



# Ecosystem approach to fisheries (EAF)

Regional Fishery Body Secretariats' Network

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### Editorial

### TO SAVE ALL THE PARTS



PIERO MANNINI (FAO)

Photo: ©Giulio Napolitano



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Photo: @Paula Bustos

As components of ecosystems, human beings and their interactions have profound effects on the structure and function of such ecosystems, as recognized by the Millennium Ecosystem Assessment (2001). Similarly, ecosystems have profound effects on human habitats, human health and even socioeconomic development, and it is therefore impossible to protect a migratory or endemic species without first protecting its ecosystem. As the Nobel-prize-winning scientist Paul Ehrlich noted in 1971: "The first rule of intelligent tinkering is to save all the parts".

During the Twenty-fourth Session of the FAO Committee on Fisheries in 2001, many Members asked FAO to conduct studies on the relationship between marine mammals and fisheries. It proved to be a major issue. Some Members urged caution regarding the complexity of ecosystem-based fisheries management, particularly with respect to the impact of predator/prey relationships in fisheries, given that several environmental and human factors also contributed to the status of particular fisheries.

The Committee agreed that FAO should conduct studies and reviews to explore the interaction between marine mammals and fisheries. This recommendation was endorsed by the Hundred and Twentieth Session of the FAO Council, which urged that ecosystem-based fisheries management studies should be conducted by FAO, following a balanced and holistic approach. This holistic approach inspired the organization of the 2001 Conference on Responsible Fisheries in the Marine Ecosystem, which took place from 1 to 4 October 2001 in Reykjavik, Iceland. The conference brought together 400 participants including FAO Member and

non-member delegations, UN bodies and agencies, civil society representatives, fisheries industry representatives, academics, researchers etc. It was organized by FAO and the Government of Iceland, with co-sponsorship from the Government of Norway. This wide range of stakeholders allowed solid discussions on this new, balanced and holistic approach, which resulted in the "Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem". The declaration was adopted by the conference and submitted to the World Summit on Sustainable Development (WSSD), also known as the Earth Summit 2002. The 2001 Reykjavik Conference established ways in which ecosystem considerations could be included in capture fisheries management by identifying future challenges and relevant strategies. Participants realized that this new guiding principle would contribute to long-term food security and to human development, as well as ensuring the effective conservation and sustainable use of the ecosystem and its resources.

The WSSD (United Nations, 2022) promoted the sustainable development of marine ecosystems and encouraged the application of the ecosystem approach by 2010. FAO not only inspired the commitment which came from the WSSD, but also the topic of the Seventh meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, "ecosystem approaches and oceans" (resolution 60/30) and ICP report (A/61/156). Its influence was also evident in the subsequent report of the Secretary-General (document A/61/63), and UN General Assembly resolutions 61/222 and 62/215. The latter saw the General Assembly invite states to consider the agreed consensual elements to be put forward when applying ecosystem approaches, with reference to a number of existing instruments. These included the 1982 United Nations Convention on the Law of the Sea and its Implementing Agreements – namely the Agreement relating to the implementation of Part XI of the Convention - the United Nations Fish Stocks Agreement and, mutatis mutandis, the FAO Code of Conduct for Responsible Fisheries.

While FAO focused on the ecosystem approach to fisheries (EAF), other organizations developed other ecosystem approaches to achieve this goal. These included the Division for Ocean Affairs and the Law of the Sea of the Office of Legal Affairs, United Nations, which developed an interdisciplinary manual and training course on "Developing and Implementing an Ecosystem Approach to the Management of Ocean-related Activities" (United Nations, 2010). The course sought to develop and implement an ecosystem

approach to the management of human activities and their impacts on the marine environment within a national context, while meeting regional and international obligations; it also published Ecosystem Approaches and Oceans. In the case of the Convention of Biological Diversity (CBD, 2021), the Fifth Meeting of its Conference of the Parties endorsed the description of the ecosystem approach and relevant operational guidance, as well as recommending the application of the principles and other guidance on the ecosystem approach (decision V/6). Like other international instruments, the Code of Conduct for Responsible Fisheries (FAO, 1995) is particularly important in providing the institutional foundations for EAF and contains provisions for practically all its aspects. However, one major difficulty in defining EAF lies "precisely in turning the available concepts and principles into operational objectives from which an EAF management plan would more easily be developed" (Garcia et al., 2003). Although there is no agreed definition for an ecosystem approach to fisheries, the FAO guidelines stated that the EAF:

strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries. (FAO, 2003)

The EAF dramatically changed the scope of FAO's mandate, broadening it from fisheries management to ecosystem management. Fisheries management took on a whole new dimension once the interactions between fisheries and the entire ecosystem now had to be taken into account. In this regard, FAO's new functions were embedded in the general mandate of FAO as per article I, 2 (c) of its 1945 FAO Constitution: "the conservation of natural resources and the adoption of improved methods of agricultural production" (FAO, 2017).



### **SECTION 2**

### The academic's corner

## OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES, THE UNFSA AND RFMOs



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Photo: ©E. J. Molenaar

In 2012, the Conference of the Parties (COP) of the Convention on Biological Diversity (CBD) adopted the set of "Aichi Targets". Target 11 stated that:

By 2020, at least...10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures [now referred to as OECMs] and integrated into the wider... landscapes and seascapes. (CBD, 2022; emphasis added). • •

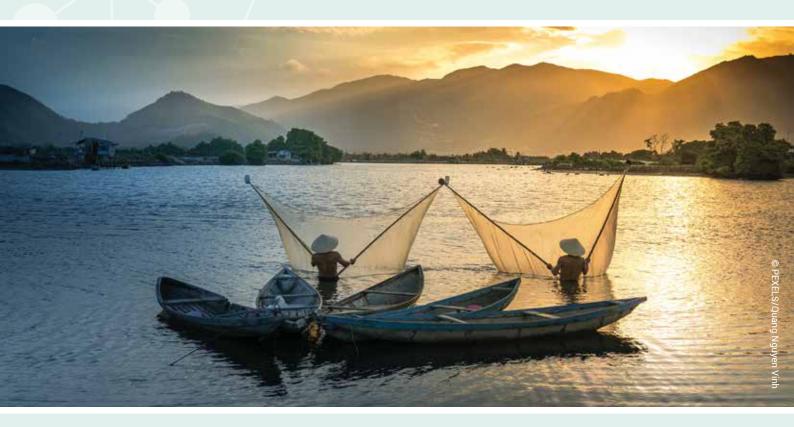
The OECMs had not been defined at the time; although they were intended to include a broad range of areas with significant biodiversity conservation, they were not formally registered as marine protected areas (MPAs). They are now also mentioned under Target 3 of the draft Post-2020 Global Biodiversity Framework (GBF) of the CBD.

In 2018, CBD COP 14 clarified the OECM concept: it adopted a definition and provided a set of common principles, criteria, and voluntary guidance on the identification, governance and integration of OECMs. The definition states that an OECM is:

a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and, where applicable, cultural, spiritual, socio—economic, and other locally relevant values (CBD Decision 14/8).

The criteria relate to: the area's legal status; its boundaries, biodiversity and other locally relevant values (e.g. social, cultural, and economic); its governance and management system; and importantly, its effectiveness in delivering the expected long-term biodiversity outcomes. Fishery OECMs are fishery closures applied by fishery authorities for the optimization of fisheries and/or the limitation and mitigation of their impact on biodiversity, such as on threatened

This short note prepared for the FAO RSN Secretariat is based on an IUCN presentation made by the author to the Fifteenth Session of the United Nations Informal Consultations of States Parties (ICSP 15) in New York on 17 May 2022 entitled "Understanding the ecosystems approach to fisheries management in the context of the United Nations Fish Stocks Agreement".



species, essential habitats, etc. These OECMs may be existing spatial fishery closures that happen to meet the OECM criteria, or new closures, irrespective of whether conservation is their primary objective or not. This is the opposite of MPAs, for which the primary, overriding objective must be conservation.

In February 2021, the Thirty-fourth FAO Committee on Fisheries noted the potential of OECMs for achieving international conservation targets and asked FAO to produce practical guidelines for the fishery sector.

States and other legitimate authorities may register their OECMs in the dedicated World OECM database held by the World Conservation Monitoring Center (WCMC). To the best of our knowledge, since 2018 few countries have started the OECM identification process: Canada in North America, Morocco and Algeria in Africa, and the Philippines in Asia and the Pacific. Of the OECMs registered in March 2022, 192 were in the marine domain and very few were fishery OECMs.

### Ongoing progress in capture fisheries

Abundant guidance on OECMs is already available. The foundational, cross-sectoral guidance can be found in CBD Decision 14/8. A general interpretation of that guidance is proposed by the World Commission on Protected Areas (WCPA, 2019). Fisheries-specific guidance currently available may be found in Rice et al. (2018), Garcia et al. (2019, 2020, 2021), FAO (2019) and ICES (2020).

