General Assembly Ad Hoc Open-ended Informal Working Group to
study issues relating to the conservation and sustainable use of marine biological diversity
beyond areas of national jurisdiction

Intersessional Workshop on the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction

Conservation and management tools, including area-based management and environmental impact assessments

6-7 May 2013, UNHQ

ABSTRACTS

Panel 1

Key ecosystem functions and processes in areas beyond national jurisdiction [Speaking Notes]

Eulogio Soto Oyarzún

(eulogio.soto@uv.cl)

Oceans comprise both pelagic and benthic realm. The marine pelagic environment is the largest realm on Earth, constituting 99% of the biosphere volume while the deep sea, defined as water and sea floor (benthic) areas below 200 meters, comprises 90% of the biosphere. Areas beyond national jurisdiction (ABNJ) take up a big part of these environments including more than 60% of the world's oceans. In these environments complex and fragile ecosystems have place such as seamounts, open slopes, basins, hydrothermal vents, cold seeps, abyssal plains and trenches on the sea-bed, as well as the water column above these ecosystems and the sub-seabed below. However our knowledge of these habitats, of the life histories and dynamic of most species and biological communities inhabiting there and of their functions and processes is very limited.

Ecosystem function considers a natural structure, process and their associated mechanisms, which may generate services that ultimately, provide human well-being. There are three classes of ecosystem functions: a) stocks of energy and materials (biomass, genes), b) fluxes of energy or material processing (productivity, decomposition) and c) stability of rates or stocks over time (resilience, predictability).
In ABNJ key function and processes have relation with Planet Regulating Ecosystem Services. They involves a huge variety processes, which can be summarized as production, consumption and transfer of organic matter to higher trophic levels, oxygen production, organic matter decomposition and nutrient regeneration. Key function and processes may be also classified in different kind of ecosystem services: a) Supporting services are habitat, biodiversity, nutrient cycling, water circulation and exchange, photosynthetic and chemosynthetic primary production, and resilience; b) Provisioning services like particular fisheries (food), oil, minerals and gas, waste disposal sites, chemical compounds for industrial and pharmaceutical uses and CO2 capture and storage; c) Regulating services such as gas and climate regulation, natural carbon sequestration and storage, waste absorption and detoxification and biological control, and d) Cultural services for example scientific, educational, recreation, spiritual and aesthetic enjoyment.

Most of these processes are unique and some of them differ from those present in areas within national jurisdiction. Processes are fast at the surface and slower deeper, but because the large volume of the ocean (and surface area of the seabed) means it is very important in maintaining biogeochemical cycles on Earth. Linkages between both ecosystems may be explained by growing evidence of fast track pathways of terrestrial pollution in the deep sea. Food web energy transfer is the best example of interaction among column water and seabed. However many issues such as experimental research aimed at elucidating the relative importance of top-down control of ecosystem function remain as important gaps in our knowledge of these ecosystems.

Panel 2

Impacts on, and challenges to, marine biodiversity beyond areas of national jurisdiction

Jihyun Lee

(jihyun.lee@cbd.int)

This presentation will start with an overview of our understanding of marine biodiversity at the global scale as well as a compilation and synthesis of available scientific information at the regional scale. As an example of the latter, it will summarize the scientific results of a series of regional workshops to facilitate the description of ecologically or biologically significant marine areas (EBSAs), convened by the Secretariat of the Convention on Biological Diversity (CBD), in the North and South Pacific Ocean, Wider Caribbean Sea, Western Mid-Atlantic Ocean, South-Eastern Atlantic Ocean, and Southern Indian Ocean. Following an introduction to CBD's EBSA criteria, a summary description will be provided of marine areas meeting these criteria, including those located beyond national jurisdiction.

The presentation will then briefly highlight various threats and pressures to marine biodiversity in areas beyond national jurisdiction, focusing on the concerns noted by the Conference of the Parties to the CBD regarding impacts on open-ocean and deep-sea habitats and ecosystems. It will also show, using an example from the South Pacific, how the scientific information on areas meeting EBSA criteria, together with geo-referenced information on threats and pressures, can be used to support the application of the ecosystem approach and the precautionary approach to the conservation and sustainable use of marine biodiversity.

