

Appendix 1

Actions taken by FAO in relation to UN General Assembly resolutions 64/72 (paragraphs 113, 117, 119, 120, 122, 123, 124), 66/68 (paragraphs 121, 126, 129, 130, 132 and 134) and 71/123 (paragraphs 156, 171, 175, 177 to 188 and 219)

- **International Guidelines for the Management of Deep-sea fisheries in the high seas and the FAO Programme on deep seas fisheries (including the ABNJ Deep-seas project) (Resolution 64/72; Paragraphs 113 and 117 and resolution 66/68; Paragraphs 121 and 126 and Resolution 71/123; Paragraph 171 and 175)**

FAO continues to work collaboratively with governments, inter-governmental organizations, international non-governmental organizations, fishing industry and the scientific community to improve fisheries management practices, increase knowledge of fish and fisheries and protect vulnerable areas in the deep-sea high seas. In particular, to:

1. Support the implementation of sustainable fisheries management practices outlined in the FAO International Guidelines;
2. Provide expert technical guidance, tools and resources to improve management practices;
3. Design state-of-the-art data collection and sharing systems related to vulnerable marine ecosystems; and
4. Facilitate dialogue, collaboration and networks among key stakeholders in order to strengthen and improve the effective management of deep-sea fisheries.

FAO's deep-sea fisheries programme is implemented through targeted contributions¹ and through projects supported by various donors, which has included the Governments of Japan², Norway³ and France⁴ (see <http://www.fao.org/fishery/topic/16160/en>). The 5 year project "Sustainable Fisheries Management and Biodiversity Conservation of Deep-sea Ecosystems in the Areas Beyond National Jurisdiction (ABNJ) concluded in 2019. The project was supported by the Global Environment Facility and implemented by FAO in collaboration with UNEP and in partnership with 20 partner organizations, including 6 regional organizations responsible for the management of deep sea fisheries in areas beyond national jurisdiction was launched. The ABNJ Deep Seas project is one of four projects that make up the Common Oceans Programme "Global sustainable fisheries management and biodiversity conservation in the Areas Beyond National Jurisdiction" (Visit <http://www.commonoceans.org/deep-seas-biodiversity/en/> for programme details). The project included components aimed at 1) improving the implementation of existing policy and legal frameworks, 2) reducing adverse impacts on vulnerable marine ecosystems, 3) improving planning and adaptive management for deep sea fisheries in ABNJ and 4) developing and testing methods for area-based planning. A second phase of the ABNJ Deep Seas project is currently being developed. Finally, FAO is a partner in the University of Bergen led North Atlantic deep-

¹ e.g. the Republic of Korea for the 2010 Busan Workshop

² Project: Fisheries management and marine conservation within a changing ecosystem context (Deep-sea component) – Still active

³ Project: Support for the implementation of the International Guidelines on the Management of Deep-sea Fisheries in the High Seas- Still active

⁴ Développement d'une banque de données sur les écosystèmes marins vulnérables en haute mer- Ended

sea sponges (SponGES) project funded by the European Union through its Horizon 2020 programme, which became operational in early 2016 and ending in August 2020. The project aims at improving the knowledge of SponGES and their ecosystems and to facilitate the uptake of such knowledge in policy and management settings.

- **Vulnerable Marine ecosystems, awareness raising and technical guidance (64/72; paragraphs 117, 119, 129, 122, 123 and 66/68 and Resolution 71/123; Paragraphs 171, 177, 178, 179, 180, 181, 182, 184)**

The Vulnerable Marine Ecosystems (VME) Portal and DataBase requested by UNGA in Resolution 61/105 (Paragraph 90) to support States and Regional Fisheries Management Organisations and Arrangements (RFMO/As) in protecting VMEs was launched in December 2014 (www.fao.org/in-action/vulnerable-marine-ecosystems/en/). The VME Portal provides the historical and current management measures adopted by RFMO/As to protect VMEs, displayed as user-friendly and navigable map and factsheet interfaces. The identification and protection of VMEs from significant impacts from bottom fishing gears and the monitoring of bottom fisheries are guided by the *FAO Guidelines for the management of deep-sea fisheries in the high seas* (<http://www.fao.org/3/i0816t/i0816t.pdf>). The portal and database are maintained by FAO and partner RFMO/As and promote awareness and transparency regarding the conservation and management measures implemented by RFMO/As to control bottom fisheries and protect VMEs. These measures are regularly reviewed and areas refined as more information on the occurrence of VMEs becomes available, with the information being entered in to the VME DataBase. All regions with RFMOs have measures on exploratory fisheries, encounter protocols, VME closures, and areas where bottom fishing is allowed. FAO and their RFMO/A partners continue to update the VME DataBase with new or modified measures. The database was last updated in February 2020.