Since 2018, the available guidance has been explained and "tested". Several expert meetings and webinars on OECMs have been organized at the global level for the marine capture fishery sector, notably: by FAO, CBD and the IUCN Fisheries Expert Group in 2019 (FAO, 2019); in the North Atlantic in 2020, by the General Fisheries Council for the Exploration of the Sea (ICES) and FEG; in the Mediterranean in 2021, by FAO and the General Fisheries Commission for the Mediterranean (GFCM); in the Baltic

Sea in 2022, by the Baltic Marine Environment Protection Commission (HELCOM) and FAO; and in the Wider Caribbean in 2022 (CBD-FAO-FEG). These meetings did not aim to identify or assess OECMs but to improve understanding of the available guidance and capacity-building needs. To our knowledge, no RFMO has registered an OECM yet.

### **Examples of potential OECMs**

A few of the many areas considered as case studies at these meetings are briefly described below. They were located within EEZs, straddling several boundaries (transboundary), or located entirely on the high seas (e.g. under NEAFC, NAFO or GFCM jurisdiction). Further regional initiatives are being planned by FAO in the Indian Ocean and West Africa, as well as in Argentina and Uruguay.

First, the NEAFC Rockall Haddock Box (Figure 1) is a conventional fishery closure, intended to protect the haddock resources from

overfishing but de facto protecting many endangered species, deep-sea species, and pristine habitats including some seamounts. Its assessment and management involve NEAFC, the United Kingdom of Great Britain and Northern Ireland, and the European Union. The Haddock box is surrounded by NEAFC VME closures that might also be considered potential OECMs, as well as by OSPAR MPAs, all of which stresses the importance and jurisdictional complexity of the area. Fortunately, ICES is the common institution for fisheries and environmental assessments in the region.

The GFCM has established fisheries restricted areas (FRAs) to protect marine resource essential habitats, vulnerable species and ecosystems, both in EEZs or on the high seas (Figure 2). In 2005, GFCM closed the entire Mediterranean to trawling and dredging at depths below 1000 m (the area is brown on the map). A large proportion of that area is in international waters. In 2012, in order to

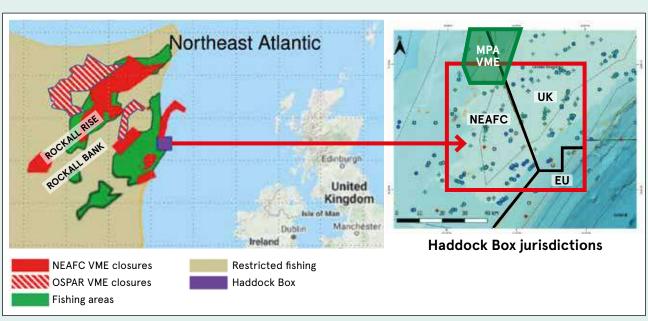


Figure 1. The Rockall Haddock Box

Note: The left panel shows the general localization; the right panel shows the jurisdictional boundaries of the box and seamounts it contains (dots). Source: ICES. 2020. ICES/IUCN-CEM FEG Workshop on Testing OECM Practices and Strategies (WKTOPS). ICES Scientific Reports, 3(42). doi.org/10.17895/ices.pub.8135

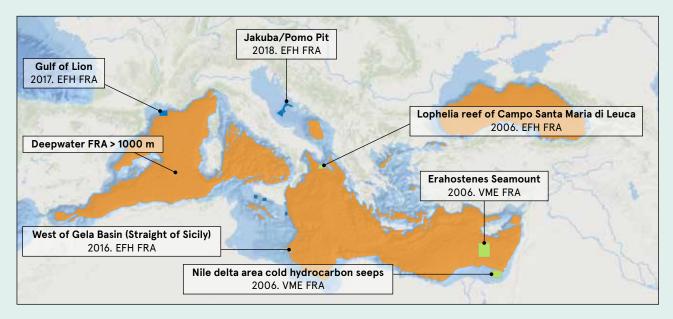


Figure 2. Examples of GFCM fisheries restricted areas (FRAs)

Note: The area over 1000 m deep is in orange.

Source: Elaborated by FAO/Fisheries and Aquaculture Division. www.fao.org/gfcm/data/maps/fras.

Map conforms to UN. 2020. Map of the World. New York. Cited 30 November 2022. www.un.org/geospatial/content/map-world Edited by Serge Garcia.

protect coastal sharks, rays, coastal benthic communities and Posidonia meadows, GFCM also decided to prohibit trawling in the whole Mediterranean within 3 nautical miles from the coast, or down to 50 m isobath. In so doing, GFCM may de facto have created the largest fishery closures on Earth.

In 2021, an FAO-GFCM workshop on OECMs suggested that the huge deepwater fishery closure is probably too large and too complex, in terms of social, economic and jurisdictional conditions, to be assessed and managed effectively as a single-fishery OECM. However, within this large area, many specific areas shown on the map may well offer promising OECMs that could be implemented under the coordinated management of the coastal State and GFCM. The Jabuka/Pomo pit in the Adriatic Sea may be the first fishery closure to be examined by GFCM for this purpose.

Many more examples of potential OECMs have been examined by the various working

groups already held. Together, they illustrate the potential range of OECMs: from small VMEs to large conventional fishery closures with complex jurisdictions like the Rockall Haddock Box, all the way up to a complex deep-sea closure applied across the Mediterranean.

### **OECMs and the UNFSA**

Within their distinct scope and mandates, the UNFSA and the CBD share the objectives of long-term conservation and sustainable use of fishery resources and biodiversity. Both the CBD (in Article 8) and the UNFSA (in Article 5) share a concern for a broad range of biodiversity attributes including target and non-target species, dependent and associated species, endangered species, and habitats.

The ecosystem approach adopted by the CBD – and translated by FAO into the ecosystem approach to fisheries in 2003 – has been

adopted by all RFMOs, and many of them use area-based management measures (ABFMs) as part of their ecosystem approach. The identification and use of OECMs would illustrate in concrete terms, and possibly reinforce, the implementation of the EAF. Consequently, RFMO members may decide to identify OECMs, whether in their area of competence, within existing ABFMs, or by creating new ones. In line with the UNFSA (Article 8.4), such management measures would apply to all vessels operating in the area.

Therefore, OECMs represent a golden opportunity for the fishery sector in ABNJ to:

- strengthen the operationalization of EAF by RFMOs (identifying OECMs) in close collaboration with regional seas organizations (RSOs);
- enhance the conservation outcomes of existing and new fishery closures, as well as the dialogue on biodiversity conservation and fisheries; and
- contribute significantly to the global conservation targets of SDGs and of the Post-2020 GBF.

RFMOs may be able to implement fishery OECMs with little additional work – with VMEs acting as low-hanging fruit – and OECMs may facilitate ecolabelling. The BBNJ agreement may strengthen the use of ABMTs (MPAs and OECMs) in ABNJ.

Yet the implementation of OECMs in ABNJ raises also several conceptual and operational challenges.

Operational challenges relate, for example to:

- The depth and importance of the water column for biodiversity and the potential need to consider multilayered OECMs, and the implication for vertical and horizontal connectivity and enforcement.
- For highly migratory species with very extended life cycles, there may be a need to consider functional networks of OECMs for a more effective and coherent sustainable use.

- The obvious need to integrate spatial and non-spatial management measures is already being faced for conventional ABFMs and should not be a major problem with OECMs.
- The integration of OECMs and MPAs in regional conservation networks, through improved collaboration between fisheries and environmental institutions may be facilitated by the coming BBNJ Agreement.
- 5. It is becoming clear that for the purposes of effective biodiversity protection and to adapt management to natural human-induced climatic changes, the use of mobile ABFMs and hence of OECMs will need to be considered. The developing surveying and communication technologies should facilitate the transition to more dynamic conservation and fisheries management if historical rigidities can be overcome.

Operational challenges are encountered both in areas under national jurisdiction and beyond them. For example, there is a need to coordinate the management of transboundary OECMs under the principle of compatibility in order to protect shared or straddling stocks and habitats effectively. Providing solid evidence of the additional biodiversity benefits produced by OECMs, and establishing causal relationships, is not easy. In the case of no-take areas in fisheries, the absence of the data that usually comes from the sector may be a strong handicap in places with low independent assessment capacity. The recurrent assessment of OECMs' performance may therefore require additional resources, even though all RFMOs are already assessed for overall performance. The additional burden will depend on present capacity and on the number of species and ecosystems involved. The ecosystem approach to fisheries has already been adopted by all RFMOs but its implementation is often considered too slow; OECMs may help to operationalize it further.

The cooperation between RFMOs and regional seas organizations may be improved, following the examples given by NEAFC and OSPAR in the Atlantic, and GFCM and the Barcelona Convention in the Mediterranean. The best way for RFMOs and their states to report to CBD and WCMC on OECMs should be clarified. Finally, the use of OECMs in industrial fisheries (for example as no-trawling areas) needs to be seriously considered, as most fisheries in the high seas are industrial. In this respect, it must be remembered that Decision 14/8 of the Conference of the Parties of CBD (2018) specifically indicates the need to:

responsible for habitat fragmentation, including ... fisheries... to engage them in developing strategies for mitigating the impacts on protected areas and protected area networks including OECMs[.] (Decision 14/8, Annex 1, II, A (e).