Finally, the presentation will address some challenges associated with our attempts to better understand impacts on marine biodiversity, such as data paucity, capacity disparity among different regions/countries, and the need to strengthen regional- and sub-regional scientific collaboration, emphasizing how such collaboration and capacity-building have been facilitated by the EBSA process. The need to apply a more systematic approach to scientifically describing areas meeting EBSA criteria, driven by expert scientific judgment, will be also addressed.

Panel 2

Impacts and challenges of high seas fisheries to marine biodiversity beyond areas of national jurisdiction

Edwin J. Niklitschek

(edwin.niklitschek@ulagos.cl)

Bottom-trawling, purse-seining and long-lining are the three most important fishing activities on the high seas. Bottom-trawling fisheries focus on deep-sea species, whose distribution is often restricted to seamounts or other specific habitats during part or all of their life-cycle. Purse-seine fisheries tends to target highly migratory pelagic species, including tunas, mackerels and related species whose distribution range may include jurisdictional and non-jurisdictional waters, across more than ocean and/or continent. Long-line fisheries concentrate on high value and less abundant deep-sea species, such as Patagonian tooth-fish. Overall, due to environmental and biological constrains, resilience of these deep-sea populations and their related communities to exploitation is believed to be lower than in coastal and shallower waters. Thus, populations targeted by deep-water trawling and long-line fisheries are probably the ones facing the highest risks of over-exploitation. The incidental capture of non-target fish, reptile, mammal and bird species by all gear-types is a matter of similar or higher concern to over-fishing. Particularly, when a given species is captured in large numbers or when small-size and/or endemic populations are affected. A third matter of concern is the localized impact by severe destruction of bottom habitats by bottom-trawling activities, specially when it affects biologically structured habitats, such as those formed by corals and sponges.

While enumerating past or potential impacts of fisheries upon high-sea populations, communities or habitats is a relatively easy task, providing quantitative estimations about the magnitude of these impacts is a goal that may be impossible to accomplish, given the limited statistical and scientific information available for most of the high-seas exploited around the planet. This lack of information will probably persist, given the geographical and political nature of these areas, far from the coast and beyond national jurisdiction. The latest condition is also a serious limitation for implementing managing or conservation measures that requires direct enforcing by national or international authorities. Therefore, there is a clear need to combine precautionary approaches with pragmatic, efficient and innovative tools that make possible the achievement of acceptable degrees of protection to the productivity, biodiversity and functioning of these ecosystems, in the near future. Identifying ecologically and biologically significant areas to protect, and learning from the successes and failures of former international efforts in this direction, such as those implemented at the CCAMLR, are probably the first steps in this direction.

Panel 2

Human impacts on fisheries productivity in areas beyond national jurisdiction

Callum Roberts

(Callum.roberts@york.ac.uk)

We have caught shellfish and fish from coastal waters for over 100,000 years. Against this very long time span, fisheries for finfish in areas beyond national jurisdiction are a very recent phenomenon, having begun in earnest only after the Second World War. Initially, fishing fleets targeted high value shallow water species like tuna, swordfish and marlin, but from the late 1960s onwards they began to fish the seabed to depths of over 1000 metres. In this presentation, I will focus on pelagic fisheries.

Since the 1950s, pelagic fisheries have spread to virtually every part of the high seas. They have had rapid and lasting effects on stocks of target species, depleting the majority by 70% or more, and in many cases by over 90%. Over time, the list of target species has grown, particularly with recent increases in the value of sharks, but the list of exploited species is much longer due to the wide spectrum of bycatch species that are caught. High seas fisheries are managed by Regional Fisheries Management Councils, most of which have failed to implement effective controls on managed fishing effort, even where problems are acute and well documented (e.g. the case of Atlantic Bluefin Tuna). Illegal, Unreported and Unregulated fishing makes the problems even more severe in many regions. Therefore, the greatest threat to the productivity of high seas pelagic fisheries is mismanagement.