Regional VME and Deep-sea Fisheries Workshops. FAO has organized and/or supported, a series of regional multi stakeholder workshops in the Southern Indian Ocean, the Mediterranean, the Southeast Atlantic, the Eastern Central Atlantic, the Western Central Atlantic and two in the North Pacific. The workshops aimed to facilitate information-sharing and discussion on issues related to VMEs, including on relevant fisheries management and conservation measures among stakeholders. The knowledge gained at the workshops also feed into the VME database development.

Under **Work Package 8 of the Sponge's project**, FAO has facilitated the uptake of new scientific information into existing management regimes, incorporating obligations and good practices for sustainable fisheries and biodiversity conservation, and translated SponGES results to all relevant actors and competent authorities, in particular managers and decision makers. A number of activities were conducted with the aim to enhance science–policy interactions, including a high-level event at the European Parliament in Brussels, and side events at the first session of the first Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ, New York, 4-17 September 2018), and GFCM Fish Forum (10-14 December 2018, FAO HQ), respectively. Moreover, a “Report on Technical Measures and Environmental Risk Assessments for Sponge Conservation” has been produced, and will be followed by a regional training workshop on addressing deep-sea sponges in a fisheries management context, that will be held at SEAFO HQ at the end of April 2020.

A review on “Vulnerable Marine Ecosystems: Processes and Practices in the High-Seas” <http://www.fao.org/3/a-i5952e.pdf> is available. This document catalogues the achievements that have

been made, since the adoption of UNGA Resolution 61/105 in 2006 and the FAO Technical Consultation on International Guidelines for the Management of Deep-Sea Fisheries in the High Seas in 2008, in the identification and protection of Vulnerable Marine Ecosystems (VMEs). It is, in many respects, a consolidated output of the FAO VME Portal and DataBase. The main chapters describe the actions taken in the following regions: Atlantic Ocean (northwest, northeast, western central, central eastern, southwest and southeast), Mediterranean and Black Sea, Pacific Ocean (north and south), Indian Ocean, and Antarctic and Southern Ocean. The regions approximate to the areas covered by RFMO/As, but also include regions where there are no regional management bodies. The seabed features are broadly described in each chapter to provide an indication as to where VMEs may be present and where they may overlap spatially with bottom fisheries. The functions and responsibilities of RFMO/As are described, and detailed accounts of measures adopted and implemented to protect VMEs from significant adverse impacts by fisheries using bottom contact gears. The measures implemented by each regional body are divided into general measures that mostly apply to the whole region and are typically precautionary in nature that allow sustainably fisheries to continue in certain areas and identify VME areas, and specific measures typically involving the closure of areas known or likely to contain VMEs to bottom fishing. Domestic measures applied by States to their flagged high seas fishing vessels are only included when particularly relevant such as in areas where there are no current regional measures from a regional body.

Best practices in VME encounter protocols and impact assessments. A multi-stakeholder workshop was held in May 2015 in collaboration with the Norwegian Institute of Marine Research (IMR) to facilitate the sharing of best practices and effective solutions on VME encounter protocols and impact assessments. The meeting also reflected on the use of indicators species/groups and the setting of thresholds and, more generally, on the various management mechanisms, including spatial measures, currently used to ensure that fisheries are sustainable under an ecosystem approach and for the protection of VMEs. The principle outcome include key messages formulated by the Workshop in relation to impact assessments and encounter protocols and their use in deep-sea fisheries management. In the context of the workshop a background document compiling information on current practices for encounter protocols was prepared and will be made available in the workshop report.