In conclusion, under the UNFSA, RFMOs seem prepared to identify and potentially use OECMs, with some additional technical and institutional capacity building.



## THE SCIENTIFIC BASIS FOR IMPLEMENTATION OF AN ECOSYSTEM APPROACH TO FISHERIES MANAGEMENT



JAKE RICE Honorary Professor University of Edinburgh

Photo: © UN-DOALOS

The ecosystem approach to fisheries is a framework for fisheries management that has been in place for decades. FAO Fisheries Technical Paper No. 443, *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook* (Garcia *et al.*, 2003) is the benchmark guidance document. With the accumulated experience of working with that framework, some lessons have emerged.

First, findings from the study of the many relationships between fisheries and larger ecosystems are rarely counterintuitive, but often easy to overlook. It is very common for influential environmental factors associated with a fishery to be robust, but this does not presuppose a simple, linear relationship between an environment's features and those of its fish population(s) and fisheries. Commonly there are upper "carrying capacities" when further "improvements" in environmental conditions do not improve ecosystem or stock productivity. Unfortunately, depensation is also common when populations are depleted or ecosystem properties are seriously degraded; this means recovery is slow to get going, even if the pressures causing the original degradation are removed.

In fisheries those very general boundaries are captured in benchmarks like Bmsy and Blim, which must be estimated individually for each target stock. As more of the better choices among management options at local scales are consistently case-specific, one size never fits all. Moreover, the numerous potentially relevant ecosystem relationships, added to the inescapable uncertainties in the available data-projected conditions, mean there is almost never a single right answer, even though there may be many wrong ones.

These lessons have accumulated incrementally: they went from being

largely overlooked, to a period of being fashionable in science and policy discourse, before eventually becoming business-as-usual.

This sequence of phases has given the knowledge expert community different roles at each stage. While the ecosystem theme was largely overlooked, science assembled evidence that the environmental relationship really did affect system dynamics. Once the relationship was accepted, science would use information-rich case histories to find effective ways of taking the "new" relationship into account in assessment and management. Then, when suitable approaches to taking



the relationship into account were established, science's "business-as-usual" role became to explore how to downscale the results of information-rich cases for general application.

One of the first classes of relationships to enjoy the ecosystem approach spotlight in late 1970s—early 1980s was Trophodynamics. This was the time of multispecies virtual population analyses, working to link the population dynamics of predator and prey populations through extensive studies of their stomach contents. Key findings from that period included:

- Prey that can be very abundant do increase predator productivity a little when common but can increase predator natural mortality and recruitment a lot when low.
- Most marine predators are not diet specialists and most prey have many predators. This makes individual predator-prey relationships very weak.
- → With predation often much more size-structured than species-dependent, strategies like balanced harvesting warrant consideration as alternatives to tuning fishing mortality interactively between species.

In the late 1980s and 1990s the ecosystem approach spotlight turned to oceanographic drivers of population and ecosystem dynamics. Physical and chemical ocean properties such as temperature, salinity, and oxygen concentration affected system productivity, and large-scale patterns such as the El Niño and La Niña were linked to booms and collapses of small pelagic stocks. They were also seen as contributing to collapses, such as in the Northwest Atlantic. The main findings from the related scientific efforts included:

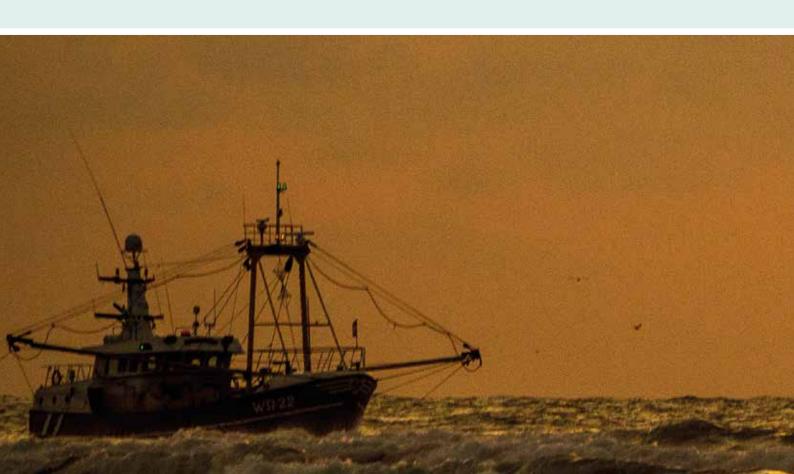
- → The impacts of oceanographic factors can be significant and appear very quickly. They can alter local stock productivity and trigger large relocations in space and/or seasonality of presence in an area.
- → Lack of linearity in these relationships often makes them hard to detect, quantify, and then include in management strategies. Often the best that can be achieved is providing warnings to managers when conditions look atypical, and encourage extra care when harvesting, until the impacts of the specific extreme event are known.

Through the 2000s, the ecosystem approach spotlight turned more broadly to the ecosystem effects of fishing. Topics including bycatch and multispecies fisheries – and how they depleted less productive stocks and truncated age/size distributions – received increasing attention, as did fishing gear entanglements and the impact on the sea bed and benthos.

Key findings from this work included that all these effects can happen if fisheries are not vigilant, but most can be avoided or mitigated if appropriate measures are in place.

The findings led to demands for policy action to enable the appropriate measures to be taken. Some policies and targets have been enacted, such as UNGA resolution 61/105 to prevent bottom gear impacts on vulnerable marine ecosystems and the ecosystem provisions of Aichi Target 11. Nevertheless, there are still demands to continue identifying other non-linear relationships between fisheries and ecosystem properties, as well as operationalizing them with appropriate reference points and objectives.

In the 2010s, ocean space and climate change entered the ecosystem approach spotlight. There had been spatial aspects to management responses to all the other ecosystem factors. However, Aichi Target 11 – which called for 10 percent of oceans to be assigned as marine protected areas, along with other effective (area-based) conservation measures (OECMs) - accelerated both the acknowledgement of the biodiversity benefits from areas managed by fisheries authorities, and indeed advocacy for more marine protected areas managed by biodiversity authorities for biodiversity outcomes. At the same time, the growing acceptance of climate change required managers to accommodate species moving across jurisdictional boundaries to maintain their preferred oceanographic conditions. Science experts also had to acknowledge that historic data on stock productivities may no longer be a robust guide for current and future harvest control rules, reference points and other tools used in assessment and management. Work on both themes remains largely in the middle phase, finding appropriate ways to operate in data-rich situations.



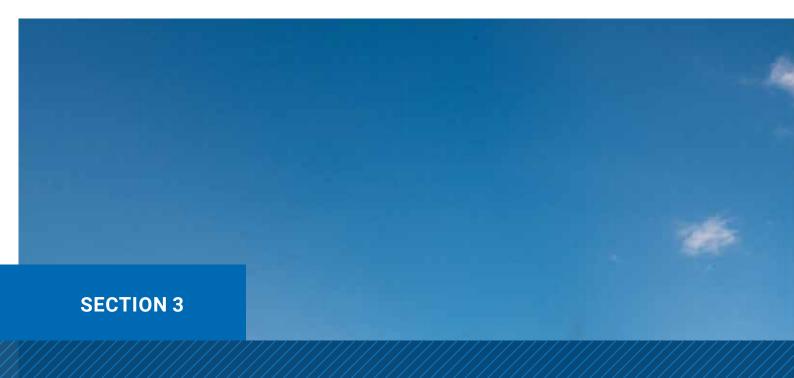
New challenges continue to emerge for the ecosystem approach to fisheries, and for the science experts supporting the ecosystem approach. The need to accommodate climate change is stimulating work on using dynamic reference points to accommodate increases in some fisheries and declines in others, as well as better ways to prepare for and respond to "extreme events", which are forecast to become more extreme and more frequent. The growing attention to ocean space is also stimulating efforts to integrate the social and natural sciences more fully, in terms of assessment and advice. Such integration is recognized as necessary not only to accommodate spatial responses to environment drivers, but also for the pursuit of several Sustainable Development Goals related to livelihoods, food security and cultural diversity.

The challenges posed by including space more explicitly in management and integrating the social and natural sciences is increasing the need to base policy and management on much stronger risk-based approaches. These risk-based approaches are not new, but in the past they have more commonly been paid lip

service to, rather than used in true risk-based advice and risk-based decision-making. It is hoped that these risk-based frameworks will more effectively address the irreducible uncertainty regarding the timing and "intensity" of coming environmental conditions, including the occurrence of extreme events, as a result of climate change. In addition, acknowledging the legitimacy of cultural diversity in fisheries management means managing without a single set of harmonized objectives. Risk-based approaches allow an evaluation of the failure to achieve what may be very different objectives for different interest groups. Such objectives may also be considered in decision-making, adding greater urgency to the fuller integration of the social and natural sciences.