Climate change and ocean acidification have recently added new dimensions to the problem of maintaining or recovering the productivity of high seas fisheries. Ocean warming, acidification and overfishing are now acting in concert to produce a three way squeeze on productivity, which means that sustainable fishing yields are likely to drop substantially over the coming century unless there is swift international action to reduce greenhouse gas emissions.

Warming is increasing the temperature and thickness of the surface warm water layer that floats on cooler, denser water below. Surface waters have sufficient light to drive photosynthesis but few nutrients because nutrients are lost to deeper water when dead animals and plants sink. Productivity gets a boost by mixing of deep water back towards the surface bringing nutrients with it. However, a thicker and more stable warm water layer will reduce mixing as the world warms, so productivity will fall. Ocean deserts of exceptionally low productivity are already expanding.

There is also a problem with hypoxia. Oxygen content of water falls as it warms. Furthermore, subsurface waters will become more hypoxic because of reduced downward mixing of oxygen from the surface, so the living space available to fast-moving fish with high oxygen demand is reducing. There has already been a 15% loss in the volume of Atlantic Blue Marlin habitat, for example. In addition, reduced oxygen levels in water lead to slower growth and smaller maximum body size of fish, both of which will reduce fisheries productivity. Smaller, slower growing fish are less productive and produce fewer eggs, both of which will adversely impact on sustainable catch levels.

Finally, ocean acidification is likely to reduce production by key groups of plankton that make carbonate shells. For example, coccolithophores are phytoplankton that lie at the base of ocean food webs, and pteropods are tiny molluscs that represent a crucial energy transfer step between phytoplankton and commercially exploited fish. Both are expected to suffer from increasing ocean acidity with uncertain consequences for fish stocks and fisheries.

Panel 3

Overview of new and emerging uses of the ocean areas beyond national jurisdiction

Takehiro Nakamura

(takehiro.nakamura@unep.org)

The ocean areas beyond national jurisdiction host marine ecosystems that provide goods and services for human benefits and green economy. Some of these ecosystem services have been utilized and recognized under the United Nations Convention on the Law of the Sea and other international agreements. These include deep sea fisheries, seabed mining, navigation, underwater cable, bioprospecting, climate/oceanography surveillance and monitoring, and scientific research. There is increased demand to use other marine ecosystem services for human benefits due to pressure for mitigation of climate change, exploration of living and non-living resources, food security, and meeting other pressing sustainability needs of human beings. In this presentation, among possible ecosystem services that can be provided by marine ecosystems in the areas beyond national jurisdiction, climate engineering, marine renewable energy, removal of marine litter and open ocean aquaculture are discussed.

The world ocean is considered to be a largest sink of carbon dioxide. Based on the potential of sequestration and storage of carbon in the ocean systems in the vast areas beyond national jurisdiction, geo-engineering technologies have been discussed in the international community. There have been a number of experimental activities that were conducted to evaluate the efficacy and environmental impacts of deployment of the technologies. The ocean areas have also been reported to be a depository of global contaminants, such as marine litter, persistent organic pollutants, and heavy metals. Scientific research suggested that ocean gyres serve as the system to accumulate, for example, marine litter. More information is becoming available on the impacts of the marine litter on marine biota and removal of marine litter in the open ocean areas is further discussed. There are a number of technologies that may be deployed in areas beyond national jurisdiction for open ocean marine renewable energy and open ocean aquaculture.

Panel 3

Trends of new and emerging uses of, and experimental activities in, areas beyond national jurisdiction and implications for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction

Duncan Currie

(duncanc@globelaw.com)

There has been an acceleration of actual and proposed new and emerging uses in areas beyond national jurisdiction (ABNJ) in past decades. Actual or proposed uses include open ocean aquaculture, cultivation of marine algae such as seaweed, ocean thermal energy conversion (OTEC), wind and wave energy. There are also various geoengineering methods proposed to address climate change, such as sunlight reflection methods (SRM) and carbon dioxide removal (CDR) techniques. Ocean fertilization with iron ore may be the best known, but other proposed methods include methane hydrate extraction, ocean fertilization through addition of urea or pumps to stimulate ocean upwelling, the deep sea deposit of crop wastes, adding substances such as limestone to enhance alkalinity and even creation of ocean dams. Unintended and impacts on the oceans, as well as terrestrial ecosystems, vary widely, depending on many factors including the nature, scale and location of the activity. The impact of the new and emerging uses on marine biodiversity and the threats generated by these uses are not necessarily independent of other threats are likely to be cumulative. Some foreseen uses, such as deep sea mining, are approaching reality, and some conventional uses, such as fishing, have had increasing and some new impacts, such as impacts on vulnerable marine ecosystems. Assessments of new and emerging uses, as well as existing uses, need to take account of cumulative as well as cross-sectoral impacts, and marine governance of areas beyond national jurisdiction likewise needs to be cross-sectoral in its scope.