- **Research programmes, exchange of scientific and research data and management measures (64/72, Paragraphs 119b,c, 121, 122 a, 123 and 66/68, Paragraphs 123, 132, 133, 134 and Resolution 71/123; Paragraphs 178, 181, 182, 183)**

In the context of the EAF-Nansen Programme, a 30 day survey with the RV Dr Fridtjof Nansen on the Mascarene Bank (Saya de Malha and Nazareth Banks) took place from in May-June 2018. The survey was conducted in collaboration with the Joint Management Area between the Seychelles and Mauritius. The main objective of this survey was to characterize the marine ecosystem and morphology of the Saya de Malha Bank, and to investigate a specific subarea of Nazareth Bank. A post-survey meeting was convened in Port Louis in September 2018 that agreed on follow-up research activities to be conducted by the various partners and through the EAF-Nansen Programme science plan. This work is ongoing, and several scientific publications are in the pipeline.

Furthermore, 30 day research cruise with the RV Dr. Fridtjof Nansen took place in January-February 2019 in the Convention Area of the Southeast Atlantic Fisheries Organisation (SEAFO). The areas sampled were selected seamounts and seamount complexes of the Southeast Atlantic. As for the 2015 survey, key

objectives include the analyses of occurrence and abundance of benthopelagic fish and sessile epibenthos, including indicators of Vulnerable Marine Ecosystems (VMEs), in selected 'existing fishing areas' and areas closed to fishing within the SEAFO Convention Area. A particular effort was made to sample target fish resources to obtain more biological data, including tissue samples for genetic studies. The survey results will benefit regional science and enhance the global understanding of the Southeast Atlantic ecosystems and contribute to management decisions at SEAFO. Further collaborative research work is planned for 2020 to analyse the data and samples collected.

- **Data collection standards, tools and sharing of best practice (64/72, Paragraphs 119b,c,d 121, 122 a, 123 and 66/68, Paragraphs 1216, 129, 133, 134 and Resolution 71/123; Paragraphs 180)**

Species guides and catalogues for deep-sea cartilaginous fishes, sponges and corals and associated training. Identification guides for vulnerable deep-sea species to assist in the implementation of fisheries management measures and reporting obligations (e.g. by-catch requirements, recording of catches, and to improve scientific assessments) have been developed, and training on the use of the guides has been provided. Species guides and catalogues of the deep-sea cartilaginous fishes of the Indian Ocean, South East Atlantic, and South East Pacific have been finalized and printed. The process that led to the production of such guides included a consultation phase with relevant stakeholders, including fishing industry representatives who during the development phase provided feedback and support through both an online discussion group and workshop. The guides are intended for use on board vessels by observers, scientists, and non-scientific personnel. The first guide under the series (Indian Ocean Guide) is now actively being used by the fishing industry and its use is integrated into their reporting procedures for the vessel in the SIODFA group (one of the partners to the ABNJ Deep Seas project).

Regional training workshops on the “Identification of Deep-sea Cartilaginous fishes of the Indian Ocean, Southeastern Atlantic, and Southeastern Pacific oceans” were held in 2014, 2015, and 2016, respectively. The general objective of the training workshops was to improve the capabilities of scientists from countries facing these three oceans in the identification of a range of deep-sea cartilaginous fish species caught in the region. The participants were introduced to the anatomical features and taxonomy of the orders of deep-sea cartilaginous fishes occurring in their waters, to the use of the taxonomic keys included in the reference text material (e.g. FAO Catalogues and Identification Guide) and to the methodologies of processing and identifying a selection of specimens. Moreover, a biological data collection protocol was illustrated thus allowing for better reporting of shark specimens. The results from the workshops are documented in two FAO Fisheries and Aquaculture Reports^{5,6}.

A FAO training workshop on the identification and biological sampling of deep-sea benthic fauna with a particular focus on corals and sponges was held at the Faculty of Marine Sciences, University of Vigo, from November 13 to 15, 2018. Nine scientists from Mauritius, Seychelles, Mauritania, Sierra Leone, Mozambique, Namibia, and Senegal were trained on deep-sea invertebrates' taxonomy. By means of lectures and practical sessions, participants improved their ability to identify the main taxa of sponges and corals, and acquired basic skills in on-board sampling, preservation techniques and storage of specimens.

⁵ <http://www.fao.org/3/a-i4241e.pdf>

⁶ <http://www.fao.org/3/a-i5514e.pdf>

The work on the development of **identification tools for sponges and corals** has also progressed. Species lists and suggestions for identification tools have been produced, and partnerships have been established to support their finalization. Three posters displaying common species of deep-sea corals and sponges occurring in the Mediterranean Sea and Indian Ocean were developed^{7,8,9}.

