She can be reached at amerwin@oceanconservancy.org.

Recently, the [US National Ocean Policy](#) [29] appeared on a [list of policies \(#286\)](#) [30] that the Freedom Caucus, a group of the most conservative members of the Republican party of the US House of Representatives, would like to see examined and potentially revoked. This listing was not a surprise because, over the past five years, attempts to undermine progress of the National Ocean Policy have been made via a series of legislative [riders](#) [31] - none of which have yet made it into law. Rhetoric and news surrounding the new administration suggest that President Trump may attempt to remove President Obama's executive orders on a range of issues, including the National Ocean Policy, and the Freedom Caucus' list may be used as a starting point. Repeal of the National Ocean Policy executive order would be a major step in the wrong direction and would be based on politics rather than policy.

First, a repeal would not rid us of the fundamental challenges that the National Ocean Policy was designed to address. Second, working together to solve our ocean

management challenges should be non-partisan. The National Ocean Policy and regional ocean planning have their roots in recommendations from an expert commission appointed by President George W. Bush, a Republican. In addition, leaders in industry and government on both sides of the political aisle have spoken out in support of the Policy and continue to actively do so under the new presidential administration. Industries and states have expressed their continued need for and support of regional ocean planning. Our hope is that as President Trump and his cabinet think about how to move forward on the National Ocean Policy, they will fully consider the economic benefits of planning and the rights of states to engage on ocean management at a regional scale with federal agencies. This approach makes sense not only for the environment but for businesses as well.

States have worked hard to develop these regional ocean plans with industry and federal partners, and believe this kind of coordination needs to continue. Thanks to that hard work, regional efforts have the momentum and federal agencies have the authority necessary to move ahead regardless of the status of the overarching frame that is the National Ocean Policy.

Tundi's Take: Monitoring for Thinking and Acting Globally ^[32]

By Tundi Agardy, Contributing Editor, MEAM. Email: tundiagardy@earthlink.net

We cannot monitor everything in the marine management realm. That is a budgetary and practical reality. So we need to prioritize. As the world increasingly looks to the sea for drinking water, energy, food, and strategic minerals, all management interventions – local regulations as well as national/international policies - will have to be placed into the broader context of increasing and ultimately conflicting demands for resources. While it is true that EBM needs to consider human uses of the oceans beyond extractive industries, extractive industries have such tremendous potential to undermine ecosystem functioning and productivity that they should be priorities for management.

By the time the [global population reaches 9 billion in 2050](#), attendant demands for food and energy^[33] will be nearly double what they are today. Intense conflicts over scarce surface water and aquifer water resources have already started, and the spectacular growth of energy-demanding desalination in response to water scarcity threatens access to and availability of seafood resources. At the same time, offshore energy development displaces fishers from productive fishing grounds, and catastrophic oil spills harm or even shut down fisheries. To date, siloed thinking about how to manage marine resources – the absence of true EBM - has resulted in uncoordinated fisheries, energy, mining, and marine use policies that do not allow the consideration of trade-offs and do not capitalize on the synergies that an integrated approach would provide.

One might argue that in certain kinds of marine management, such silos have begun to be broken down. Ecosystem-based approaches to fisheries management (EAF) adopted by many fisheries management agencies in developed countries have forced them to look at the broader consequences of extraction, for instance predicting how the removal of forage fish in industrial fishing has the potential to undermine target food fisheries. However, such still-single-use management can only go so far since it cannot possibly consider impacts on other sectors through new uses or expansion of existing uses. This is why we invoke the need for EBM, and for both governance arrangements and policies that support an integrated approach that considers possible trade-offs and constraints to sustainability.

Needed: Tailored monitoring that can yield local and global insights

So what do we need to know to ensure that not only the local situation is well-managed and understood, but that the broader situation is considered? We need monitoring that is highly tailored to the circumstances and objectives of management. This sort of monitoring allows us to assess the condition of ecosystems and their ability to deliver the goods and services that support them.

Given the trajectories of global population, demand for growth, and increasing rates of change, we will also need knowledge to be able to predict levels and kinds of future use – especially extractive uses - and anticipate conflicts or trade-offs. Research and monitoring will need to inform us whether use of one kind is undermining use of another kind (or the system itself). Importantly, research will also need to identify the thresholds in the ecosystem so that monitoring can warn us how close we are to approaching points of no return. The latter is a minimum requirement of monitoring protocols – if monitoring resources are limited, at the very least we should be avoiding management missteps from which there is no recovery.

This will prove challenging – ever more so given the global wave of isolationism, the push for growth at any cost, and the unpredictability introduced by the political movements sweeping the globe. But we would be wrong to retrench and focus only on the local and the near term, without committing to international cooperation and solidly sustainable policies that consider winners and losers across sectors and societies. In the end there is only one ecosystem that we need to safeguard, and that is the global one – we'll need to think globally and act globally if we want to succeed.