There is scope for developing the legal regime of the high seas to better protect the marine environment of the high seas and Area and in particular the conservation and sustainable use of marine biodiversity based on a science-based, precautionary, global, transparent, cross-sectoral and effective control and regulatory mechanism for new and emerging uses including geoengineering. No current framework exists to address the development or regulate the implementation or otherwise implement measures to control many of the new and emerging uses. The evolution of the London Convention and Protocol to address ocean fertilization is an example of the development of law in one sector, but the breadth of new and emerging uses goes well beyond ocean fertilization. Only the International Seabed Authority and the London Convention and Protocol have sophisticated frameworks for assessments, while some regional fisheries management organizations are developing frameworks for deep sea bottom fishing. No current international governance framework for assessment of the effects on marine biodiversity in ABNJ currently exists. The CBD has developed guidelines for environmental impact assessments (EIAs) and strategic environmental assessments (SEAs), but these are non-binding voluntary guidelines, have no reporting process and are subject to the BBNJ processes. Nor is there currently a method for ensuring uses do not infringe any marine protected areas in ABNJ. There are requirements under international law to conduct environmental impacts and apply the precautionary approach but implementation is patchy.

Panel 4

Area-based management tools

Erik J. Molenaar

(E.J.Molenaar@uu.nl)

The presentation on area-based management tools will be tailored to areas beyond national jurisdiction (ABNJ; the high seas and the Area) as well as the mandate of the BBNJ Working Group. Separate attention will be given to

1. **Terminology.** It is, *inter alia*, noted that a universally accepted definition of the term 'area-based management tool' does not exist and that a broad definition will be employed for the purpose of the presentation, namely "higher protection than the surrounding area due to more stringent regulation of one or more or all human activities". Pursuant to this definition, area-based management tools do not imply a complete prohibition of one or more or all human activities *per se*;
2. **Types**. A distinction is made between sectoral (sector specific) and cross-sectoral (non-sector specific or holistic) tools;
3. **Objectives**. Listing the main objectives of area-based management tools in ABNJ;
4. **Threats**. E.g. removals of target and non-target species; damage to benthic ecosystems; and pollution of the marine environment (substances, noise & light);
5. **Examples of existing tools**. Focusing on shipping, fishing, deep seabed mining and multiple human activities;
6. **Relevant international instruments & bodies**. Covering non-legally binding instruments and legally binding instruments & bodies (at both global and regional levels);
7. **Challenges re ABNJ**. At the outset, it is submitted that the wider the international support for area-based management tools in ABNJ, the more effective they are likely to be. Tools adopted by regional states - or even individual states - are not inconsistent with international law *per se*. This would only occur if the rights of other states would be interfered with in ways that would be inconsistent with international law; for instance at-sea high seas enforcement without a clear ground under international law.

   The existing international framework for area-based management tools in ABNJ faces challenges at both global and regional levels. As regards the regional level, it is noted that (a) most existing tools are merely sectoral; (b) ABNJ in certain regions do not have regional fisheries management organizations/arrangements or regional seas agreements, that could adopt such tools; (c) the effectiveness of some regional tools may be compromised by insufficient universal support; and (d) diverging levels of protection of ABNJ among regions has various consequences.

   As regards the challenges at the global level, it is noted that regulatory bodies for some human activities are lacking as well as a comprehensive legally binding framework on area-based management tools in ABNJ, which could contain: (a) minimum requirements for global and regional instruments and bodies, and guidance on their respective roles; (b) confirmation of the authority of relevant global and regional bodies to identify, designate and manage area-based management tools and an obligation for all states to respect these tools; and (c) mechanisms to stimulate regional action or take action by default.