The path followed to date has proved complex, as science has worked to inform and support an ecosystem approach to fisheries, but also informative and interesting. Now that humankind is accepted as part of the "ecosystems" relevant to fisheries, even more paths – no doubt also complex, but interesting and rich in useful information at the same time – lie ahead for the expert community.





### The United Nations (UN) area





### **CONTRIBUTIONS FROM:**

### CBD:

Convention on Biological Diversity

#### DOALOS:

United Nations Division for Ocean Affairs and The Law of the Sea

**FAO/NFIFO:** Fishing Technology and Operations Team

Fisheries and Aquaculture Division

### FAO/NFIPF:

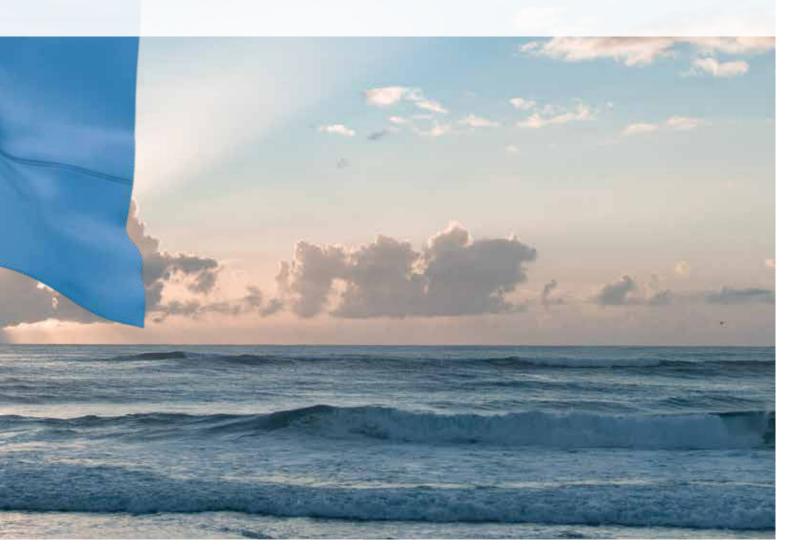
Global and Regional Processes Team Fisheries and Aquaculture Division

### FAO/NFISR:

Resilience Team Fisheries and Aquaculture Division

#### FAO/PSU:

FAO eLearning Academy: elearning.fao.org



### **CBD:**CONVENTION ON BIOLOGICAL DIVERSITY

### CBD COP 15 and the final stages of negotiations on the Post-2020 Global Biodiversity Framework

by Joe Appiott, Secretariat of the Convention on Biological Diversity

Important discussions have been ongoing under the Convention on Biological Diversity (CBD), as part of which CBD Parties have been developing the Post-2020 Global Biodiversity Framework, which will contain a new set of global goals and targets for biodiversity. From 2010 to 2020, CBD Parties focused their efforts on achieving the Aichi Biodiversity Targets, adopted by the CBD Conference of the Parties (COP) in 2010. Although the Aichi targets were not achieved by their 2020 deadline, they catalysed political attention, public awareness and action on the conservation and sustainable use of biodiversity. They also increased action and collaboration on issues related to fisheries and biodiversity, including through Aichi Target 6 on sustainable fisheries and Aichi Target 11 on protected areas and other effective area-based conservation measures (OECMs).

Now, efforts are focused on developing new goals and targets under the Post-2020 Global Framework, with the current draft including targets on area-based conservation, the harvesting and use of wild species, food security and other key issues related to sustainable fisheries.

The Post-2020 Global Biodiversity Framework will be submitted for adoption at the Fifteenth Meeting of the Conference of the Parties (CBD COP 15). The Government of China is the President of COP 15 and was expected to host part II of COP 15 in person in Kunming, China (following) part I of COP 15, which took place in a hybrid format in October 2021). Unfortunately, because of continued uncertainties related to the ongoing global pandemic, China, as COP President, has decided to relocate the meetings from Kunming to a venue outside China with the support of the COP Bureau. Part II of CBD COP 15 will now take place in Montreal, Canada, from 5 to 17 December 2022. China, as COP 15 President, will continue to preside over the Meetings, with the logo and the theme of COP 15 maintained.

Third Meeting of the Sustainable Ocean Initiative (SOI) Global Dialogue with Regional Seas Organizations and Regional Fishery Bodies, 25–28 October 2022, Busan

Since 2016, the CBD Secretariat, FAO and UNEP have worked together to coordinate the Sustainable Ocean Initiative (SOI) Global Dialogue with Regional Seas Organizations and Regional Fishery Bodies, which hosts constructive discussions on the means and opportunities to enhance regional-scale cooperation and collaboration between regional seas organizations and regional fishery bodies. This process, the first of its kind at the global level, focuses on sharing experiences within and across regions,

and identifying areas of potential collaboration on issues of common interest; these include:

- enhancing the application of the ecosystem approach/ecosystem-based management (e.g. understanding ecosystem structure and function, strategic planning, stakeholder involvement, impact assessments, risk assessments);
- strengthening the effectiveness of area-based management tools (e.g. marine spatial planning, marine protected areas, particularly sensitive sea areas, VMEs);
- preventing, reducing and mitigating the impacts of pollution, including marine debris, on marine biodiversity and fisheries resources; and
- strengthening monitoring and data/information sharing in support of scientific assessment of the status and trends of marine biodiversity and fisheries resources.

The Third Meeting of the SOI Global Dialogue with Regional Seas Organizations and Regional Fishery Bodies will take place in Busan, Republic of Korea, on 25–28 October 2022. In view of the forthcoming adoption of the Post-2020 Global Biodiversity Framework, this meeting will provide a critical opportunity to examine the roles of regional organizations and regional-scale collaboration in the implementation and monitoring of the Post-2020 Global Biodiversity Framework.



### **DOALOS:**UNITED NATIONS DIVISION FOR OCEAN AFFAIRS AND THE LAW OF THE SEA

The Division for Ocean Affairs and the Law of the Sea, as the Secretariat of the United Nations Convention on the Law of the Sea and the United Nations Fish Stocks Agreement, as well as General Assembly processes on oceans and the law of the sea, has recently undertaken several activities of particular interest to regional fishery bodies. The following provides a brief synopsis of some relevant developments.

### Fifteenth round of Informal Consultations of States Parties to the United Nations Fish Stocks Agreement

The fifteenth round of informal consultations, originally scheduled in 2020, was held at United Nations Headquarters from 17 to 19 May 2022. Pursuant to paragraph 63 of that resolution, for two days the fifteenth round of informal consultations focused on the topic "Implementation of an ecosystem approach to fisheries management"; one day served as a preparatory meeting for the resumed Review Conference on the United Nations Fish Stocks Agreement, which will be held in 2023.

The Chairperson's report of the meeting, as well as the written contributions of states, intergovernmental and non-governmental organizations on the implementation of an ecosystem approach to fisheries management, are all available on the Division website (Implementation of an ecosystem approach to fisheries management), together with the presentations made at the meeting.

General Assembly of actions of states and RFMOs to address the impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep-sea fish stocks (2022)

In resolution 75/89, the General Assembly decided to postpone from 2020 to 2022 its further review of the actions taken by states and regional fisheries management organizations and arrangements in response to paragraphs 113, 117 and 119 to 124 of resolution 64/72; paragraphs 121, 126, 129, 130 and 132 to 134 of resolution 66/68; and paragraphs 156, 171, 175, 177 to 188 and 219 of resolution 71/123. The postponement is designed to ensure the effective implementation of the measures therein and to make further recommendations, where necessary. As per past practice, this review, which will take place in the context of the informal consultations on the draft annual resolution on sustainable fisheries in November, will be informed by the Secretary-General's report and a two-day multistakeholder workshop.

In paragraph 210 of resolution 76/71, the General Assembly also requested that the Secretary-General convene on 2 and 3 August 2022, with full conference services and if conditions allow, without prejudice to future arrangements, the two-day workshop that was to have been held in 2020 pursuant to resolution 73/125 of 11 December 2018. The workshop would discuss implementation of paragraphs 113, 117 and 119

to 124 of resolution 64/72; paragraphs 121, 126, 129, 130 and 132 to 134 of resolution 66/68; and paragraphs 156, 171, 175, 177 to 188 and 219 of resolution 71/123.

In accordance with resolution 74/18, states, the Food and Agriculture Organization of the United Nations (FAO) and other relevant specialized agencies, funds and programmes, subregional and regional fisheries management organizations and arrangements, other fishery bodies, other relevant intergovernmental bodies and relevant non-governmental organizations and stakeholders will be invited to participate in the workshop, in accordance with United Nations practice.

