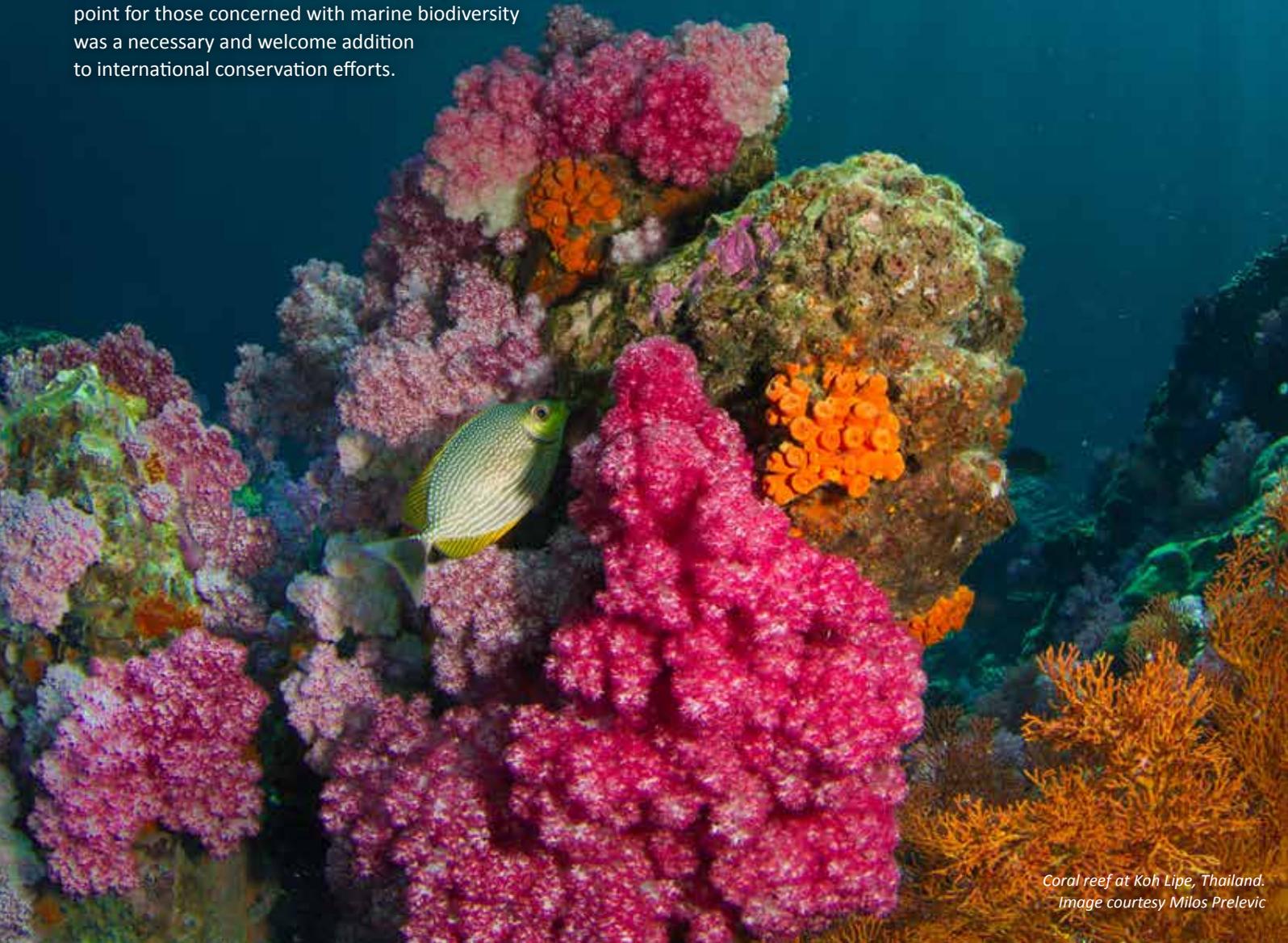


Celebrating 10 years of marine biodiversity conservation

Ten years. For some, a mere blink; for others, a lifetime. For GOBI and its followers, a chance to reflect on a decade of support for ground-breaking scientific research and marine conservation.

In 2008, oceanic exploration continued apace and international political will to protect the ocean was crystallising. For example, evidence emerged on the expansion of low-productivity regions in mid-ocean gyres as oceans warm, and the world's first comprehensive Census of Marine Life was drawing together large amounts of information. The inception of the Global Ocean Biodiversity Initiative as a focal point for those concerned with marine biodiversity was a necessary and welcome addition to international conservation efforts.

In the ten years since GOBI's inception, the scientific and political "seascape" around marine biodiversity research and ocean governance has evolved considerably, crowned in 2017 by a clutch of landmark ocean-themed conferences and a declaration by the United Nations of a Decade of Ocean Science for Sustainable Development (2021-2030). GOBI might be young, but it is already sitting at the top table, contributing new data, insights and expertise to globally significant proceedings. The following pages recount GOBI's most recent contributions in this arena, but not before an indulgent look overleaf at our first decade of achievements.



The GOBI partnership now comprises more than 40 organisations around the world working to generate new information and science to support ecosystem-based management of the marine environment, and area-based management approaches in particular. The partnership was initially established in 2008 in response to the need for data and scientific expertise to support the Convention of Biological Diversity's (CBD) fledgling process to map and describe ecologically or biologically significant areas of the ocean (EBSAs). Its purpose: to advance the scientific basis for conserving biological diversity in the marine environment. Since then, GOBI has supported the EBSA concept by: (i) developing background documents on how to describe areas relative to the EBSA criteria, (ii) developing the first EBSA Repository prototype, (iii) providing technical support, capacity development and facilitation for all of the 14 regional EBSA workshops to date, (iv) summarising the history of the EBSA process, (v) reviewing the results, (vi) participating in CBD Expert Workshops, and (vii) presenting at EBSA events to help explain the process, the data that were used, the results and their potential uses.

While GOBI originated in response to the need to support and inform the CBD EBSA process, the growing results from that process and the expanding network of partners has afforded GOBI the opportunity to broaden its scope of work. Today, GOBI is committed to supporting the 2030 Agenda for Sustainable Development and in particular SDG 14, Aichi Target 11, and UN General Assembly resolution 72/249 on the development of an international legally binding instrument under the United Nations Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. The data collated by GOBI partners have informed the work of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the UNESCO report on expanding the purview of the World Heritage Convention to areas beyond national jurisdiction (ABNJ), and efforts to create frameworks for the designation of no-mining areas within regional environmental management plans. In this context GOBI's role is to provide guidance on how biodiversity data and criteria can be interpreted and applied to inform policy and management.



Building on Germany's enduring support for the GOBI Secretariat, in 2016 GOBI was awarded a grant of €5.2m by Germany's International Climate Initiative (IKI), to support a research portfolio comprising six complementary scientific topics over five years. The outcomes are intended to assist States and intergovernmental organisations in determining the strengths, challenges and limitations of available data and in turn, to strengthen EBSA descriptions through the generation and assimilation of new data on key overarching themes. This is timely as CBD COP14 in November 2018 will seek to establish future options for the EBSA process and improve its utility for integrated ocean governance.

In the short term, GOBI's efforts combined with those from its peers and counterparts from science, industry, government and civil society, will continue to provide science-based advice and support for marine biodiversity conservation to bodies including CBD, CMS, IOC, GOOS, GEO BON, ISA, IMO, IPCC, IPBES, WOA2, the BBNJ process under UNCLOS, regional seas conventions, regional fisheries management organisations and national governments. In the lead-up to the UN's Decade of Ocean Science for Sustainable Development (2021-2030), with its headstart and considerable momentum, GOBI is well placed to contribute towards the ultimate long-term goal: a truly global network of effective, equitable and well-connected ecologically and biologically important marine areas protected by appropriate and sustainable conservation measures for the benefit of mankind and Earth's biodiversity as a whole.

To keep track of GOBI's work and progress, visit www.gobi.org and follow @GOBIsecretariat on Twitter. Further enquiries can be directed to secretariat@gobi.org.

EBSAs into the future

by David Johnson, GOBI Coordinator

CBD Expert Workshop to develop options for modifying the description of EBSAs, for describing new areas, and for strengthening the scientific credibility and transparency of this process, Berlin, 5-8 December 2017

Voluntary practical options for further enhancing scientific methodologies and approaches for the scientific and technical [EBSA] exercises were previously welcomed by CBD COP13, which also established objectives for this workshop. The workshop noted latest updates on the EBSA process and the EBSA Repository and information-sharing mechanisms. Participants also exchanged information on examples and lessons learned from relevant global, regional and national processes.