Panel 5

Environmental impact assessments, strategic environmental assessments and biodiversity in areas beyond national jurisdiction - *Current arrangements*

Jake Rice

(Jake.Rice@dfo-mpo.gc.ca)

In 2006 the CBD COP VIII adopted Voluntary Guidelines for Biodiversity-Inclusive Environmental Impact Assessments. These were developed primarily based on experience with activities and EIAs in terrestrial ecosystems, and soon questions were posed about their applicability in marine ecosystems. In 2009, CBD organized an expert meeting to review the applicability of these guidelines for application in marine environments, including areas beyond national jurisdiction (ABNJ). This meeting noted a number of special considerations for EIAs and SEAs to take into account biodiversity in ABNJ. After reviewing the 2006 Voluntary Guidelines in light of these considerations, the expert meeting proposed modifications or additions to many of the 2006 Guidelines. After review by Parties and a number of revisions, Voluntary Guidelines for considering biodiversity in marine EIAs and SEAs were approved by the 2012 CBD COP.

In addition, UN agencies overseeing many of the industries operating in ABNJ have guidelines for conduct of EIAs and/or SEAs either as separate documents (IMO for shipping, ISA for sea-bed mining) or as part of overarching guidance on operations (FAO for deep-sea fisheries). Most of these guidelines were developed and adopted by the appropriate agencies before the CBD voluntary guidelines were available, but address many of the considerations highlighted by the CBD review.

This talk will first summarize the special considerations applicable when EIAs include impacts of activities on biodiversity in ABNJ, and the guidance provided by CBD for best practices to address those considerations. It will then cross-tabulate the guidelines provided by FAO, IMO, and ISA against the practices promoted by CBD. This should provide useful factual information about the degree to which current governance practices address biodiversity beyond national jurisdiction when assessing impacts of major marine industries.

Panel 5

Gaps and options in the assessment of impacts on marine biodiversity in areas beyond national jurisdiction

Miguel D.Fortes

(migueldfortes@gmail.com)

Assessment approaches to understand and mitigate environmental impacts on marine biodiversity in ABNJ include Environmental Impact Assessment (EIA), Marine Protected Areas (MPAs) (either individually or as networks), marine spatial planning, and ecosystem-based approaches. There are, however, common or inherent problems in the selection and application of these approaches, which are hindering efforts for further cooperation among states and regions. In turn, these problems create gaps affecting a better appreciation and use of the resources in these areas beyond the limit of national control. The problems and gaps in the implementation and adoption of these approaches are interdependent and include: wide geographic scope, lack of financial resources, lack of coordination, hence, data and the minimum requirements that should be defined for each approach including objectives or principles against which the outcome will be tested. Especially in developing countries, these gaps lead to little technical information on the benthic and pelagic communities in ABNJ, which help generate general guidance on the subject but is not legally binding, not offering comprehensive decision making based on rationalization of the currently fragmented approaches and ocean policies and their implementation. There is a need to adopt an international legally binding instrument to support and expand scientific initiatives, to deal inter alia or solely with an acceptable impact assessment protocol. This should go hand-in-hand with a mechanism to establish or expand regional scientific advisory bodies, and establish a permanent scientific body to comprehensively assess the state of marine biodiversity in areas beyond national jurisdiction.

Panel 6

Social and environmental considerations for management in areas beyond national jurisdiction

Angelique Brathwaite

(abrathwaite@coastal.gov.bb)