Additional information is available at: www.un.org/ Depts/los/bottom\_fishing\_workshop.htm

The regular process for global reporting and assessment of the state of the marine environment, including socioeconomic aspects (Regular Process)

The Regular Process is beginning a series of regional workshops, the first of which is to be held in Dar es Salaam, United Republic of Tanzania from 19–27 July. Workshops will take place through to the end of 2022 and aim to identify key priorities for assessment(s) to be conducted during the third cycle, as well as building capacity on ocean governance and the science policy interface. Participation is key in this process, as we strive to have a balanced array of voices

across geographic regions, disciplines and perspectives. We therefore strongly encourage widespread engagement, including by qualified female and early-career candidates, to apply to participate in the workshops and contribute to the development of the third cycle assessments. The invitation is open to all delegates to ensure that the World Ocean Assessment(s) produced under the third cycle:

- deliver the key information needed for decisionmaking;
- support broad dissemination of scientific knowledge;
- → that the Regular Process continues to contribute to global action, strengthening the science policy interface and supporting the delivery of Sustainable Development Goal 14 (Life Below Water) and its associated targets; and
- → contributes to achieving the other goals of the 2030 Agenda.

The Division for Ocean Affairs and the Law of the Sea (DOALOS) has launched its new social media channels to support outreach and engagement surrounding the Regular Process and the World Ocean Assessment. Together with a Communications Consultant, our team has launched a public awareness campaign on Instagram to amplify the key findings of the recently released, second World Ocean Assessment (WOAII). Should your organization wish to contribute to this social media campaign, please contact the Division via email at: doalos@un.org.



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 (General Assembly resolution 72/249)

The Fourth Session of the Intergovernmental Conference was convened in March 2022 pursuant to General Assembly resolution 72/249 of 24 December 2017; it aimed, inter alia, to elaborate the text of an international legally binding instrument on the conservation and sustainable use of the marine biological diversity of areas beyond national jurisdiction under the United Nations Convention on the Law of Sea, with a view to developing the instrument as soon as possible. The negotiations addressed a four-part package of issues related to the conservation and sustainable use of the marine biological diversity of areas beyond national jurisdiction, namely: marine genetic resources, including questions on the sharing of benefits; measures such as area-based management tools, including marine protected areas; environmental impact assessments; and capacity building and the transfer of marine technology. Cross-cutting issues such as institutional arrangements and dispute settlement were also addressed by the Conference.

At the end of the Fourth Session, the Conference considered the way forward in light of the fact that this was the last of four sessions initially mandated by the General Assembly in its resolution 72/249. It considered that an additional session was required as soon as possible to make progress. The President was also asked to prepare a further revised draft text of an agreement with a view to facilitating the prompt finalization of the work of the Conference. Accordingly, pursuant to decision 76/564 of the General Assembly, a fifth session of the Conference took place from 15 to 26 August 2022.

The Conference is open to all States Members of the United Nations, members of the specialized agencies and parties to the Convention, with others invited as observers; this includes the representatives of other interested parties such as global and regional intergovernmental organizations and international bodies that have been invited to participate in relevant conferences and summits. Several regional fishery bodies have participated in previous sessions of the Conference: the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the North Pacific Fisheries Commission (NPFC), the North-East Atlantic Fisheries Commission (NEAFC), the Northwest Atlantic Fisheries Organization (NAFO), the South East Atlantic Fisheries Organization (SEAFO) and the Western and Central Pacific Fisheries Commission (WCPFC).

### United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea

The Twenty-second Meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea was held in New York from 6 to 10 June 2022. Pursuant to General Assembly resolution 76/72, in its deliberations on the Report of the Secretary-General on oceans and the law of the sea, the meeting focused its discussions on the theme "Ocean observing". As per past practice, regional fisheries management organizations and arrangements were invited to provide contributions to the report of the Secretary-General on the topic and to participate in the meeting. All relevant documents for this meeting, including the Secretary-General's report on the topic of focus and the contributions to this report received from Member States, United Nations agencies, programmes and bodies, as well as other intergovernmental organizations, can be found on the website of the Division at: www.un.org/depts/los/consultative\_process/ consultative\_process.htm.



## FAO/NFIFO: FISHING TECHNOLOGY AND OPERATIONS TEAM FISHERIES AND AQUACULTURE DIVISION

### "Classification and illustrated definition of fishing gears" updated after 30 years

The long-waited publication "Classification and illustrated definition of fishing gears" has just been released by FAO. As the previous publication, it is expected to become an essential tool for RFBs because it standardizes data collection and reporting for compliance purposes.

This publication produced by Fishing Technology and Operations Team (NFIFO) updates and replaces "Definition and classification of fishing gear categories" published more than 30 years ago in 1990. The International Standard Statistical Classification of Fishing Gear (ISSCFG) has provided a broad categorization of all types of fishing gear and operational practices to ensure the compatibility and comparability of data collected by FAO Members and regional fishery bodies (RFBs) around the world. The purpose of the document is primarily to assist readers in identifying different types of fishing gear for the purposes of attributing and reporting fisheries catches by FAO Members, RFBs – including regional fisheries management organizations (RFMOs) and regional fisheries advisory bodies (RFABs).

#### **About this document**

The primary purpose is to assist FAO Members, regional fishery bodies, as well as those working on fishery statistics and management, to correctly attribute and report fisheries catches made by different gear types.

- → The classification applies to commercial, subsistence and recreational fisheries in marine and freshwater fisheries.
- → The document provides definitions and illustrations of the configuration and mode of operation of typical fishing gears.
- → The document also contributes to the prevention, deterrence and elimination of illegal, unreported and unregulated (IUU) fishing by providing monitoring, control and surveillance personnel with information to identify the type of fishing gear with regard to license and authorization to carry out fishing operations.
- This document provides context and references for some contemporary conservation issues related to major fishing gear types; it can therefore be used as a reference text for students and researchers in fisheries and marine conservation.
- → This document elaborates the revised International Standard Statistical Classification of Fishing Gear (ISSCFG), as endorsed and adopted for implementation by the FAO Coordinating Working Party on Fishery Statistics (CWP) at its Twenty-fifth Session in February 2016 in Rome, Italy.

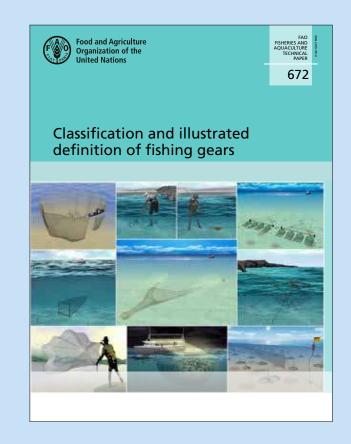
### FOR MORE INFORMATION:

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PDF URL: www.fao.org/3/cb4966en/cb4966en.pdf Card page: www.fao.org/documents/card/en/c/

cb4966en

**Citation**: He, P., Chopin, F., Suuronen, P., Ferro, R.S.T and Lansley, J. 2021. Classification and illustrated definition of fishing gears. FAO Fisheries and Aquaculture Technical Paper No. 672. Rome, FAO.





## FAO/NFIPF: GLOBAL AND REGIONAL PROCESSES TEAM FISHERIES AND AQUACULTURE DIVISION

### Regional Consultation on the Development of a Coordination Framework among RFBs in the Indian Ocean (Maputo, Mozambique 22-24 June 2022)

FAO convened the Regional Consultation on the Development of a Coordination Framework among Regional Fishery Bodies in the Indian Ocean from 22 to 24 June 2022 in Maputo, Mozambique. The consultation brought together secretariat and bureau representatives of regional fishery bodies (RFBs) as well as other relevant regional and international organizations that have a role to play in the sustainable use and conservation of shared marine living resources in the Indian Ocean, in particular in the Western Indian Ocean (WIO).

This is the first regional consultation in a series and therefore provides an example for further ones to follow in other world regions; it also inspires the general global discussion about the value of coordination and cooperation of regional organizations supporting sustainable fisheries. This consultation followed up on the recommendation from the Thirty-fourth Session of the FAO Committee on Fisheries (COFI) for FAO to strengthen its collaboration with relevant international organizations and RFBs to support sustainable development with an emphasis on promoting RFBs cooperation to ensure common approaches on a number of cross-cutting issues. Five regional fisheries management organizations (RFMOs), two regional fishery advisory bodies (RFABs), and two regional economic bodies participated in the consultation.

The purpose of this consultation was to jointly identify critical issues for information-sharing, coordination and cooperation that can significantly improve the sustainable use and conservation of shared fisheries and other living marine resources in the Indian Ocean with a view to develop a Regional Coordination Framework in the Indian Ocean.

The consultation focused on geographical connections and overlaps, on species of common interest, both target and bycatch species, on aspects of conservation of biodiversity and on incoherency regarding conservation and management measures and advice. Particular emphasis was being directed at the critical issue of preventing, deterring and eliminating illegal, unreported and unregulated (IUU) fishing for which regional coordination and cooperation is crucial. The participants identified a range of critical issues, discussed the reasons, objectives and organizations to be involved and ways to best approach and develop improved methods and tools of working together.

### Towards an RFB coordination framework in the Indian Ocean

The RFBs Regional Consultation agreed to further explore more ways to concretely improve coordination and cooperation based on the areas identified in consultation with RFB Members and in continued discussions across organizations with a view to developing a regional coordination framework in the Indian Ocean.

The Regional Consultation on the Development of a Coordination Framework among Regional Fishery Bodies in the Indian Ocean was organized in the framework of the initiative "Follow-up action to the 34th FAO Committee on Fisheries" funded by the European Union, with additional funding by the Common Ocean Programme.