The following lists of bullet points are copied directly from the workshop report. In Paragraph 31, insights concluded on regional and national experiences were that:

- *There is a mismatch of spatial scale between the large size of some EBSAs described by the CBD regional EBSA workshops, the finer scales of area-based considerations and the scales at which marine spatial planning is happening at the national and regional levels.*
- *There are mechanisms for input of traditional/local knowledge, but there is often limited input of these knowledge systems in the description of areas meeting the EBSA criteria.*
- *The regional workshops held since 2011 have covered almost the entire world oceans, and there is a need to revisit the regions both to update descriptions of existing EBSAs and to consider information regarding potential new areas that may meet the EBSA criteria.*
- *The preparatory meetings held at national and regional scales to prepare for the regional workshops have been very valuable, but there is scope to improve them (e.g., better technical support for geo-referencing information), and to use them more widely to prepare for regional workshops.*
- *There are many cases where the features meeting the EBSA criteria overlap either the exclusive economic zones (EEZs) of two or more countries, extend into marine areas beyond national jurisdiction, or both. In these cases, national EBSA processes within individual EEZs would not be sufficient to meet the needs for describing transboundary ecological features meeting the EBSA criteria or maintaining the EBSA description scientifically sound and up-to-date.*
- *The existing EBSA descriptions are already proving useful in policy and management, especially, but not limited to, planning marine protected area networks and other effective area-based conservation measures.*
- *There is a need for more organized capacity-building before and after regional workshops and awareness-building for other ministries and stakeholders that need to cooperate in marine spatial planning and adopting enhanced conservation and management measures for EBSAs.*



- *Better linkages need to be developed with other relevant global and regional initiatives.*
- *It is important to validate, on-the-ground, large-scale maps, data and monitoring interpolations provided to workshops.*

In Paragraph 36, conclusions based on consideration of other relevant instruments were:

- *Most, if not all, of the global and regional instruments presented include provisions for modification of designations, subject to their respective protocols/procedures.*
- *Grounds for modification of descriptions or designations of areas identified include: incorporation of new information or analysis, including the traditional knowledge of indigenous peoples and local communities; changes in the perceived status of threats; irremediable loss of the distinguishing features that led to the designation of the area, although some processes permit modification in cases where a site was listed, described or identified either wholly or partly by error; or exceptionally, for reasons relating to urgent national interests (e.g., Ramsar Convention).*
- *In most instances, the modification of an area of international importance is linked to monitoring and review processes.*
- *There is some experience with the modification of descriptions and designation of areas, which usually proceeds on the basis of technical guidelines to ensure scientific rigour and follow-up procedures.*
- *Certain processes provide for a temporary remedial regime for sites that have been found to be under threat or potential threat, or the condition of which appears to have deteriorated to, among others: raise awareness; catalyse cooperation towards their recovery or restoration; and allow the Party concerned to access financial or technical support available under the relevant process.*
- *Under the relevant instruments analyzed, coastal States do not generally wish to revoke the designation of areas within their jurisdiction, as designation is a matter of prestige.*

Opportunities were given for GOBI Partners to present experience from providing technical support to all the EBSA regional workshops (CSIRO and Duke University). Specific inputs such as those by BirdLife International on Important Bird and Biodiversity Areas (IBAs), and by Giuseppe Notarbartolo di Sciara (on behalf of the IUCN Marine Mammals Protected Area Task Force) on Important Marine Mammal Areas (IMMAs), presented both concepts as an emerging set of scientific information that can complement existing EBSA descriptions.

Summaries of the substantive discussion on future options can be found in Annexes III and IV of the workshop report. The most salient points are presented here.

For existing EBSAs, reasons for potential modification have been suggested (such as changes to IUCN Red List Species, new information, or corrections to errors); together with considerations on actors who can propose modifications; and options for the differentiation between a significant modification and a minor modification. There was significant support for regional EBSA workshops to continue to be held, notwithstanding the potential value of other types of workshops (thematic, global, cross-regional), and for opportunities to incorporate traditional knowledge.

For new areas meeting the EBSA criteria, different procedural options for actors to decide on the need for description of new areas were proposed, together with recognition of capacity building needs. The workshop also made suggestions to restructure the EBSA website, including provision of information on business of the EBSA Informal Advisory Group and indicative types of information that should be in the EBSA information-sharing mechanism.

CBD Secretariat will circulate the workshop report for peer review and the outcome will be further discussed at SBSTTA 22 and CBD COP14.



Workshop participants in Berlin, December 2017

Around the world in 311* EBSAs

**subject to outcomes of COP14*

by Christopher Barrio Froján, GOBI Secretariat

The CBD's most recent regional workshop to facilitate the description of ecologically or biologically significant marine areas (EBSAs) focused on the Baltic Sea. Held in February 2018 in Helsinki, Finland, it marked the culmination of an ambitious programme to assess the world's seas and oceans for EBSAs. This momentous occurrence, elapsed with little fanfare, is an astonishing achievement that has necessitated herculean logistical and technical coordination internationally, as well as political goodwill, foresight and commitment at national, regional and global administrative scales. Welcome to the dawn of the global EBSA network.

Since the formal adoption of seven scientific EBSA criteria in 2008 at CBD COP9, 14 regional EBSA workshops have been convened by the CBD, which – together with other initiatives – have evaluated all of the world's oceans and seas (with the exception of the Southern Ocean) against those criteria and described over 300 EBSAs. Together they represent a collection of some of the world's most biodiverse, valued and beautiful marine features, yet they are not the only such features, and they are certainly not out of danger from the threat of degradation by human activities. The EBSA process has reached an important milestone, but it is only the beginning of a long road to biodiversity conservation and sustainable human development.

The future of EBSAs, how best to use them in marine spatial planning and whether to continue to describe them, is at the forefront of discussions by the CBD and its Parties, advisors and associates. In December 2017, international delegates attending a workshop convened by the CBD in Berlin (see article on page 3) discussed the mechanisms by which to alter existing EBSA descriptions in the light of new data becoming available. They also discussed and acknowledged the value of continuing to convene EBSA workshops across the globe, together with noting the political challenges of describing EBSAs that straddle national boundaries. Novel ways to incorporate traditional knowledge from local or indigenous communities into EBSA descriptions were also promoted.

During the regional EBSA workshop for the Baltic Sea, nine areas meeting the EBSA criteria were selected and described by the attending experts. Unfortunately, the absence of delegates from some Baltic States prevented the proposal of more areas with EBSA potential. Nonetheless, supported by the ever proficient technical team from the Marine Geospatial Ecology Lab at Duke University, EBSA proponents were able to draw and adjust digitally the boundaries of the candidate

EBSAs to best reflect the available data. Communication of progress amongst participants during the workshop was greatly enhanced by the flexible facilities available at HELCOM headquarters, the workshop hosts, who strove to be as accommodating as possible. Veteran EBSA workshop participants noted the smooth-running of the workshop and the unconstrained willingness to cooperate of the attending delegates. Tried and tested planning by the CBD Secretariat and decisive chairmanship during the meeting had much to bear on the success of the proceedings.

The nine candidate EBSAs described during the Baltic Sea regional EBSA workshop will be added to the 33 candidate EBSAs described in April 2017 at the Caspian and Black Seas regional EBSA workshop. Together, these will be evaluated by experts attending the 22nd meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) in July 2018. Subject to agreement by SBSTTA, the candidate EBSAs will be submitted to the CBD COP in November 2018 and added to the 279 EBSAs already in the EBSA Repository. In the event that any of the candidate EBSAs described at the previous two regional workshops should fall short of the evaluation by SBSTTA, they will be added to a list of sites to be reassessed during future iterations of the EBSA process.

Now that most of the world's oceans have been subjected to scrutiny by the EBSA process, work can progress on several fronts to maximise the value and benefit from the acquired evidence within each EBSA description. Assessing how representative EBSAs are of the different kinds of marine features will reveal whether any particular feature is either well or poorly represented, identifying in turn where future investigations ought to focus, to ensure good representativity of all features. In addition, EBSAs can be classified into one or more of four distinct classes (static, dynamic, ephemeral or grouped), which can, for example, assist in the creation of a network of protected areas for highly mobile species or time-dependent behaviours (feeding patterns, breeding cycles, lifecycle stages). With the supplementary knowledge acquired during the first pass of the world's oceans, and with the capacity that has now been shared across the globe by the EBSA process, the stage is set for a renewed and complementary continuation of efforts to describe EBSAs and further strengthen capacity, both in national waters and beyond. GOBI, together with its partners and gathered momentum, is at the forefront of this movement to ensure the continuing EBSA process can yield its maximum reward.