Areas beyond national jurisdiction encompass over half of our oceans and comprise over 90% of their volume while housing an amazing wealth of primarily unprotected biodiversity. Ecosystem Based Management is a multi-faceted system, which is viewed as the all-encompassing conservation measure for marine and coastal ecosystems, and many of its facets can be extrapolated and /or adapted to be effective in high seas. At one end of the EBM spectrum are ecological concerns such as ecosystem conservation; while at the other end are social values such as equity and food security. As the social and ecological systems are inextricably linked, they will have to be considered equally in order to effectively manage areas outside of national jurisdiction. While knowledge of the systems to be protected is important; use of the precautionary principle will perhaps play a greater role, than for nearshore systems as many of these offshore resources are unknown. The difficulties involved in the discovering and documenting of biodiversity in these remote areas should not hinder the process of protecting biodiversity, but feed into it as the system evolves. The establishment of marine protected areas can play an integral role in conserving biodiversity in areas beyond national jurisdiction, however the remoteness and difficulty involved in both collecting the scientific information to designate such areas, as well as governance and enforcement will prove a challenge, but not an insurmountable one. The social benefits obtained echo those for nearshore ecosystems such as food and pharmaceuticals and are expanded to include among others, benefits from the oil and gas industry, telecommunication and mining. Stakeholders and communities will fall in a much narrower group and might therefore be easier to identify but with less of "spiritual" stake and more of an economic stake in the ecosystems. Methods for engaging stakeholders fall into the qualitative or quantitative categories. Qualitative methods have proven to be more effective in Small Island Developing States such as Barbados, where the use of participatory action research has found favour with island communities. For stakeholders in areas beyond national jurisdiction, quantitative methods such as socio-economic research and social network analysis which shows the benefit flows between stakeholders could be more useful.

Panel 6

Scientific expertise and infrastructure for marine biodiversity management [Speaking Notes]

Alf Håkon Hoel

(alf.haakon.hoel@imr.no)

Today, an ecosystem approach is fundamental to the conservation and use of marine biodiversity. A fundamental precondition for the ecosystem approach is scientific knowledge about ecosystems. Infrastructure for science and scientific expertise is therefore critical, in order to develop an understanding of the structure and functions of marine ecosystems. Without scientific knowledge, no ecosystem approach to management. This applies equally in areas beyond as well as inside national jurisdiction.

In Norway, the Mareano programme represents a novel approach to the mapping of the seabed and study of seafloor ecosystems and their components. An important aspect of the scientific infrastructure is also the regional, international scientific cooperation through the International Council for the Exploration of the Sea (ICES), which involves marine scientists from all countries around the North Atlantic and which provides regional commissions and member states with scientific advice on how the marine environment and the resources there can be managed.

Moving from science to actual management, the ecosystem approach requires that the cumulative effects of various uses and pressures on the marine environment is assessed. A number of countries are in the process of implementing an ecosystem approach, and in the Norwegian case a substantial effort has gone into studying the cumulative effects of external pressures on marine ecosystems such as climate change and uses such as petroleum development. On the basis of this, and the identification of vulnerable and valuable areas in the ecosystems, spatial management measures are adopted, regulating petroleum activities in time and space.

A similar, spatial, approach is taken by the Northeast Atlantic Fisheries Commission for the areas beyond national jurisdiction in the Northeast Atlantic. Here, fisheries are limited in a number of areas in order to protect the biodiversity in vulnerable marine ecosystems. Such a regional approach is critical to the management of biodiversity in areas beyond national jurisdiction. The Arctic also represents an interesting case in this regard.

Finally, an important objective in the management of activities affecting marine biodiversity is the need to ensure that the capacity of ecosystems to deliver services in terms of food production is protected and enhanced. How can efforts to manage biodiversity in areas in areas beyond national jurisdiction contribute to this?

Panel 7

Existing regimes, experiences and best practices

Kristina M. Gjerde

(kgjerde@eip.com.pl)

There are a number of regimes relevant to the use of area-based management tools in marine areas beyond national jurisdiction (ABNJ). This presentation will address issues such as: What are their principles and main characteristics? What lessons can be learned from existing regimes, experiences and practices? What are the benefits and challenges in enhancing coordination among regimes?

Global level approaches: This presentation will review 1) the experiences and practices of the International Maritime Organization with respect to the adoption of "Particularly Sensitive Sea Areas" (PSSAs) and associated protective measures for particular PSSAs where the discharges or other activities of ships may be more strictly regulated, and 2) the approach applied by the International Seabed Authority in the establishment of a network of nine "Areas of Particular Environmental Interest" in the Clarion Clipperton Zone (CCZ) in the Pacific. These nine representative areas were established to preserve regional biodiversity and ecosystem structure and function as part of an Environmental Management Plan to guide exploration and future exploitation of manganese nodules in the CCZ.