Coming next: Regional Consultation on the Development of a Coordination Framework among RFBs in the Eastern Central Atlantic Ocean.

The second meeting of this kind focuses on the Eastern Central Atlantic Ocean region and is held in Accra, Ghana, from 30 November to 2 December 2022. The Regional Consultation is funded by the European Union, with additional funding provided by the Government of Japan.



### Key discussion highlights of the consultation were:

1. The North West Indian Ocean squid fishery
The emerging significant squid (Sthenoteuthis oualaniensis) fishery occurring in the North
West Indian Ocean (NWIO) is unregulated.
The species would fall within the mandate management of SIOFA, but the fishery occurs outside of the SIOFA Agreement area.
Although the fishing activities are taking place in the area of competence of IOTC, the species of concern falls outside the IOTC mandate, which covers tuna and tuna-like species, leaving the emerging significant squid fishery occurring in the NWIO unregulated.

### 2. Management of priority species by different bodies

The narrow-barred Spanish mackerel or kingfish (Scomberomorus commerson) a species under the mandate of IOTC, has also been identified as a priority species by RECOFI, and for the conservation of which RECOFI Members have adopted a binding recommendation on imposing an annual closed season on fishing activities in the RECOFI area of competence. Collaboration and coordination are required to avoid inconsistency between RECOFI and IOTC conservation and management measures targeting the narrow-barred Spanish mackerel.

### 3. Other shared stocks and non-highly migratory species: the oilfish

Other existing cases were identified where shared stocks and non-highly migratory pelagic species, such as oilfish (Ruvettus pretiosus) are under the mandate of one organization (i.e. SIOFA) and being harvested as bycatch by fisheries managed by a different organization (i.e. IOTC) sharing the same fishing areas. It was highlighted that oilfish, by volume, is one of the most commonly exploited fish in the SIOFA area, and considerable volumes are caught by IOTC authorized vessels, as bycatch.

### 4. Ecologically related species and endangered, threatened and protected species

It is essential to address cooperatively the negative impacts of fishing activities on endangered, threatened and protected (ETP) species (e.g. cetaceans, sea birds, sea turtles) and to work jointly on monitoring the implementation of mitigation measures to reduce such interactions.

The issue of shark conservation and management is particularly exemplary of the need for coordination and cooperation among RFBs. Sharks, both targeted and bycatch species are recognized as an ecologically related species (ERS) to tuna fisheries; at the same time sharks fall under the mandate of several RFBs and are regulated by few heterogeneous legal provisions for conservation and protection.

### 5. Scaling up regional cooperation and coordination

RFBs and regional economic organizations have an important role in the development and promotion of regional policies, and in supporting the implementation of international fisheries instruments. Further engagement needs to be pursued by these players to scale up regional cooperation and coordination and ensure sustainable fisheries in the Indian Ocean.

## Specific areas to improve coordination and cooperation among RFBs to combat IUU fishing were identified and include: (1) aligning and harmonizing procedures and minimum standards, (2) developing strategies and responding to challenges, (3) effectively

6. Supporting the fight against IUU fishing

exchanging information, e.g. for risk assessment, (4) organizing mutual MCS support, and (5) capacity development for states to fulfil their international obligations as flag, port, coastal and market states.

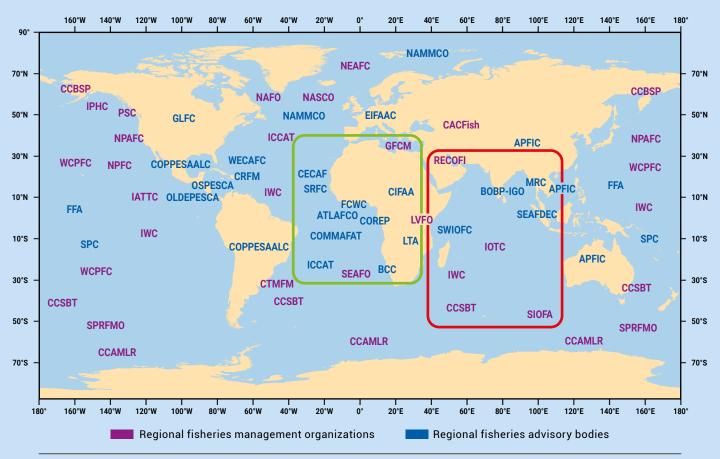


Figure 4. List of RSN members and permanent observers as of September 2022

The red and green shape outlines in the map show the areas considered for the Regional Consultations in the Indian Ocean and in the Eastern Central Atlantic Ocean respectively.

Source: Authors' own elaboration.



## FAO/NFISR: RESILIENCE TEAM FISHERIES AND AQUACULTURE DIVISION

### **Shark and sea cucumber proposals** for CITES

#### by Kim Friedman

"MORE LISTINGS of Commercially Exploited Marine Species in the pipeline" was an article published in the RSN newsletter 16 (FAO, 2018; pp. 14–15). CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) did list those species. Now, in 2022, CITES will consider listing more aquatic species in its Appendices (CITES, 2022a).

FAO provides scientific and technical advice to the parties of this multilateral treaty, under a 2006 MOU between the two organizations (CITES-FAO, 2006). Prior to the Nineteenth Conference of Parties of CITES in Panama (14–25 November 2022) (CITES, 2022b), FAO put together the Seventh Expert Panel to ensure there was a knowledge-based scientific and technical assessment of species proposals.

FAO receives notification of the species list under consideration only after the final date for the lodgement of CITES proposals (17 June 2022). However, through informal consultations, FAO believes that new shark and sea cucumber species will be on the agenda (CITES, 2022c; CITES, 2022d; European Union, 2022), potentially including blue shark under CITES lookalike provisions. To assist CITES Parties in their decision-making, FAO and others will provide guidance on whether the

species in question meet specific CITES listing criteria (CITES, 2016).

The week-long FAO Seventh Expert Panel assessment of proposals was scheduled for 18–22 July in Rome, Italy, and reported on the FAO Fisheries and Aquaculture division website in the first weeks of August 2022 (FAO, 2021). In this report, experts in fisheries management and trade reported their:

- assessment of each proposal from a scientific perspective;
- comment on technical aspects of the proposal in relation to biology, ecology, trade and management issues, as well as, to the extent possible, the likely effectiveness for conservation.

The determinations made by the FAO panel rely on listing criteria developed through numerous CITES consultations – years of negotiation. These criteria are intended to be applicable for all species, although there are specific guidelines "with respect to application of the definition of 'decline' for commercially exploited aquatic species" (CITES, 2016).

FAO does not give advice on whether Parties should list species in CITES Appendices – but does make determinations on whether a species or species group does or does not meet the CITES criteria. It's important that the Expert Panel does not offer advice on whether to list a species, as that is a political decision for CITES Parties.

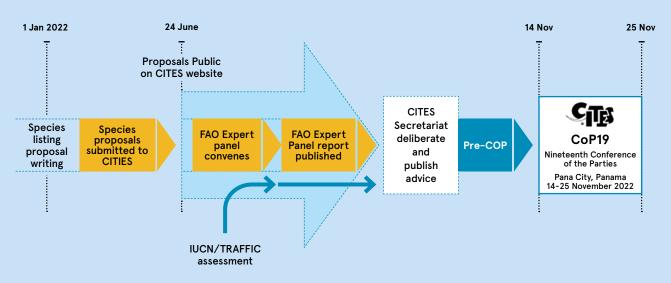
Alongside the deliberation phase of the listing process (Figure 3), there are several opportunities for RFBs to communicate on issues relevant to CITES Parties. This is important as many CITES Parties have limited expertise in fisheries (delegations to CITES are predominantly led by the relevant government's environment ministry). RFBs can join FAO in producing materials to raise awareness of the CITES Community and CoP19 events, as well as making presentations on CITES to the fisheries community.

#### FOR MORE INFORMATION:

DOI: doi.org/10.4060/cb4966en PDF URL: www.fao.org/3/cb4966en/cb4966en.pdf

**Citation**: He, P., Chopin, F., Suuronen, P., Ferro, R.S.T & Lansley, J. 2021. *Classification and illustrated definition of fishing gears*. FAO Fisheries and Aquaculture Technical Paper No. 672. Rome, FAO.

Figure 3. CITES listing process timeline



Source: Regional Fishery Body Secretariats' Network (RSN).



### FAO/PSU: FAO ELEARNING ACADEMY: ELEARNING.FAO.ORG

### Portfolio of existing multilingual fisheries-related courses

The FAO elearning Academy offers over 500 multilingual certified e-learning courses, free of charge, as a global public good, for professionals working in food and nutrition security, social and economic development, and sustainable management of natural resources. The Academy is the result of a collaborative effort involving over 300 partners throughout the world (FAO, 2020).