First SOI national workshop on EBSAs:

Yaounde Cameroon, 17-19 January 2018

by David Johnson, GOBI Coordinator

The marine waters of Central West Africa are dominated by the Guinea Current. The marine ecosystem is heavily influenced by river discharge and relatively low biological productivity, low salinity and high turbidity. Cameroon has a relatively small EEZ (15,400 km²) and in the past, conservation efforts have focused on terrestrial ecosystems. However, the Cameroon coastline supports significant mangrove stands, and its beaches are important nesting areas for marine turtles. Mangroves and associated coastal forests cover 230,000 ha, one of the most extensive national coverages in Africa. Marine areas support threatened species such as the Atlantic humpback dolphin (*Sousa tenzii*) and West African manatee (*Trichechus senegalensis*), as well as five species of endangered sea turtles. Tidal marshes are distributed widely, seagrass beds can be found in Ntem-Nyong and Moungo-Ideneau, and coral reefs are present on the Kribi coast.

All Parties to the Convention on Biological Diversity (CBD) have commitments to Aichi Biodiversity Targets and National Biodiversity Strategic Action Plan (NBSAP) targets. To help develop institutional capacity and bring together experts in Cameroon, the CBD Secretariat, working closely with the national CBD Focal Point, Mme Prudence Galega (Ministry of Environment Protection of Nature and Sustainable Development of Cameroon, MINIPDED), convened a Sustainable Ocean Initiative (SOI) Workshop in Yaounde to explore the merits of a national process to describe Ecologically or Biologically Significant Marine Areas (EBSAs).

This workshop provided an opportunity for dialogue and discussion among different stakeholders and sectors in Cameroon, as well as a chance to focus on national-level

priorities for Cameroon regarding coastal and marine resources. It also promoted scientific and technical collaborations to describe EBSAs and consider potential threats to significant biodiversity. Discussions were closely aligned to the priorities outlined in Cameroon's second National Biodiversity Strategy and Action Plan (NBSAP2), which includes 10 specific coastal and marine targets. Input was also provided by the Abidjan Convention Secretariat. Considerations raised by the workshop emphasised synergy among neighbouring coastal countries, the value of marine spatial planning, and the need for national collation of marine data and a network of marine experts.

Consideration of results from the CBD's regional EBSA workshop for the South-East Atlantic region (Swakopmund, Namibia, April 2013) provided a baseline. However, the regional workshop only described one EBSA in Cameroon waters (Figure 1).

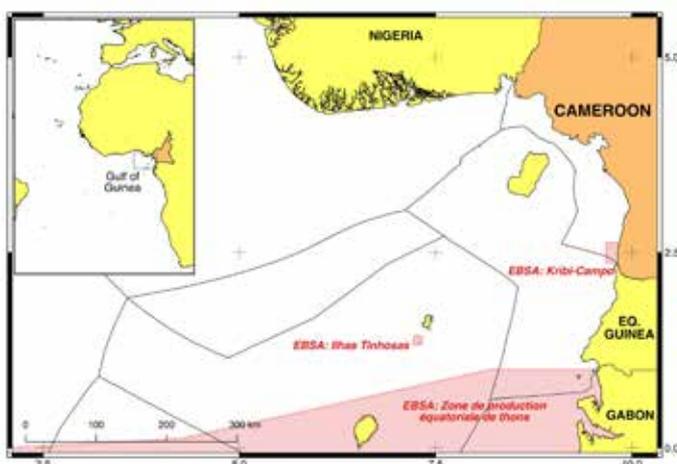


Figure 1: Map of the Gulf of Guinea region, including existing EBSAs (areas shaded pink) and EEZ boundaries.

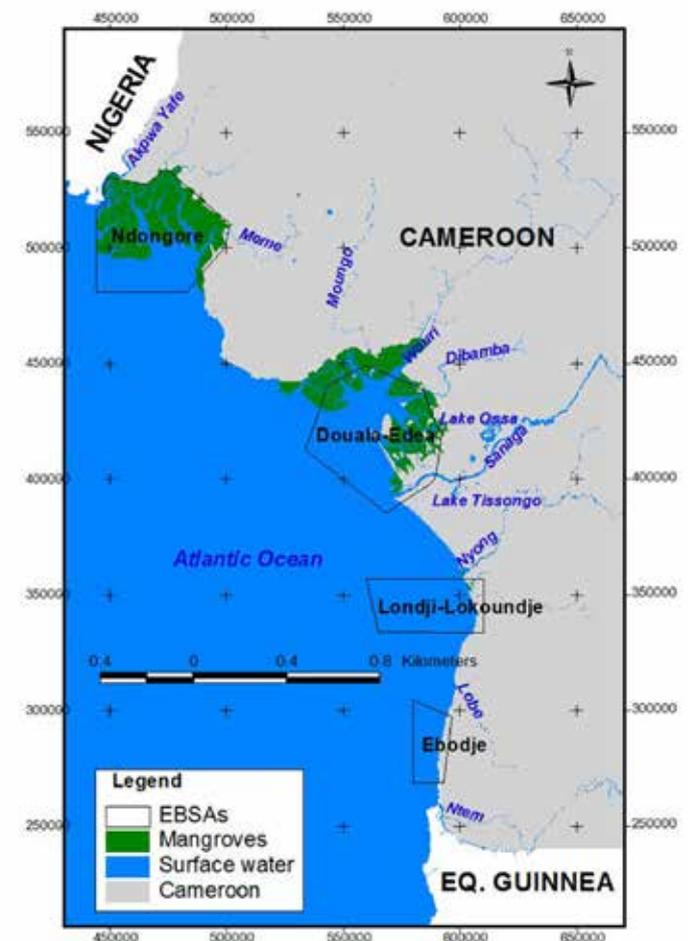
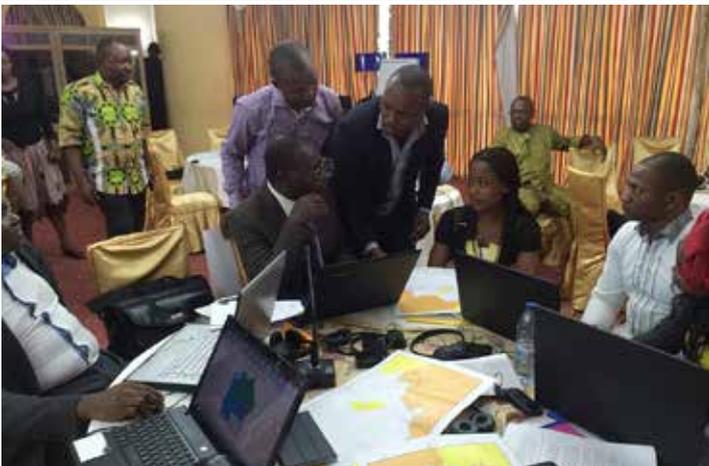


Figure 2: Map showing the four locations for which evidence of biodiversity significance was considered against the EBSA criteria.

Over an intensive three-day interactive session during the SOI workshop, a group of 30 national experts scoped four potential national EBSAs (Figure 2). Lack of sufficient data is a clear challenge for Cameroon, as some of the regional-scale datasets used at the CBD South-East Atlantic Regional EBSA Workshop in 2013 are not refined enough to be used at national level.

The GOBI Secretariat facilitated technical and scientific sections of the agenda, explaining accepted methodologies and lessons learned from previous exercises of this kind. In particular, this emphasised considerations of scale, relative importance/significance, spatial and temporal variability, data precision, and taxonomic accuracy and uncertainty. During a detailed review of the EBSA criteria, participants considered relevant information held in OBIS (the global open-access

data and information clearing-house on marine biodiversity) with access to, for example, data on IUCN Red List Species such as the ‘vulnerable’ Royal Threadfin fish (*Pentanemus quinquarius*). Working groups also considered ways of using EBSA information for planning and management. This took note of ongoing projects in Africa, including Operation Phakisa (South Africa), the Benguela Current Commission’s MARISMA sub-regional project, and Mami Wata, an integrated ocean management project coordinated by GRID-Arendal. Mami Wata is in the process of finalising a capacity building guide. Next steps in Cameroon envisage further internal work, sharing information and interaction with regional organisations such as the Council of Ministers of the Central African Forest Commission (COMIFAC) and the Abidjan Convention.



New resolutions for the protection of marine migrants: CMS COP12

by *Giuseppe Notarbartolo di Sciara, Tethys Research Institute*

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) is an environmental treaty under the United Nations Environment Programme (UNEP); it provides a global platform for the conservation of migratory animals and their habitats. By bringing together States through which migratory animals pass, it lays the legal foundation for internationally coordinated conservation measures throughout a migratory range, complementing a number of other UNEP Conventions and their Parties' efforts.