Global criteria, processes and programs: Both the UN Food and Agriculture Organization (FAO) and the Convention on Biological Diversity (CBD) have established globally applicable criteria and processes to assist in the identification of "vulnerable marine ecosystems" (FAO VMEs) and "ecologically or biologically significant marine areas" (CBD EBSAs). States and regional fisheries management organizations (RFMOs) are obliged via a series of UNGA resolutions to adopt measures to prevent significant adverse impacts to VMEs during high seas bottom fishing. The CBD EBSA criteria are a support tool for management decisions by governments and competent organizations with no trigger for action.

Regional processes in ABNJ: Three regional seas organizations, in the Mediterranean, the North East Atlantic and the Southern Ocean, have been active in establishing marine protected areas in ABNJ as part of their efforts to establish regionally representative networks of marine protected areas. The presentation will note their practices and common problems such as limited regulatory competence, compliance, engagement with other organizations, and ability to influence the actions of non-Parties.

Regional fisheries bodies: Some RFMOs have experience in closing areas to deep sea bottom fisheries to protect biodiversity and prevent significant adverse impacts to VMEs using the FAO VME criteria. Common criteria are not yet applied by RFMOs that regulate tuna or tuna-like species and few areas have been closed specifically to protect their biodiversity values.

Observed benefits of cooperation include: 1) avoiding conflicts of use such as seabed mining in areas closed to bottom fishing; 2) maximizing use of expertise and preventing duplication of efforts; 3) enabling comprehensive protection of areas under stress from multiple sources, including climate change and ocean acidification; and 4) safeguarding areas currently free from direct human impacts.

Challenges to cooperation include lack of time, money and expertise, as well as differing priorities. Legal mandates may also be too narrow, as organizations can only act within the specific terms of their respective jurisdictions and mandates. In practice, an injection of funds, human resources, and/or scientific capacity have served to stimulate cooperation. Other mechanisms include commitment to shared goals and objectives and obligations to report to the global community.

Panel 7

Ecosystem services and area-based management

Nobuyuki Yagi

(yagi@fs.a.u-tokyo.ac.jp)

When people attempt to evaluate the best practices in area-based management schemes, one simple question arises: "What is the purpose of area-based management?" Unless the purpose and the goal are well defined, the activities cannot be effectively evaluated. Maintaining ecosystem services in the area would be one purpose of management beyond areas of national jurisdiction. Ecosystem services include both products obtained from ecosystems (such as fish) and other benefits such as primary production and nutrient cycling, as they were discussed in detail at the Millennium Ecosystem Assessment. Maintaining healthy material inflow and outflow of the ocean is key.

However, it should be noted, that the existing legal frameworks focus on the management of "goods" (i.e., products obtained from services) rather than "ecosystem services". UNCLOS focuses on the management of living resources by requesting coastal States to determine the allowable catches in its EEZ (Article 61) and neglects the ecosystem services. The five criteria relevant in the identification of a VME at FAO and the seven EBSA criteria of CBD do not specifically mention ecosystem services. Meanwhile, some management practices in coastal areas actually involve the maintenance of ecosystem services. For instance, Japanese coastal fishery management organizations often initiate tree-planting activities in river up-streams, taking into account the ecosystem connections of land and sea (healthy material inflow to the ocean) in an effort to conserve their tenure areas in territorial use-rights fishery (TURF). It is functioning because the purpose and the goal are shared by the local stakeholders. Incentives (rights-based management) and the needs for penalties (peer-sanctions) are well recognized by the communities concerned. This can be interpreted as economic based solutions, rather than solutions based on legally binding instruments. If a global system for the conservation and sustainable use of marine biological diversity is to be created beyond areas of national jurisdiction, the first step would be to set a well defined goal of the conservation efforts and seek stakeholder's involvement toward achieving this goal. Stakeholders may wish to consider the use of economic instruments, such as payment for the ecosystem services, to achieve the goal.