The overall objective of the Academy is "universal education" offered as a global public good, to anyone, at any time and anywhere in the world, thus reducing gender and social inequalities in the access to education. Democratizing education, offering free learning opportunities, inclusivity, scalability, transparency in certification, with no greenhouse gas emissions, no limitations of physical presence, and competitiveness for inclusion in the professional market. The FAO elearning Academy promotes digital inclusion in all its possible meanings: gender-biased communities, youth, marginalized individuals, indigenous groups, citizens in conflicts and post-conflict areas have the same educational rights and opportunities.

The FAO elearning Academy strives to fill the gap between formal and informal education, allowing professionals to acquire easily and efficiently the competencies they need to become more competitive and relevant.

In the field of fisheries, there are courses related to the ecosystem approach to fisheries, fisheries and aquaculture response to emergencies, climate-smart fisheries and aquaculture, climate change adaptation and mitigation in fisheries and aquaculture, the fisheries performance assessment, the Sustainable Development Goals Indicator 14.b.1 – Securing sustainable small-scale fisheries:

Fisheries and aquaculture response to emergencies (FARE)

https://elearning.fao.org/course/view.php?id=789

Understanding antimicrobial resistance in food and agriculture

https://elearning.fao.org/course/view.php?id=783

Climate change adaptation and mitigation in fisheries and aquaculture

https://elearning.fao.org/course/view.php?id=544

Climate-smart fisheries and aquaculture https://elearning.fao.org/course/view.php?id=579

Food loss and waste in fish value chains https://elearning.fao.org/course/view.php?id=567

The Fisheries Performance Assessment Toolkit https://elearning.fao.org/course/view.php?id=530

Bivalve Mollusc Sanitation: Growing Area Risk Profile https://elearning.fao.org/course/view.php?id=481

Bivalve mollusc sanitation: growing area assessment and review https://elearning.fao.org/course/view.php?id=629

Monitoring and preventing ciguatera poisoning https://elearning.fao.org/course/view.php?id=648

Ecosystem Approach to Fisheries - Introduction https://elearning.fao.org/course/view.php?id=784

Ecosystem Approach to Fisheries - Policy and Legal Implementation

https://elearning.fao.org/course/view.php?id=753

Rules of the road at sea for small-scale fishers https://elearning.fao.org/course/view.php?id=704

Reglas de tráfico marítimo para los pescadores en pequeña escala

https://elearning.fao.org/course/view.php?id=851

Règles de navigation en mer pour les pêcheurs artisanaux

https://elearning.fao.org/course/view.php?id=855

Rules of the road at sea for small-scale fishers (Chinese)

https://elearning.fao.org/course/view.php?id=836

SDG Indicator 14.b.1 - Securing sustainable small-scale fisheries

https://elearning.fao.org/course/view.php?id=348

Indicateur ODD 14.b.1 - Assurer la durabilité de la pêche artisanale

https://elearning.fao.org/course/view.php?id=434

Indicador 14.b.1 de los ODS - Lograr la pesca sostenible en pequeña escala

https://elearning.fao.org/course/view.php?id=433

SDG Indicator 14.b.1 - Академия электронного обучения ФАО

https://elearning.fao.org/course/view.php?id=556

SDG Indicator 14.b.1 - 保障小规模渔业的可持续发展 14.b.1

https://elearning.fao.org/course/view.php?id=548

SDG Indicator 14.4.1 - Proportion of fish stocks within biologically sustainable levels

https://elearning.fao.org/course/view.php?id=502

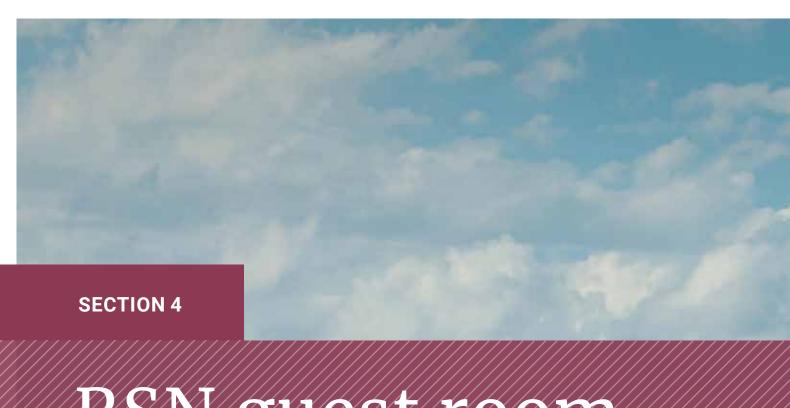
Indicador 14.4.1 de los ODS - Sostenibilidad de las poblaciones de peces

https://elearning.fao.org/course/view.php?id=745

Indicateur 14.4.1 des ODD - Durabilité des stocks de poissons

https://elearning.fao.org/course/view.php?id=735



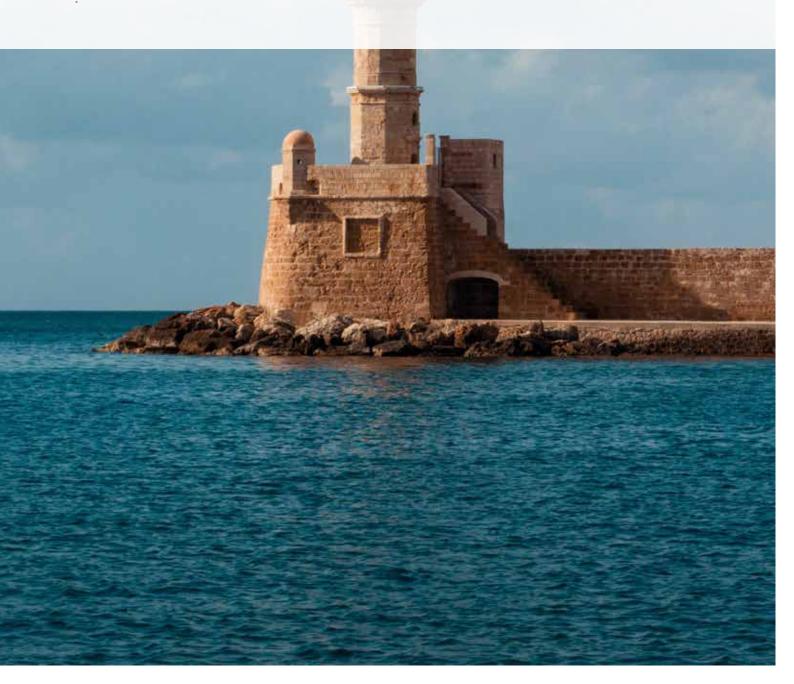


# RSN guest room





Allen Institute for Artificial Intelligence (AI2)



## SEEING THROUGH THE DARK: HOW COMPUTER VISION IS ADVANCING THE FIGHT AGAINST IUU FISHING

At the Allen Institute for AI (AI2), a team of computer vision researchers, engineers and maritime experts are combining satellite-based SAR data with computer vision to pinpoint UU fishing activities. The result is an advanced computer vision algorithm that is being built into Skylight, a maritime transparency platform produced by AI2, a non-profit research institute. The web-based software alerts maritime analysts to potential illicit activity as a critical step towards improving maritime security and fisheries enforcement efforts.

Illegal, unreported, and unregulated (IUU) fishing presents one of the greatest threats to the vitality of our marine ecosystems. While IUU fishing happens almost everywhere there are fish, it mostly occurs out of sight and unobserved. Common methods to monitor and detect IUU fishing activities, especially "dark" vessels, have significant limitations. The automatic identification systems (AIS) required of large fishing vessels can be easily disabled, and vessel monitoring systems (VMS) used by many nations have limited access. Optical imagery is expensive and – without knowing where to look for suspicious vessels - impractical. Even if problem vessels have been identified, optical imagery often cannot be obtained because of cloud cover, haze, or darkness. While challenges remain, recent advances in satellite-based detection and artificial intelligence offer the ability to accelerate the fight against IUU fishing.

To detect dark vessels in areas where IUU fishing may be occurring, researchers, engineers and maritime experts at AI2 have combined satellite-based synthetic aperture radar (SAR) imagery with computer vision. The result is an advanced AI model that is integrated into Skylight.

For decades, SAR has been seen as a promising tool to combat illegal fishing: it can "see" through clouds and produce images in any kind of weather. But technical and economic barriers have precluded its use. Satellites like the ones used to collect SAR data can image over 18 million square kilometers per day, yet the time and technical skills required to ingest SAR data manually and assure the quality of detections have made this task almost impossible. Recent successes in developing advanced computer vision algorithms are finally making it possible to harness the important data SAR provides at scale.

The platform's computer vision model scans thousands of square kilometres in minutes to detect vessels. The system correlates these detections with known vessels transmitting their location via AIS to help maritime analysts pinpoint potential "dark" illegal fishing activities. With these insights, authorities can see the full picture and take enforcement and compliance actions.

Detecting vessels with computer vision is not infallible. While machine learning methods – and convolutional neural networks (CNNs) in particular – outperform heuristic approaches like constant-false-alarm-rate (CFAR) when detecting vessels in Sentinel-1 SAR images, and they are able to cope with sheared or tilted appearances of vessels and glinting effects, they nevertheless demonstrate a high false-positive rate. The key challenge is the presence of various static objects, such as offshore platforms, single-point-mooring buoys and especially reflective rocks, which often exhibit SAR signatures that are indistinguishable from those of vessels.