Party representatives, international organisations, NGOs and associates attending the CMS COP12 meeting in Manila in October 2017 took a major step towards strengthening measures for the conservation of a wide range of migratory species. As part of that contingent, GOBI partners were instrumental in making Important Marine Mammal Areas (IMMAs) part of the mandate of the CMS, as well the promotion and eventual adoption of a resolution that addresses connectivity in the conservation of migratory species. Together, these measures highlight the need to express conservation objectives in terms of whole migration systems and functionality of the migration process itself, not just the status of populations or habitats.



The adoption of the so called 'IMMA resolution' – championed by Giuseppe Notarbartolo di Sciara of the Tethys Research Institute and IUCN's Marine Mammal Protected Areas Task Force – represents a significant step in the international recognition of a novel process to formalise areas of the seas, regardless of whether within or beyond national jurisdiction, that are

important for marine mammals as a whole, or at certain crucial times in their lifecycle (e.g., breeding, calving, migrating). An essential step in this novel approach to identifying IMMAs is to include local experts and stakeholders in dedicated regional workshops, in an effort to increase capacity in regions where conservation efforts may benefit from a coordinating impetus. So far, three IMMA regional workshops have been held – two supported by GOBI's IKI-funded research programme – with a further three workshops planned over the next three years (see article on next page).

A new system to capture emerging knowledge and describe Migratory Connectivity in the Ocean (MiCO) – presented by Daniel Dunn of the Marine Geospatial Ecology Lab at Duke University – was also well received during its dedicated side event. Both MiCO and the IMMA process, together with much of GOBI's other work, fit in with the CMS's conference slogan of 'Their Future is Our Future – Sustainable Development for Wildlife & People'.

CMS COP12 was attended by over 500 delegates representing more than 120 countries, and all of them are now informed not only of the existence of IMMAs and what they can be used for, but also of the broader global context and consequences of potential obstacles in the connectivity between places and times that are essential for the continued survival of migratory species. Furthermore, both the IMMA and the connectivity resolutions, as well as the decisions that come from them, will stimulate CMS parties, range states and other relevant bodies to consider the utility and outputs from MiCO and the IMMA process when managing human activities in aquatic habitats. More specifically, these resolutions invite the CBD, the IMO and the IUCN to consider IMMAs and recognised migratory pathways as useful contributions for the determination of EBSAs, PSSAs and KBAs, respectively, and encourages the ongoing liaison with the International Whaling Commission to mitigate threats such as ship strikes and noise.

The tasks of identifying the IMMAs in new regions and of mapping migratory connectivity pathways across the oceans can now go ahead with confidence, knowing that the outcomes of all such efforts will receive the attention and cooperation of countries on the ground and at the highest level.

For more information about the CMS COP12 meeting please visit www.cms.int/en/cop12.

Important Marine Mammal Area (IMMA) workshop puts 46 new candidate IMMAs on the map

by Erich Hoyt, Co-Chair of the IUCN Marine Mammal Protected Areas Task Force

From 12-16 March 2018, the IUCN Marine Mammal Protected Areas Task Force conducted the third Important Marine Mammal Area (IMMA) workshop in Kota Kinabalu on the island of Borneo. Covering the NE Indian Ocean and SE Asian Seas region, this workshop follows successful IMMA workshops in the Mediterranean and in the Pacific Islands in 2016-2017. At its close, a total of 46 candidate IMMAs was proposed, the biggest number so far out of any workshop.

IMMA Co-ordinator Michael J. Tetley led the attending 34 marine mammal experts and observers from 17 countries as they worked through more than 100 areas of interest (Aoi) submitted for consideration by workshop participants and members of the conservation community at large. From these preliminary Aoi, the group merged 33 areas, deferred 11 others, retained 24 as Aoi, and then prepared concise profiles for the 46 candidate IMMAs, proposing boundaries and detailing how each area met the IMMA criteria.

According to Task Force Co-chair Giuseppe Notarbartolo di Sciara, “the 46 candidate IMMAs will now go for peer review before being put on the IMMA e-Atlas as official designations. If they don’t pass peer review, they’ll revert to Aoi and will be considered again in the future.”

The materials for Aoi and cIMMA identification included valuable maps of MPAs and other conservation designations in the region, as well as IUCN key biodiversity areas (KBAs) and CBD ecologically or biologically significant areas (EBSAs).

Additional data layers depicted bottom topography with important features such as seamounts and continental drop-offs, ocean currents and surface productivity.

The third IMMA workshop region stretched from the coast of India, Bangladesh, Thailand and Vietnam in the North to the vast Indonesian archipelago in the south. The region includes the Coral Triangle, one of the most species-rich areas in the ocean, both for marine mammals and overall marine biodiversity. Attending experts identified sites for marine mammal species such as Indo-Pacific humpback and Irrawaddy dolphins, finless porpoises, Bryde’s and Omura’s whales as well as blue and humpback whales, and dugongs.

The workshop plenary was attended by the Permanent Secretary to the Ministry of Tourism, Culture and Environment in Sabah, Malaysia, Yang Berbahagia Datu Rosmadi Datu Sulai. He acknowledged the importance of the IMMA work. The opening talks were by Task Force co-chairs Erich Hoyt and Giuseppe Notarbartolo di Sciara as well as by GOBI Coordinator, David Johnson, who gave an overview of the other projects supported by GOBI, as well as his work with OSPAR and the CBD EBSA process.

Preliminary results from the workshop were announced as part of Task Force presentations at the European Cetacean Society annual meetings in La Spezia, Italy, 6-10 April 2018. Final results are expected to be released in September 2018.

About IMMAs

Important Marine Mammal Areas (IMMAs) are defined as discrete portions of habitat, important to marine mammal species, that have the potential to be delineated and managed for conservation. IMMAs are intended to act as a red flag spotlighting important habitat for marine mammals which may lead to marine protected areas (MPAs), ship or noise directives, marine spatial planning, and other conservation outcomes. But IMMAs also function as valuable indicators of health in the marine environment. They point to the location of umbrella species for protecting biodiversity, and can be used to monitor climate change.

From 2019 to 2021, the IMMA bus rolls on to conduct expert workshops in the Western Indian Ocean and Arabian Seas (2019), the waters of Australia-New Zealand and South East Indian Ocean (2020), and the South East Tropical and Temperate Pacific Ocean (2021). In each region, extensive location and other information

about each marine mammal species along with oceanographic and environmental data will be gathered in advance of the meetings. The Borneo workshop is the second in a series of five southern hemisphere workshops (2016-2021) sponsored as part of GOBI’s IKI-funded research programme. The other main supporter of the IMMA effort is the Eulabor Institute.

Other co-sponsors of the worldwide IMMA project include the Tethys Research Institute, Whale and Dolphin Conservation (WDC), the MAVA Foundation, and the International Committee on Marine Mammal Protected Areas. The preparation of IMMA criteria and establishing support for the IMMA concept was funded by Animal Welfare Institute, Eulabor Institute, Tethys and WDC, among others.

For more information and contact details for the IUCN Marine Mammal Protected Areas Task Force and the IMMA work, go to www.marinemammalhabitat.org.



Identifying important areas for conservation in the Indian Ocean

by Tammy Davies, BirdLife International

The Indian Ocean is a diverse region with high biodiversity in terms of both species and ecosystems, but it is also experiencing rapid change and has a low level of protection, making it an important focus for conservation efforts.

The Indian Ocean region is important for a variety of seabirds, including 20 globally threatened species. Seabirds can be effective proxies for identifying priority sites for conservation because they are relatively easy to study compared with many other marine taxa, and because their distributions and food webs often encompass a diversity of marine taxa.

BirdLife International works to identify Important Bird and Biodiversity Areas (IBAs) based on a set of standardised and objective criteria designed to select sites of global significance. Seabird tracking data are fundamental to BirdLife International's work in identifying marine IBAs. BirdLife International hosts the Seabird Tracking Database (www.seabirdtracking.org) – the largest global database of its kind (currently at 11 million data points from 116 species and contributed by 190 researchers).

BirdLife International has also published an established approach for identifying marine IBAs from tracking data; it was originally designed for albatrosses and petrels but has since been applied to more than 100 seabird species and other taxa. Although this approach is well defined, there remains some flexibility in the unit of analysis (species, colony, breeding stage). As part of this process we seek input from regional experts to ensure the approach is appropriate for the species and data in the region. This is particularly important in the Indian Ocean, given its overall biodiversity and variety of seabird species – from albatross with well-studied and clearly defined breeding stages, to tropical seabird species that are less predictable, with some species with bimodal breeding or nonsynchronous breeding across neighbouring islands.