The EBM Toolbox: Methods for assessing marine ecosystem status ^[34]

By Ángel Borja

Editor's note: This work is a product of the DEVOTES project (DEvelopment Of innovative Tools for understanding marine biodiversity and assessing good Environmental Status), a project for developing tools for the implementation of marine legislation management funded by the European Union. Ángel Borja is coordinator of the DEVOTES project as well as head of projects at AZTI Tecnalia and a member of the Scientific Committee of the European Environment Agency. He can be reached at aborja@azti.es.

Since the 1960's, many methods have been developed to assess the status of single ecosystem components, especially in estuaries and coastal waters. However, few methods exist for assessing multiple ecosystem components in a holistic way, using an ecosystem approach that accounts for the response of marine systems to human pressures. In addition to methods for assessing multiple ecosystem components, innovative monitoring approaches that encompass and combine all the relevant features of ecosystems are also needed for determining the health of large marine areas in a holistic way.

The DEVOTES project conducted between 2012 and 2016 sought existing methods that addressed both of these needs (monitoring and assessment). They found numerous marine ecosystem status assessment methods based on qualitative status descriptions but found very few that were quantitative. Five quantitative methods they found were:

- [Helsinki Convention Ecosystem Health Assessment Tool \(HOLAS\)](#) ^[35], a multi-metric indicator-based assessment tool for the Baltic Sea
- a [method for assessing status for the Marine Strategy Framework Directive](#) ^[36] in the Bay of Biscay
- [Ocean Health Index \(OHI\)](#) ^[37], a framework that scores ecosystem benefits delivered to people by assessing current status and likely future state. The OHI is applicable to a wide range of assessment areas, and assessments have been completed in 11 regions to date with numerous others underway
- [Marine Biodiversity Assessment Tool \(MARMONI tool\)](#) ^[38], a web-based application to perform indicator-based, integrated marine biodiversity assessments. The tool has been tested in four areas within the Baltic Sea
- [Nested Environmental status Assessment Tool \(NEAT\)](#) ^[39], a tool developed by the DEVOTES project for assessing the environmental status of marine waters using biodiversity status rather than pressures leading to state changes.

Summaries and comparisons of these tools were published in 2016 in [Frontiers in Marine Science](#) ^[40]. Additionally, the DEVOTES project provided lessons about key attributes needed for assessment of environmental status of open and coastal systems. They found that assessment methods should:

- Use the ecosystem approach, requiring a common and explicit vision of the desired status of the environment, and multiple stakeholders need to be involved in the definition of that status
- Include multiple components of the ecosystem, biotic and abiotic
- Use reference conditions or baselines and be repeated to track changes
- Use an integrative assessment of all components
- Use a range of values for capturing status, including a target value that separates what is considered good and what is not good
- Weight components when integrating
- Calculate the uncertainty associated with the assessment
- Ensure comparability across regions and time

- Use robust monitoring approaches and data
- Address pressures and impacts.

Finally, for any ecosystem assessment to be effective and be used to inform marine management, it needs to be transparent and repeatable and provide results that can be easily communicated to wide audiences, including scientists, managers, and policymakers.

Latest News and Resources for Ocean Planners ^[41]

- [New Zealand releases first marine spatial plan covering Hauraki Gulf](#)^[42]
- [US finalizes first regional ocean plans – for Northeast and Mid-Atlantic](#)^[43]
- [Mauritius initiates MSP process for its EEZ](#)^[44]
- [Regional MSP process for western Mediterranean gets underway](#)^[45]
- [New 3D map of the global ocean helps define global ecosystems, including by depth](#)^[46]
- [New report provides guidance for performance monitoring and evaluation in ocean planning](#)^[47]
- [Paper provides guidance for creating and using data portal to support ocean planning](#)^[48]
- [Innovative approaches to marine conservation and coastal resilience from Africa compiled](#)^[49]
- [Report provides approach for sustaining fisheries and in the Middle East through MSP](#)^[50]
- [2016 Ocean Health Index scores released - little recent change in ocean health in recent years](#)^[51]
- [US releases offshore oil and gas leasing plan for 2017-2022](#)^[52]
- [New US president restricts environmental agency communications](#)^[53]

From the Archives: Getting around ideology - When facts divide more than unite (MEAM February-March 2015, Issue 8:3) ^[54]

From the Archives calls attention to past MEAM articles whose perspectives and insight remain relevant. In this article, Jennie Hoffman of Adaption/Insight discusses how presenting more facts from more experts to convince skeptics about the existence of climate change, overfishing, or the perils of biodiversity loss may actually deepen people's commitment to their existing beliefs. [Learn why this is the case, as well as best practices for discussing risk-reducing actions in polarized atmospheres](#)^[55].