A manual on how to collect biological data on deep-sea species is available at <http://www.fao.org/3/a-i6353e.pdf>. The purpose of this manual is to provide fishery observers and in general, fishery data collectors with a detailed description of the procedures required to collect biological data from the most important fishery groups that can be encountered while at sea. Fully illustrated sheets describe the correct methodologies to take length and weight measurements, determine the sex and maturity stage of the specimens, collect age structure samples, collect genetic samples and preserve specimens for further studies, and take photos that can help experts in the identification of the specimens. This will supplement existing observer manuals and will be useful for those vessels operating in areas without RFMO technical support or without full observer coverage on data collection to meet new data collection requirements.

An electronic application for reporting onboard observations from deep-sea fisheries vessels has been developed by FAO and an interested group of RFMOs. This application – SmartForms – collects deep sea fisheries information. The collected information includes photographs, GPS location, and physical characteristics. The application will be tested by the RFMOs interested in deploying the application and by fishing industry partners in the context of the ABNJ Deep-Seas project. A reporting component will also be added. An optional application of the SmartForms for submitting voluntary information on biodiversity elements is being developed. This application collects information on species of interest (e.g. marine mammals, seabirds, etc.) onboard fishing vessels to facilitate partnerships between industry and the global biodiversity community. The SmartForms mobile app can be used by commercial and recreational fishers to improve data collection.

- **Improved information on fish and fisheries, stock assessment and assessment of fishing activities (64/72 113, 117, 119, 123 and 66/68, 121, 126, 129, 133 and Resolution 71/123; Paragraphs 171, 175, 178, 179, 183, 186)**

The *Worldwide review of bottom fisheries in the high seas in 2016* <https://doi.org/10.4060/ca7692e> was published in 2020 and is the first comprehensive treatment of the world's deep-sea fisheries. It focuses on the harvesting of demersal species of finfish and shellfish in the ABNJ using gears that contact or fish very close to the seafloor. This provides improved estimates of regional catches and shows how varied the fisheries are in the different regions, with some having almost no waters at fishable depths to those having more extensive areas above 2000 m. Further, and not included in the *Review of Bottom Fisheries in the High Seas* (<http://www.fao.org/3/ca2528en/ca2528en.pdf>) published in 2009, is an attempt to show the spatial distributions of the fisheries and highlight some of the features fished. The ocean was divided into eleven regions, with eight being managed by regional bodies. Exceptions are the central Atlantic that has two advisory bodies though almost no bottom fisheries in the ABNJ and the Arctic Ocean that currently has no fisheries. The ABNJ of the southwest Atlantic has a large bottom fishery but is actually just a small component of the adjacent EEZ fisheries. Our knowledge regarding the state of the demersal stocks in the ABNJ, and on the impacts on the environment, have improved substantially over the last decade. Even though, complete information is only available for about half of the stocks. Some

⁷ <http://www.fao.org/3/a-i6945e.pdf>

⁸ <http://www.fao.org/3/a-i7256e.pdf>

⁹ <http://www.fao.org/3/a-i6324e.pdf>

25% are fully exploited with healthy fisheries, some 25% are over-exploited, and around 50% are fishing on stocks where the status is virtually unknown. Some of the over-exploited stocks are closed to directed fishing, and some of these have shown little recovery over longer time periods. Clear links to the effect of environmental conditions have more recently been identified as the major driver in fisheries production, and therefore it is important to better understand and predict the effects of climate change. The yield from the high seas bottom fisheries was estimated at 226 000 metric tonnes in 2016, with over 80% coming from the northwest Atlantic, southwest Atlantic and Mediterranean Sea, though the later region is less comparable as the ABNJ here extend to within 12/24 nautical miles of the coast.

A global review of *Alfonsino* (*Beryx* spp.), their fisheries, biology and management

(<http://www.fao.org/publications/card/en/c/d1c00ca0-7215-4386-8460-fbfb8038d06/>) and a review of orange roughy (*Hoplostethus atlanticus*) <http://www.fao.org/documents/card/en/c/CA1870EN> are available. The orange roughy publication provides stakeholders and interested parties with an understanding of orange roughy fisheries around the world. The report covers historical aspects of the regional development of orange roughy fisheries, biology, stock assessment, ecosystem interactions, and key management issues. Recent developments in science and approaches to management are specifically highlighted with respect to future management of sustainable deepwater orange roughy fisheries.