BirdLife International first identified marine IBAs in the Indian Ocean in 2012, and since then there has been a considerable increase in the tracking data available for the region, both in terms of species and number of tracked birds, warranting a

re-evaluation of the IBAs in this region. To kick-start the re-evaluation, BirdLife International hosted a workshop in Dar es Salaam, Tanzania, in November 2017 that brought together 22 experts from 15 institutions. The workshop aimed to re-evaluate IBAs in the Indian Ocean, and to evaluate priority sites for conservation, including approaches for incorporating different data (e.g., type, taxa). Input and feedback was received on the method for marine IBA re-evaluation, the reassessment period, and methods to integrate different types of data. This was combined with identifying research and conservation gaps for the region.

The next steps with this work are to integrate marine IBAs within marine management decision making processes in the region. The Nairobi Convention (which provides the legal framework and mechanism for collaborative action to protect and manage the marine environment of the Indian Ocean) held its Conference of the Parties in March 2018, providing a window of opportunity to incorporate the latest information on marine IBAs into regional decision making processes.

More details on IBAs can be found here: www.birdlife.org/worldwide/programme-additional-info/important-bird-and-biodiversity-areas-ibas

The method to identify IBAs from tracking data: onlinelibrary.wiley.com/doi/full/10.1111/ddi.12411



Above: Workshop participants in Dar es Salaam in November 2017

Developing a bioregionalisation for the Indian and South Pacific oceans

by Piers Dunstan, CSIRO

CSIRO, in collaboration with the Bay of Bengal Large Marine Ecosystem project, developed an approach to define bioregions in the Bay of Bengal. They have since extended and adapted the approach and applied it throughout the Indian Ocean to derive a single combined bioregionalisation. CSIRO, with backing from GOBI's IKI project, is now extending this bioregionalisation approach into the western South Pacific Ocean through a series of expert workshops, in which this novel and evolving statistical analysis can be performed with local data holders.

Bioregionalisation workshops have recently been held targeting the Indian Ocean (February 2018) and Pacific Ocean (April 2018), which were attended by scientists and managers from local coastal States. The workshops drew on national and international experiences and expertise and were able to describe previously unseen details. Where possible, experts used existing processes that have occurred nationally, but these were usually limited to the coastal and shelf areas. In deep-sea and pelagic ecosystems, results from previous analyses were used (such as GOODS and Longhurst) and combined with the knowledge that participants brought on these systems, such as knowledge on the dynamics of tuna distributions. This approach refined, and in some cases significantly changed areas that have been described before. The workshops also produced descriptions of each of the regions that can be used to assist in the management of the different ecosystems.

Work is currently ongoing to produce the workshop outputs, including a report describing the data and analyses used in the process, as well as the resulting bioregions and the remaining uncertainties around their description. This will be provided to all participants, and to a group of reviewers to gather additional expert input into the process. The review will be

used as feedback into a second round of workshops that will finalise the description and refine the boundaries.

Background

Developing bioregionalisations for the western South Pacific and Indian oceans is one of the six research themes funded by GOBI's grant from the German International Climate Initiative (IKI). The work, led by CSIRO, aims to incorporate understanding of shallow, deep and pelagic species, ecosystems, physical environments and their likely boundaries based on current information. The expert-based bioregionalisation exercises will be supported by the refinement of statistical analyses applied to datasets of selected species groups. The intention is to identify bioregions specific for each taxon, using data acquired through the EBSA process and additional regional biogeographies based on new invertebrate and fish collections from CSIRO, University of Tasmania, Museum Victoria and regional partners. Further, the resulting bioregionalisations will be strengthened with the inclusion of local and traditional knowledge.

The work itself will draw on experience in CSIRO and other GOBI collaborators, using approaches currently being trialled in Australia and around the Antarctic margins. CSIRO will collaborate with regional and national stakeholders to ensure a consistent approach. The analytical approach will build on existing approaches such as Marine Ecoregions of the World and the Global Oceans and Deep Seas bioregionalisation to provide a synthesised product. Further information on CSIRO's approach and preliminary results can be accessed at www.msp.csiro.au/content/bioregionalisation.

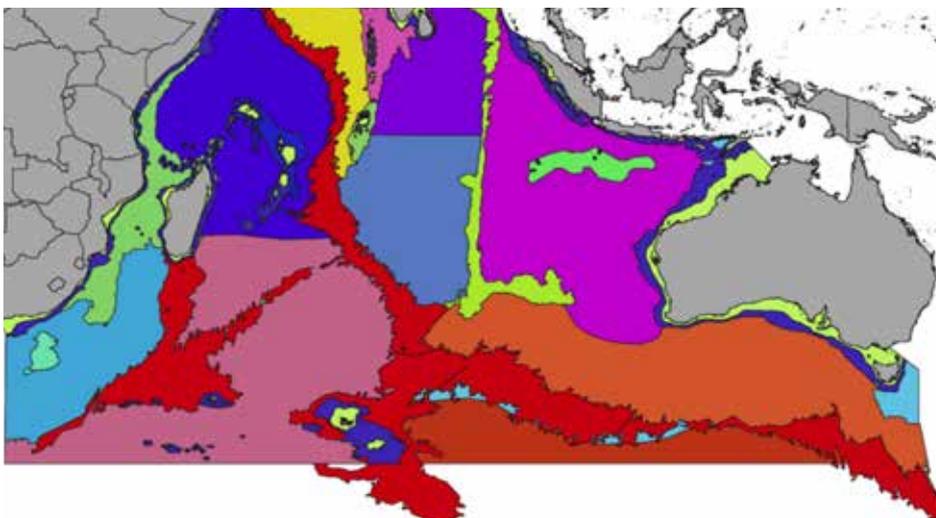


Figure 1: Draft outputs from the Indian Ocean workshop showing different bioregions described in different colours.

The ocean in 2030: How to get to the future we want?

by Sebastian Unger, IASS Potsdam

2017 was remarkable for international ocean governance: politicians, policy-makers and experts from science and civil society explored ways and agreed steps out of the marine crisis at the UN Ocean Conference in New York, at the EU-organised Our Ocean Conference in Malta, at the annual session of the High-Level Political Forum for Sustainable Development and at the UN Climate Conference in Bonn. But did they succeed in turning the tide towards greater sustainability?

On 13-14 December 2017 the 4th Potsdam Ocean Governance Workshop brought together 50 outstanding international policy-makers, scientists and representatives from international organisations and civil society to discuss what achievements, challenges and possible next steps to advance conservation and sustainable use of the ocean. The workshop was hosted by the Institute for Advanced Sustainability Studies (IASS) together with TMG - Think Tank for Sustainability, the Institute for Sustainable Development and International Relations (IDDR), the Cluster of Excellence 'The Future Ocean' and the Helmholtz Centre for Ocean Research GEOMAR, and the United Nations Environment Programme.

Following an opening plenary, three parallel workshop sessions discussed and reflected on options that could catalyse actions for strengthened ocean governance:

Unlocking the potential of SDG interactions

There is broad agreement among participants that implementing the 2030 Agenda from an ocean perspective requires taking into account interactions between Sustainable Development Goal (SDG) 14 and other critical SDGs. Achieving SDG 14 depends to a large degree on delivering various cross-cutting goals, however, so far only very limited attention has been given to developing the needed governance innovations. New coherent approaches, supportive tools and knowledge-based follow-up and review process are needed. The development of thematic reviews with a focus on implementation could provide the necessary holistic perspective.

Achieving ocean sustainability through voluntary commitments

The reporting of voluntary commitments on actions for ocean sustainability has become an important component of ocean governance. This workshop session analysed experiences with current pledge and review frameworks, such as in the context of the UN Ocean Conference 2017 and the Our Ocean Conference. One of the key issues identified is the need to keep track of the different voluntary commitments pledged

under various processes. A central registry mechanism could provide transparency of commitments pledged through different voluntary commitment processes, and provide a means to ensure effectiveness, identify trends, catalyse action and provide credible mechanisms for independent verification.

Building regional ocean partnerships

The role of regional ocean governance in delivering the SDGs for the ocean was one of the key points for discussion at the UN Ocean Conference in New York. Several marine regions have embarked on implementing the SDGs for the oceans. This session identified obstacles and leverage points for regional cooperation in the SDG delivery, for example, North-South and South-South cooperation in sharing lessons learned and developing effective partnerships. Platforms such as the Partnership for Regional Ocean Governance (PROG) could serve as a useful role model, bringing together potential partners, facilitating initial interactions between sectoral bodies and relevant actors not usually involved in their management processes, and providing a link between regional and global marine management processes.

In closing the workshop, Sebastian Unger as one of the co-hosts of this workshop, drew an optimistic conclusion following two days of discussions: "The ocean is in a deep crisis. But all the international engagement we have seen in 2017 gives hope that change is possible." What is needed now is a transparent system to track the voluntary commitments made by states and stakeholders, coupled with stronger cooperation within marine regions and a holistic approach to the implementation of the different SDGs linked to the ocean.