[Printer-friendly version](#) ^[56] [PDF version](#) ^[57]

Source URL: <https://meam.openchannels.org/meam/issue/february-2017-104>

Links

- [1] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/editor-how-pay-marine-conservation-and-management>
- [2] <https://meam.openchannels.org/node/13954>
- [3] <https://attendee.gotowebinar.com/register/4732896560238609921>
- [4] <https://meam.openchannels.org/node/14979>
- [5] <https://meam.openchannels.org/node/15380>
- [6] <https://attendee.gotowebinar.com/register/7380480977461324291>
- [7] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/turning-science-actions-what-scientists-can-do-inform>
- [8] https://www.researchgate.net/publication/265843485_Utility_of_primary_scientific_literature_to_environmental_managers_An_international_case_study_on_coral-dominated_marine_protected_areas
- [9] <http://www.sciencedirect.com/science/article/pii/S0964569115001167>
- [10] <http://oceanspaces.org/blog/what-%E2%80%98boundary-organization%E2%80%99-and-why-should-you-care-part-1>
- [11] <http://www.pimpac.org/>
- [12] <http://www.wiomsa.org/>
- [13] <http://campam.gcfi.org/campam.php>
- [14] <http://www.resilience.org/>
- [15] <https://www.openchannels.org/node/14191>
- [16] <https://www.openchannels.org/node/14627>
- [17] <https://www.openchannels.org/node/14288>
- [18] <https://www.openchannels.org/node/14235>
- [19] <https://www.openchannels.org/node/14387>
- [20] https://www.researchgate.net/publication/221952982_Towards_the_2012_marine_protected_area_targets_in_Eastern_Africa
- [21] <http://www.sam4wio.weebly.com/>
- [22] <https://www.facebook.com/ashadevos>
- [23] <http://www.lenfestoceano.org/en/news-and-publications/news/case-study-discovering-the-global-payoff-of-supporting-shark-research>
- [24] <https://www.openchannels.org/node/12378>
- [25] <https://peerj.com/about/preprints/what-is-a-preprint/>
- [26] <https://osf.io/preprints/>
- [27] <https://www.openchannels.org/news/mpa-news/improving-applications-science-mpa-design-and-management>
- [28] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/perspective-us-national-ocean-policy-trump-era>
- [29] <https://obamawhitehouse.archives.gov/the-press-office/executive-order-stewardship-ocean-our-coasts-and-great-lakes>
- [30] <https://meadows.house.gov/first-100-days>
- [31] [https://en.wikipedia.org/wiki/Rider_\(legislation\)](https://en.wikipedia.org/wiki/Rider_(legislation))
- [32] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/tundis-take-monitoring-thinking-and-acting-globally>
- [33] http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf
- [34] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/ebm-toolbox-methods-assessing-marine-ecosystem-status>
- [35] <http://www.helcom.fi/Lists/Publications/BSEP122.pdf>
- [36] <https://www.ncbi.nlm.nih.gov/pubmed/21507430>
- [37] <http://www.oceanhealthindex.org/>
- [38] <http://www.sea.ee/marmoni/>
- [39] <http://www.devotes-project.eu/neat/>
- [40] <http://journal.frontiersin.org/article/10.3389/fmars.2016.00020/full>
- [41] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/latest-news-and-resources-ocean-planners-2>
- [42] <http://www.seachange.org.nz/>
- [43] <https://www.whitehouse.gov/blog/2016/12/07/nations-first-ocean-plans>
- [44] <http://allafrica.com/stories/201612290508.html>
- [45] http://www.maltatoday.com.mt/environment/environment/73375/planning_authority_to_partner_in_2_million_maritime_spatial_planning_project#.WH87HxsrKUN
- [46] <http://www.nature.com/news/3d-ocean-map-tracks-ecosystems-in-unprecedented-detail-1.21240>
- [47] <https://www.openchannels.org/node/15734>
- [48] <https://www.openchannels.org/node/15609>
- [49] <https://bluesolutions.info/publication-blue-solutions-from-africa/>
- [50] <http://www.fao.org/3/a-i6043e.pdf>
- [51] <https://www.sciencedaily.com/releases/2016/12/161208125821.htm>
- [52] <https://www.doi.gov/pressreleases/secretary-jewell-announces-offshore-oil-and-gas-leasing-plan-2017-2022>
- [53] <https://www.boston.com/news/national-news/2017/01/24/trump-orders-media-blackout-at-epa>
- [54] <https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/archives-getting-around-ideology-when-facts-divide>
- [55] <https://meam.openchannels.org/node/8987>
- [56] <https://meam.openchannels.org/print/meam/issue/february-2017-104>
- [57] <https://meam.openchannels.org/printpdf/meam/issue/february-2017-104>