FAO worked with the deep seas fishing industry through the FAO Deep Seas Programme and the ABNJ Deep Seas Project to promote the implementation of the International Guidelines on deep-sea fisheries in the high seas. The southern Indian Ocean is one of the focal areas for the ABNJ Deep Seas Project, and the Project worked closely with fishing industry partners such as the Southern Ocean Deep Seas Fishers Association (SIODFA) and the Sealord Group. The project is also working with the International Coalition of Fisheries Associations (ICFA) which represents national fish and seafood industry trade associations from the world's major fishing nations. ICFA members have been actively engaged in a range of activities with FAO relating to deep-sea fisheries. Overall, the deep seas fishing industry has been working with FAO to support the implementation of sustainable fisheries practices outlined in the FAO International Guidelines, including: providing ship time and expert technical knowledge, developing and testing tools to improve information collection and exchange - including relating to vulnerable marine ecosystems and vulnerable species -, sharing experiences in relation to operational constraints and opportunities and sharing scientific results in relation to seabed mapping and use of multi-frequency acoustics in support of stock assessment.

- **Establish as appropriate regional fisheries management organizations or arrangements competent to regulate bottom fisheries in ABNJ (64/72, paragraph 124)**

FAO notes with satisfaction that additional RFMOs have become operational in recent years.

- **Making publically information available on bottom fishing and ABNJ (64/72, paragraph 122c)**

Resolution 64/72, paragraph 122c calls upon “submission by flag states to FAO of a list of those vessels flying their flag authorized to conduct bottom fishing in ABNJ, and the measures they have adopted to give effect to the relevant paragraphs of resolution 61/105 and present resolution”. The information reported to FAO in relation to UNGA 61 was disseminated as a subsection of the Fishing vessel finder, and made publically available through FAOs website.

- **Climate change, deep sea fisheries and vulnerable marine ecosystems (Resolution 71/123; Paragraph 185)**

A report on climate change in the deep-oceans is available, with work being jointly undertaken by the FAO ABNJ Deep-seas project and the Deep Oceans Stewardship Initiative (DOSI) (<http://www.fao.org/3/ca2528en/ca2528en.pdf>). The report highlights that necessary information from the deep oceans is quite limited, despite their great importance in climate regulation and buffering. Nevertheless, there is sufficient information to identify changes attributable to climate change at the oceanographic and biological levels, with predictions for significant deep ocean change occurring within the next 20-30 years. Effects are predicted to be largest at the poles, affecting productivity across all trophic levels. Highlighted were several recent changes in fish distributions in accordance to ocean warming, which in these cases did not appear to affect productivity but caused stock allocations problems affecting quota shares between national EEZs and high seas fisheries. RFMOs, or at least the fishing industry more generally, is ideally located to provide more extensive information on changes in the deep oceans. Many of the RFMO monitoring programmes could also contribute as data providers. The study showed that the effects of climate change on fishing patterns and stock biomass and distribution can be difficult to accurately predict, but it is believed that they will occur. This will require the management systems in RFMO/As to have adaptive processes in place to enable responsible decisions and to adopt appropriate measures.

- **Special consideration for developing countries (64/72, paragraph 121 and 66/68, paragraph 134 and Resolution 71/123; Paragraphs 187)**

Capacity development has been incorporated at various levels in FAOs activities supporting implementation of the guidelines, including in the different project. Some of these capacity development have been mentioned above in relation to use of species identification tools, on the job training during research surveys, and training to analyse resulting information as well as training and capacity development in relation to all the elements of the FAO deep-sea guidelines. The ABNJ Deep Seas project, for example, includes a range of capacity development opportunities in relation to deep-sea fisheries and VMEs, including on the VME criteria. The EAF-Nansen Programme, while providing on the job opportunities while on surveys, also provides for opportunities for joint research activities through the implementation of its science plan (in particular Theme 7 : Bottom habitat mapping) and for specific capacity development opportunities in relation to science and fisheries management through its Technical Training Network.