Workshop results will be published and fed into relevant policy processes. For more information: www.iass-potsdam.de/en/research/ocean-governance or contact Sebastian.Unger@iass-potsdam.de or Barbara.Neumann@iass-potsdam.de.



Examining biophysical, biogeographic and genetic connectivity along mid-ocean ridges

*BBIG-C Workshop, Dublin, 20-21 March 2018
by Cindy Lee Van Dover, Duke University*

In recent years, patterns in the genetic structure of populations in the deep sea have been documented using molecular methods. These patterns can range in scale from pole-to-pole populations of certain taxa, to basin-scale differentiation of populations within other taxa, and to more regional, smaller-scale population structure in yet other taxa. Molecular tools even allow us to infer contemporary directionality in gene flow between populations. But understanding how populations are connected in the deep sea requires more than just genetics; oceanographic patterns, biological properties and ecological processes can all account for the genetic structure observed. This understanding informs forecast and hindcast models of how populations respond to natural and anthropogenic events that modify connectivity pathways. Such models might assess, for example, habitat loss and the tipping point beyond which connectivity is lost and populations decline.

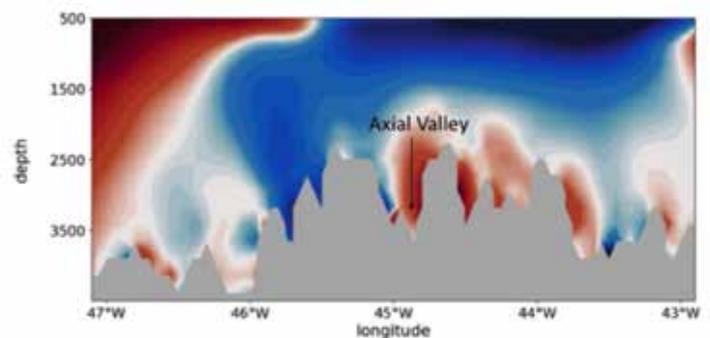


Hydrothermal vent ecosystems on spreading ridges on the seafloor (such those pictured above at the Galapagos Ridge) have proven to be especially fruitful systems in which to explore processes underlying patterns of genetic structure in the deep sea. There are several reasons for this, described here.

The habitat created by hydrothermal vents is patchily distributed across the globe, along linear extents of seafloor spreading centres and is extraordinarily rare. It is estimated in sum to occupy a total area not much bigger than the island of Manhattan. The dominant invertebrate taxa at hydrothermal vents are endemic to this environment, requiring flux of sulphide-rich vent fluids to support symbiotic chemosynthetic microbes on which the host organisms depend for nutrition. The population density of these invertebrate taxa is high, making it relatively easy to sample sufficient numbers of

animals for population genetic studies. Life history traits that influence patterns of connectivity are variable among vent taxa, with many dominant taxa typically having pelagic larval stages that connect separate populations. Lastly, there is a potential environmental risk to hydrothermal vent ecosystems from commercial interest in their metal-rich sulphide deposits. For effective environmental management, it is important to predict if and how mining activities might interrupt population connectivity in vent-endemic taxa.

The fundamental premise of the BBIG-C workshop, held in Dublin on 18-21 March 2018, was that connectivity among deep-sea populations cannot be resolved using genetic data alone, and that advances in genetic bioinformatics and modelling, global oceanographic models, multivariate biogeochemical tracer methodologies, species-specific eDNA profiling, and other tools may be employed to understand processes that underlie observed patterns in genetic structure. A key deliverable from the BBIG-C workshop will be an invited review of and prospects for connectivity studies at deep-sea hydrothermal vents, to be submitted to the *Journal of Heredity*.



Above: Snapshot of oceanographic currents (blue = southerly, red = northerly; 5-d average), Mid-Atlantic Ridge cross section in the region of the TAG hydrothermal vent site (36N). Based on the Viking20x global ocean circulation model. Image courtesy of Klaus Getzlaff.

Workshop participants: Jens Carlsson^{1*}, Jon Yearsley^{1*}, Bernie Ball¹, Corinna Breusing², Klaus Getzlaff³, Conor Graham⁴, Didier Jollivet⁵, Telmo Morato⁶, Stefan Ragnarsson⁷, Eva Ramirez-Llodra⁸, Travis Washburn⁹, Cindy Van Dover⁹ §
* co-convenors; § organiser

¹University College Dublin, ²Monterey Bay Aquarium Research Institute, ³GEOMAR, ⁴Galway-Mayo Institute of Technology, ⁵Station Biologique de Roscoff, ⁶Universidade dos Açores, ⁷Marine and Freshwater Research Institute (Reykjavík), ⁸Norwegian Institute for Water Research, ⁹Duke University.

Protection of the Arctic Marine Environment 2nd PAME meeting, Helsinki, 18-20 September 2017

by Cindy Lee Van Dover, Duke University

PAME is a Working Group of the Arctic Council, which comprises eight Member States (Canada, Kingdom of Denmark, Finland, Iceland, Norway, Russian Federation, Sweden, and the United States of America); Permanent Participants (including representatives of Aleut, Athabaskan, Gwich'in, Inuit, Russian Indigenous Peoples, Saami associations), and representatives from Observer States and organisations. The PAME Working Group was established in 1991 under the Arctic Environmental Protection Strategy to address policy and non-emergency pollution prevention and control measures related to the protection of the Arctic marine environment from both land and sea-based activities. These include coordinated action programmes and guidelines complementing existing legal arrangements. PAME members currently work in five expert groups focused on: Arctic shipping, marine protected areas (MPAs), ecosystem approach to management, Arctic marine pollution, and resource exploration and development in environmental and social contexts of the Arctic region.

At the invitation of the resource exploration and development expert group, a plenary report was presented by Cindy Van Dover (Duke University) on the work of the international community regarding environmental protection measures for marine mining in the area beyond national jurisdiction (ABNJ). Mineral resources of the Arctic are poorly constrained, but the Gakkel Ridge is a seafloor spreading centre in the Arctic ABNJ that hosts hydrothermal vents, and will likely host sulphide deposits. For this reason, the work on hydrothermal vent ecosystems undertaken as part of GOBI's IKI-funded research programme was highlighted, including: (i) the rationale for protection of all active hydrothermal vents from deep-sea mining, (ii) recommendations for the design of latitudinal

bands representing Areas of Particular Environmental Interest on the Mid-Atlantic Ridge where mining is prohibited, and iii) the challenges of applying the mitigation hierarchy to achieve no net loss of biodiversity.

The World Wildlife Fund, a PAME Observer Organisation, is supporting a project to develop a vision for MPAs and MPA networks in the Arctic marine environment, sharing GOBI expertise and products, especially as they relate to area-based management of dynamic ecosystems. Achievement of CBD network criteria and regional environmental management planning of activities associated with seabed mining would also contribute to PAME goals.

Further reading on the resource potential of deep-sea mining, mining's likely impact on biodiversity, and efforts to reduce that impact can be found in the following articles:

Petersen et al. (2016) News from the seabed – geological characteristics and resource potential of deep-sea mineral resources. Marine Policy 70, 175-187. DOI: 10.1016/j.marpol.2016.03.012

Van Dover et al. (2017) Biodiversity loss from deep-sea mining. Nature Geoscience 10, 464-465. DOI: 10.1038/ngeo2983.

Dunn et al. (in press) A systematic and adaptable design for conservation of mid-ocean ridges in the context of deep-sea mining. Science Advances.

The PAMEII meeting report can be downloaded from www.pame.is/images/02_Document_Library/Meeting_Reports/2017/PAME_II_2017_Meeting_Report.pdf



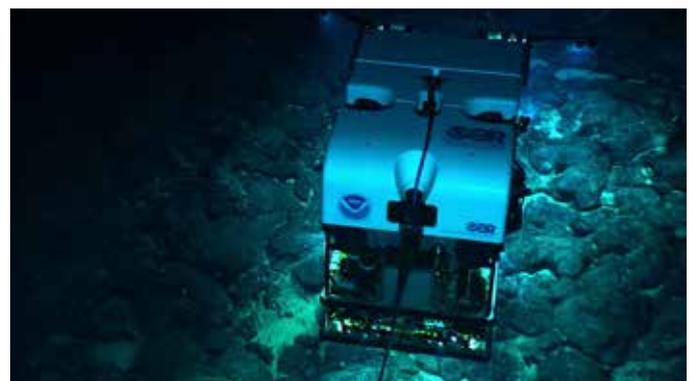
The Ocean Genome Legacy develops genomic diversity baseline for US national monuments

by Hannah Appiah-Madson and Dan Distel, Ocean Genome Legacy Center

The Ocean Genome Legacy (OGL), based at Northeastern University Marine Science Center near Boston MA, is a global biodiversity initiative that works with scientists, researchers, NGOs and governmental organisations to describe, catalogue, archive and share the genomic (i.e., DNA) biodiversity of our oceans. DNA-based analyses can reveal cryptic biodiversity and provide an authoritative basis for the description of species that are unique, rare or endemic. Genomic samples can also be important for establishing baseline data for the management of important marine areas. As a GOBI partner, OGL aims to promote international scientific collaboration using the tools of modern genomics to provide information that can inform marine biodiversity management.