Panel 8

Trends in cooperation for research, management and capacity building activities in ocean areas beyond national jurisdiction

Martin Tsamenyi

(tsamenyi@uow.edu.au)

Marine areas beyond national jurisdiction (ABNJ) cover over 50% of the earth's surface and are host to an abundant array of biodiversity. Rather than being remote from national interests, these areas have current and rapidly developing links with coastal State and ocean industry concerns. The international community has an enduring interest in the conservation and sustainable use of marine biodiversity in ABNJ for current and future generations. The Ad Hoc Open-ended Informal Working Group to study issues related to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction (BBNJ Working Group) reporting to the UN General Assembly (UNGA) is the principal global policy making forum for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction (ABNJ). Outside this forum there are a variety of scientific research programmes and management activities related to conservation and sustainable use of biodiversity in ABNJ. This presentation will map and classify relevant programmes and activities and identify emerging trends across these initiatives and highlight the ad hoc and fragmentary nature of these programmes and management initiatives and the clear need for improved coordination mechanisms and strategic direction in the ABNJ space.

Comprehensive and coordinated information on marine biodiversity is critical to strategies and informed decision making for conservation and sustainable use of this precious resource in ABNJ. Potential options for coordination of scientific research programmes will be discussed including suggestions for information exchange, possible data repositories and training programmes. Greater institutional cohesion at both global and regional levels is also an important prerequisite for achieving biodiversity conservation goals in ABNJ. Possible models for cooperation and coordination between institutional and other actors in the ABNJ space including States, global and regional organizations, non-governmental organisations (NGOs), ocean industries and the ocean business community will also be considered. It will be argued that improved coordination between global organizations with interests and responsibilities in ABNJ will assist in defining best practice standards for biodiversity conservation in ABNJ.

Finally the presentation will explore mechanisms for capacity building and technology transfer between developed and developing countries to facilitate enhanced conservation and sustainable use of biodiversity in ABNJ. These could include partnership and mentoring arrangements between regional organizations with more advanced resources and capacity in ABNJ biodiversity conservation and those at an earlier stage of development. Such arrangements could include combined training programmes, exchange postings and technology transfer between these organizations. A global scholarship programme could also be established to foster science, policy and governance research into biodiversity conservation and sustainable use of biodiversity in ABNJ.

Panel 8

OBIS and capacity-building needs for marine biodiversity data management

Patrick Halpin

(phalpin@duke.edu)

The Ocean Biogeographic Information System (OBIS) is an open-access global information system archiving and disseminating marine biogeographic information for use in scientific, management and policy analysis. The OBIS information system has its origins from the collaborative Census of Marine Life program that concluded in 2010. Since that time, OBIS has been maintained as a project under the UNESCO-IOC/IODE program and operates through data contributions of a number of international parties and institutions. The OBIS information system is currently the largest single data repository for biological data for the world's oceans with more than 35,000,000 geographically registered biological observations of 120,000 marine species from over 1,100 data sets on-line. The OBIS information system plays a vital role in scientific analysis to support a number of international processes in areas beyond national jurisdiction (ABNJ). These processes include the CBD process for the identification of Ecologically or Biologically Significant Areas (EBSAs) and the FAO process for the identification of Vulnerable Marine Ecosystems (VMEs) as well as other emerging efforts. The reasons OBIS is critical to these international processes are: (1) the OBIS system provides an unbiased open-access information system open to use by all parties and individuals; (2) the information system provides contributed data in both national waters and ABNJ areas; and (3) the OBIS system is working closely with international bodies to better meet future demands.

While the OBIS information system represents the largest marine biological data collection available to support international processes there are significant gaps and deficiencies that need to be addressed to better meet the rapidly increasing demands of the international community. Data availability for our world's oceans are unevenly distributed with significant gaps in the open ocean (ABNJ) and southern hemisphere regions. These gaps may represent areas of low data collection or may represent areas where data exists but has not yet been made available to the international community. Filling the existing data contribution gap is an extremely high priority but will take new resources and effort. In addition, raw data must be processed and analyzed to produce useful information to inform international processes. Institutional capacity to support the aggregation and analysis of raw data into useful information must be increased and sustained to support growing needs. And regional capacity to objectively use and apply this information must also be increased in order to put this information to use in ongoing international processes.