In support of this mission, OGL has partnered with NOAA's exploratory vessel *Okeanos Explorer* to document the genomic biodiversity of largely unexplored marine monuments. As part of a three-year Campaign to Address the Pacific monument Science, Technology, and Ocean NEeds (CAPSTONE), the *Okeanos Explorer* has sampled organisms, predominantly corals and sponges, at the Marianas Trench Marine National Monument (MTMNM), Musician Seamounts, Pacific Remote Islands Marine National Monument (PRIMNM), and Papahānaumokuākea Marine National Monument (PMNM). These expeditions are critical to establish baseline records for these areas to support management needs. The MTMNM was designated in 2009 in part to protect deep-sea coral and sponge habitat. The Musicians Seamounts complex is the closest group of seamounts to the Hawaiian Islands, and so may be an important habitat refuge for fish and coral. The PRIMNM was virtually unexplored below SCUBA depths before this mission, and PMNM has both cultural and natural World Heritage inscription, as it is an important cultural location for Native Hawaiians, as well as home to over 7,000 marine species.

Since 2015, OGL has accessioned over 500 genomic samples collected by the *Okeanos Explorer*, including specimens from two taxonomic kingdoms, 11 phyla, 16 classes, 39 orders, 74 families, 94 genera, and 18 species. Records can be browsed in our online catalogue (www.northeastern.edu/ogl/catalog).



Right: Images courtesy of the NOAA Office of Ocean Exploration and Research, Hohonu Moana: Exploring Deep Water off Hawai'i 2015 Expedition.

Catching the right fish – a toolkit to minimise marine megafauna bycatch

by Ellen Hines¹ and Gregg Verutes²

¹Estuary & Ocean Sciences Center, San Francisco State University

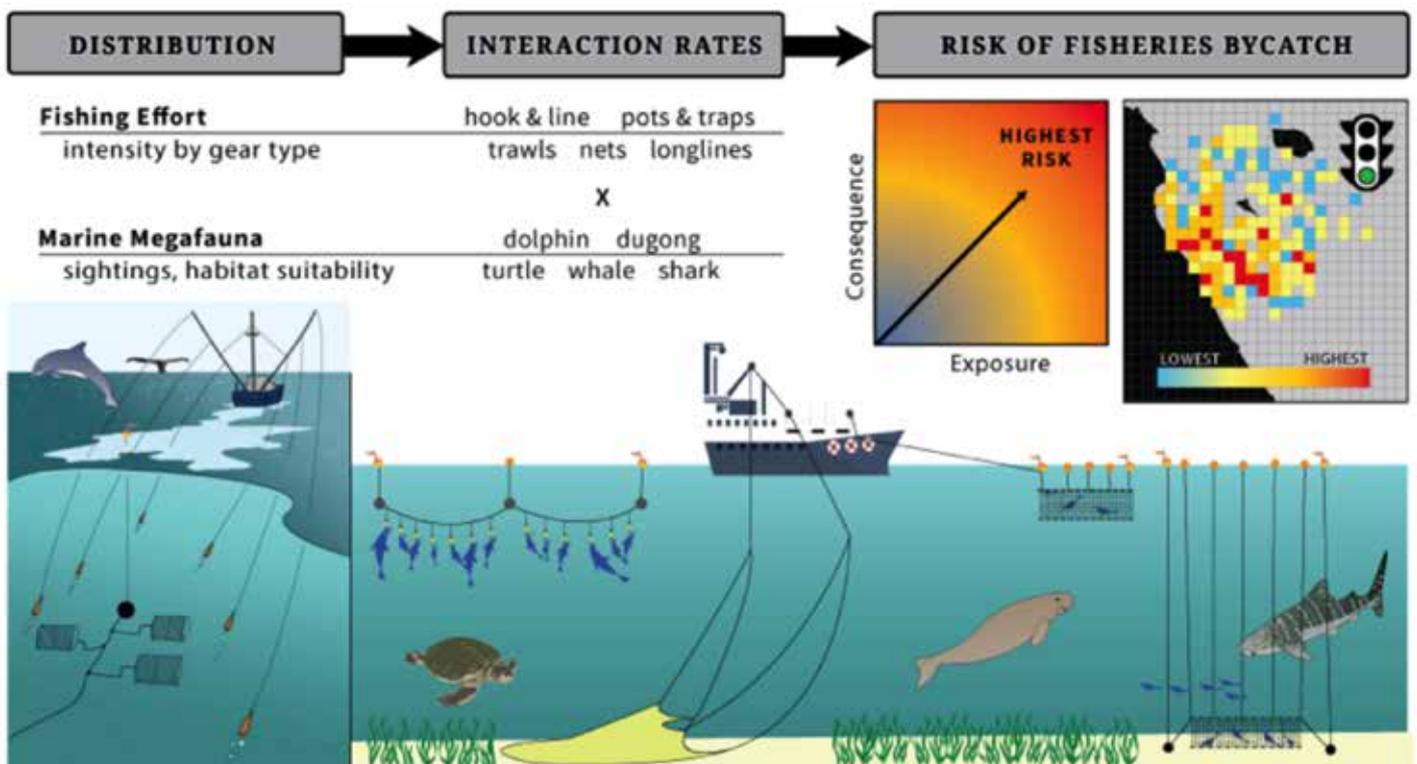
²National Audubon Society

Injury or mortality of fisheries bycatch is an important conservation problem, as marine mammals, seabirds, sea turtles and sharks (marine megafauna) are increasingly faced with the possibility of extinction. In many countries, fisheries bycatch is poorly monitored or regulated, therefore impacts of bycatch on local populations of megafauna are not well understood. Even in countries where megafaunal population estimates are available, gaps in data on fishing effort, encounter frequency, bycatch rates, and the fate of animals post-capture are key obstacles that impede the ability to characterise or quantify the risk of fisheries to megafauna. The limited availability of quantitative data surrounding this issue constrains any estimation of bycatch rate and consequently management action. Furthermore, data limitations are often greatest in developing countries where marine fisheries can be fundamental to local and national economies.

Despite the ever-present need for more data, there is an equally strong need to make better use of existing data to develop bycatch risk assessments and inform management strategies.

High precision and resolution data yield assessments with low levels of uncertainty. Yet as long as uncertainty is accurately described and accounted for, even low-resolution data can be used effectively to characterise bycatch risk and prioritise sites, gear types, seasons for monitoring and to guide future data collection efforts.

To meet this need, we have designed and developed a suite of tools that enable scientists to conduct place-based bycatch risk assessments in sites with varying gaps in data. Our goals are to: (1) enhance the capacity of personnel to collect, analyse and apply data from existing research on marine megafauna threatened by bycatch, and (2) estimate marine megafaunal abundance and bycatch in developing countries and contribute to effective measures to reduce bycatch to sustainable levels. In applying and testing these tools, we assessed the risk from fisheries to two marine mammal species, the Irrawaddy river dolphin (*Orcaella brevirostris*) and dugong (*Dugong dugon*) at four study sites in South-East Asia. We classified local fisheries into five distinct categories of fishing gear (hook and line, nets, trawls, pots and traps, longlines).



Above: Flowchart showing how data are incorporated into the Bycatch Risk Assessment Tool (ByRA). Image courtesy Ellen Hines.



Ellen Hines (right of center, front row) and colleagues on a fact-finding mission in Malaysia, January 2017. The team talked to fishermen about marine mammal bycatch and are pictured here with the head of the local village. Image courtesy Ellen Hines.

longlines, pots and traps, and trawls) and incorporated existing spatial and seasonal data on animal distribution, fisheries effort and interaction rates.

Our analysis revealed differences across sites and scenarios, driven in large part by the variation in risk posed by different fishing gears to each species, distribution of gear deployment in space, and intensity of use. Across all four study sites, the amount of risk posed by fishing activities to each test species was driven by spatial overlap between test species and fishing gear, intensity of fishing effort, gear type used (i.e., catchability or propensity of test species to get caught in different types of gear), and timing of overlap. Areas with high habitat suitability for the test species were likely to have both the animal and fishing co-occur frequently. Our maps of high-risk locations can show where and when intervention (i.e., temporary closures for certain gears, reductions in quotas, etc.) can reduce the risk of bycatch of a species in particular areas and time. Our scenario comparisons demonstrate how different modelled estimates of habitat suitability across different seasons (dry, pre-monsoon, monsoon, post-monsoon) compare with regards to risk and the drivers of exposure and consequence.

The developed Bycatch Risk Assessment Toolkit (ByRA) is designed to support scientists and managers in mapping, measuring, and reporting relative risk to species based on cumulative impacts from different categories of fishing gear. ByRA has been designed to enable scientists and managers to establish baselines, identify management interventions, and evaluate new international policies under the U.S. Marine Mammal Protection Act. Scenario comparisons and sensitivity analysis facilitated by the toolkit are meant to illuminate choices, isolate key drivers of change (social and demographic,

technological, economic, environmental, and political), and guide managers towards filling critical gaps in data and capacity. In the four SE Asian study sites, scientists and government agencies have expressed interest in utilising the outputs from our investigation to commission new surveys and technology that track fishing activity and animal movement. We are currently working with Monterey Bay Aquarium SeafoodWatch to develop ByRA as a rapid assessment tool to assess marine megafaunal bycatch risk in specific fisheries.

This new tool can support marine megafauna conservation and socio-ecological research by accounting for human dimensions and uncertainty, especially in developing countries where data and capacity are limited. The ByRA approach is flexible and transparent, enabling users to co-develop methods and assign variable weights and data quality scores based on a combination of empirical data, literature, and local knowledge. The resulting bycatch risk maps and summary tables harmonise primary data (e.g., sightings of fishing effort and animals), ocean sampling points (e.g., depth, temperature, seagrass and acoustic surveys) with literature and secondary sources to embrace the spatio-temporal complexity of a given system. By documenting our process, we aim to provide policy and decision-makers with maps of priority conservation areas and inform the design and configuration of spatial plans for both marine and coastal systems.

Further information on ByRA and its development can be found on our website www.mmbycatchtoolbox.org, or by emailing Ellen Hines: ehines@sfsu.edu

Funding for this project is provided by the NOAA Office of International Affairs.

Hot off the press

GOBI partners have been busy over the past few months – here’s a selection of recent publications in the academic press that have benefited from contributions by GOBI (articles available at www.gobi.org/resources):

Reviewing the EBSA process: Improving on success (in Marine Policy 88: 75-85) by David Johnson and colleagues.

A retrospective look at the results from concerted international efforts to deliver 14 regional EBSA workshops across the globe, identifying gaps and lessons learnt as the process continues. DOI: 10.1016/j.marpol.2017.11.014

A global biogeographic classification of the mesopelagic zone (in Deep Sea Research Part I 126: 85-102) by Tracey Sutton and colleagues.

An impressive investigation into the regional scales over which the ocean interior varies in terms of biodiversity and function. DOI: 10.1016/j.dsr.2017.05.006

Biodiversity loss from deep-sea mining (in Nature Geoscience 10: 464-465) by Cindy Lee Van Dover and colleagues.

A sobering account of the potential implications of mining for minerals on the deep sea ecosystem. DOI: 10.1038/ngeo2983

Scientific rationale and international obligations for protection of active hydrothermal vent ecosystems from deep-sea mining (in Marine Policy 90: 20-28) by Cindy Lee Van Dover and colleagues.

A summary of scientific, ecological, jurisdictional and regulatory considerations for deep-sea mining at hydrothermal vents. DOI: 10.1016/j.marpol.2018.01.020

Defining the qualitative elements of Aichi Biodiversity Target 11 with regard to the marine and coastal environment in order to strengthen global efforts for marine biodiversity conservation outlined in the UN SDG14 (in Marine Policy in press, online) by Siân Rees and colleagues.

Explaining and contrasting qualitative vs quantitative elements of the CBD’s marine conservation targets. DOI: 10.1016/j.marpol.2017.05.016

Mainstreaming marine biodiversity into the SDGs: The role of ‘other effective area-based conservation measures’ (in Marine Policy in press, online) by Daniela Diz and colleagues.

An exploration of alternative area-based conservation measures in the context of the CBD’s Aichi Biodiversity Target 11 and Sustainable Development Goal 14.5. DOI: 10.1016/j.marpol.2017.08.019

Climate change is likely to severely limit the effectiveness of deep-sea ABMTs in the North Atlantic (in Marine Policy 87: 111-122) by David Johnson and colleagues.

On the utility of area-based management tools (e.g., MPAs) under predicted climate change scenarios. DOI: 10.1016/j.marpol.2017.09.034

Temporal resolutions in species distribution models of highly mobile marine animals: Recommendations for ecologists and managers (in Diversity and Distributions 23 (10): 1098-1109) by Laura Mannocci and colleagues.

A guide on how to choose the optimum temporal resolution when modelling migratory behaviour. DOI: 10.1111/ddi.12609

Preventing plastics pervading an oceanic oasis: Building the case for the Costa Rica Thermal Dome to become a World Heritage site in ABNJ (in Marine Policy in press, online) by David Johnson and colleagues.

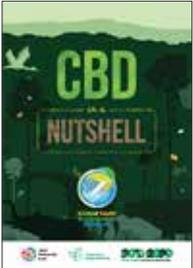
Highlighting the prevalence of marine plastics and the need for a Regional Seas Convention for the Eastern Central Pacific. DOI: 10.1016/j.marpol.2018.02.022

Empowering high seas governance with satellite vessel tracking data (in Fish and Fisheries, online) by Daniel Dunn and colleagues.

A proposal for using automatic identification system data to inform monitoring, control and surveillance of fishing and thereby enhance conservation of biodiversity. DOI: 10.1111/faf.12285



Other notable and relevant publications include:



CBD in a Nutshell by Global Youth Biodiversity Network

Due to the broad spectrum of the CBD and the organic way in which it has developed, its procedures and operational framework can seem complex, obscure and challenging, even to the most experienced negotiators. This illustrated guidebook to the CBD is useful and comprehensive reference point for anyone, young or otherwise, wishing to better understand the CBD’s institutional and operational arrangements. Available at www.bit.ly/GYBNGuidebook-low-res

TRACKS – the companion magazine for CMS COP12

In the words of the CMS’s Executive Secretary, this a new departure for CMS, emulating the format of an inflight magazine as an echo of the thousands of air miles that are clocked up by some of the migratory bird species on the CMS Appendices. Its thematic scope mirrors its visual appeal, making it essential and informative reading for anyone with an interest in animal conservation. Available at www.cms.int/sites/default/files/uploads/meetings/cop12/Inflight/TRACKS_WEB-PDF_DS_Cover3.pdf



UNESCO World Heritage Convention 2018 Annual Report

This report highlights some of UNESCO WHC’s most impressive achievements in the past 12 months, whilst drawing attention to the most pressing threats to the marine environment, not only from a cultural standpoint, but also from an ecological one, as both are inexorably linked. Available at www.whc.unesco.org/document/165577

IUCN’s Large Scale Marine Protected Areas: Guidelines for design and management

This document offers an authoritative resource for protected area managers; drawn from concerted collaboration among specialist practitioners across IUCN dedicated to supporting better implementation of ideas in the field. The advice presented is intended to build institutional and individual capacity to manage protected area systems effectively, equitably and sustainably. Available at www.iucn.org/pa_Guidelines



Final Report from the 4th Our Ocean Conference – An Ocean for Life

The report describes in detail the conference proceedings and applauds the unprecedented commitments made by delegates, which contribute to maritime security and the sustainable development of the Blue Economy across the world.



Global Ocean Biodiversity Initiative

Providing the scientific basis for conserving biological diversity in the global ocean

The Global Ocean Biodiversity Initiative is an international partnership of organisations committed to advancing the scientific basis for conserving biological diversity in the marine environment. In particular, GOBI contributes expertise, knowledge and data to support the Convention on Biological Diversity's efforts to identify ecologically and biologically significant marine areas (EBSAs) by assisting a range of intergovernmental, regional and national organisations to use and develop data, tools and methodologies.

GOBI also undertakes research to generate new science that will enhance the value of EBSAs and their utility for promoting environmental protection and management for specific areas of the world's oceans. The intention is ultimately to reduce the rate of biodiversity loss through the application of ecosystem approaches to the management of human activities, and to support the establishment of networks of representative marine protected areas in national and international waters.

The GOBI partnership and activities are coordinated by a Secretariat team, provided by Seascape Consultants Ltd. GOBI is funded by the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.

 www.gobi.org

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Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety



seascape
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based on a decision of the German Bundestag