Waves, rocks, reefs, buoys can impact the accuracy of computer vision models. Clever approaches, such as recognizing that "stationary" objects and fixed infrastructure are unlikely to be interesting, can mitigate these impacts. What is more, the delay from taking an image to its delivery and processing, though improving, can still make it difficult to effectively use detections to interdict suspicious vessels in close to real time.

Despite these challenges, new computer vision algorithms that harness SAR data constitute a breakthrough, saving time and resources, and helping authorities monitor vast areas more efficiently.

Already SAR satellite imagery is playing an important role in helping countries understand what is happening in their waters, these advances are just the beginning. The Skylight team is working to incorporate additional imagery sources and types into the platform to greatly increase both the area and frequency at which vessels can be detected. These advances cannot come soon enough: to protect marine ecosystems, address climate change, ensure more sustainable fishing, promote livelihoods and food security, we need to conserve at least 30 percent of our oceans by 2030. By leveraging game-changing technology such as AI, and computer vision in particular, governments and non-governmental organizations are getting the help they need to combat IUU fishing.





#### **CONTRIBUTIONS FROM:**

**ACAP.** Agreement on the Conservation of Albatrosses and Petrels

**APFIC:** Asia-Pacific Fishery Commission

**ATLAFCO:** Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean

**BOBP-IGO:** Bay of Bengal Programme – Inter-Governmental Organisation

**CCAMLR:** Commission for the Conservation of Antarctic Marine Living Resources

**EIFAAC:** European Inland Fisheries and Aquaculture Advisory Commission

**FIRMS:** Fisheries and Resources Monitoring System

**GFCM:** General Fisheries Commission for the Mediterranean

**ICCAT:** International Commission for the Conservation of Atlantic Tunas

**ICES:** International Council for the Exploration of the Sea

IPHC: International Pacific Halibut Commission

IWC: International Whaling Commission

LTA: Lake Tanganyika Authority

LVFO: Lake Victoria Fisheries Organization

**NAFO:** Northwest Atlantic Fisheries Organization

**NAMMCO:** North Atlantic Marine Mammal Commission

**NASCO:** North Atlantic Salmon Conservation Organization

**NEAFC:** North-East Atlantic Fisheries Commission

**NPAFC:** North Pacific Anadromous Fish Commission

**PICES:** North Pacific Marine Science Organization

PSC: Pacific Salmon Commission

**SIOFA:** Southern Indian Ocean Fisheries Agreement

**SPRFMO:** South Pacific Regional Fisheries Management Organisation

**WECAFC:** Western Central Atlantic Fishery

Commission

## ACAP

## Agreement on the Conservation of Albatrosses and Petrels

#### News from ACAP

At ACAP's recent Seventh Meeting of the Parties (MoP7), its Advisory Committee was reinforced as its top priority. With thousands of albatrosses, petrels and shearwaters dying every year because of fishing operations, all Parties agreed that much work remains to address the threats to seabird populations.

The implementation of ACAP's best practice advice for seabird bycatch mitigation was identified as essential for the conservation of these key marine species. Simple but highly effective measures such as employing a combination of weighted branch lines, night setting and bird-scaring lines can be adopted by fisheries to drastically reduce seabird bycatch. Alternatively, the use of an assessed hook-shielding device or underwater bait setting device is recommended.

Encouragingly, a growing number of RFMOs and other bodies have adopted several of these measures in their operations, leading to the reduction of seabird bycatch from longline and trawl fishing.

In his report to the Parties, the Chair of the Advisory Committee stressed that ongoing actions are required to prevent further declines in the populations of albatrosses and petrels, including the promotion and implementation of best-practice seabird mitigation measures, improvements in the collection and reporting of seabird bycatch data, implementing priority monitoring and tracking studies, and the continuation of schemes to eradicate invasive feral species at breeding sites.

ACAP's comprehensive range of best practice advice guidelines and factsheets describing proven mitigation measures are available in multiple languages and can be accessed through the ACAP website.

Celebrations for World Albatross Day recently took place (19 June 2022) under the theme of climate change and its impact on albatrosses. The annual celebration, kickstarted in 2020, aims to increase awareness of the continuing conservation crisis faced by ACAP's 31 listed species.

This year's featured species were the Blackfooted Phoebastria nigripes, and the Laysan P. immutabilis albatrosses. Both of these nearthreatened species have most of their breeding populations on the low-lying atolls of the United States of America's Northwestern Hawaiian Islands. They are at risk from predicted sea level rises, as well as increases in the number and severity of storms that result in flooding, both considered a consequence of climate change.

ACAP's Executive Secretary, Dr Christine Bogle, commented that: "It is tragic that albatrosses, already being killed in their thousands by fishing operations, must also suffer from the impacts of climate change. Strengthened international cooperation is needed to overcome these threats."

#### FOR MORE INFORMATION:

www.acap.aq



### **APFIC**

#### **Asia-Pacific Fishery Commission**

# Building capacity in the ecosystem approach to fisheries management

by Simon Funge-Smith, Derek Staples, Rudolf Hermes, Chris Grose, Rusty Brainard, Rishi Sharma, Panitnard Weerawat, Isara Chanrachkij, Rick Gregory

While support for an ecosystem approach to fisheries management (EAFM) has long been recognized, progress in its implementation in the Asia-Pacific region has been slow. This is partly the result of a lack of experienced fisheries managers and a low level of skill in applying an integrated and holistic approach to fisheries management. The EAFM training course (Essential Ecosystem Approach to Fisheries Management – E-EAFM) aims to overcome these gaps by providing capacity development in how to: manage fisheries more holistically; resolve fisheries issues and challenges more effectively; reduce user group conflicts; work cooperatively with other stakeholders; and help unlock financial

Illegal gears are often major source of conflict in fisheries, both between and within small and large-scale fisheries. EAFM offers a way to look into how to address these problems and build consensus on actions to be taken.



resources. During the training course, participants work with a template to develop EAFM plans for their area. They also learn and practise important interpersonal skills for effective communication, facilitation, and conflict management.

E-EAFM was developed through a consortium of the Asia-Pacific Fishery Commission, FAO, the Bay of Bengal-large marine ecosystem (LME) project, the National Oceanic and Atmospheric Administration (NOAA) and IMA International. It was funded by a wide variety of sources, including the Global Environmental Fund (GEF), Norway, Sweden, and the United States Agency for International Development (USAID) and Coral Triangle Support Partnership. The course was handed over to the Southeast Asian Fisheries Development Center (SEAFDEC) in 2014 to implement in Southeast Asian countries though the FAO/GEF Reduction of Bycatch Project (REBYC II). To date, 24 training programmes have been conducted since 2014 for more than 500 participants. A recent assessment found that 80 percent of these improved their understanding of the EAFM concept. Training of trainers (TOT) on EAFM was also provided to a total of 60 participants, who then became members of the core teams to transfer their knowledge in their respective countries. SEAFDEC and national fishery agencies have established learning sites in Cambodia, the Lao People's Democratic Republic (PDR), the Philippines and Thailand. As well as Southeast Asia, E-EAFM has now been used across different parts of Asia and Latin America (through the REBYC-LAC project and The Nature Conservancy) and has been taken up and adapted by different countries.

E-EAFM is targeted at mid-level fishery managers who developed plans for their localities. It can be applied to all scales, from local to regional, though it is particularly suited for provincial-scale



fisheries; moreover, it can link in to other planning processes through a nested approach, something that is also overlooked/excluded in other training programmes. It is rich in local knowledge, and does not let "lack of science/data" prevent the development of a plan (although more data is clearly an area where the plans could be better informed). It is best focused on coastal nearshore fisheries and can deal with multispecies, multigear issues, which are a common feature of fisheries in the region.

EAFM inspires people to act rather than dishearten them with a lack of knowledge and the attitude that "you need more research". As a process it is well documented (eafmlearn.org), openly accessible and translated into multiple languages; it also comes with a user kit — unlike many other courses that are somewhat inaccessible.

EAFM does need a local government or fishery agency to support participants after the training course. A high-level consultation package for leaders, executives and decision makers (LEAD) was developed to assist in this. However, to get buy-in it also requires a cadre of people who have been trained to implement the principles in their day-to-day jobs.

Although EAFM plans have been developed, sustaining implementation and keeping the monitoring going remains a challenge, as does poorly supported "co-management", which is often oversold.



Stakeholder-driven EAFM plans generally struggle to address overcapacity in a fishery; indeed, one inevitable outcome is that some stakeholders will have to agree to reduce their effort or even withdraw from the fishery. A common excuse for this is that there is insufficient evidence (stock assessment) that can provide clear guidance. A recent initiative in the region is building local capacity in this regard (stock assessment capacity for APFIC countries): this will go hand in hand with EAFM to better inform and implement long-term sustainable fisheries. This kind of hard requirement is typically something that requires informed assessments. Regulatory intervention as well as participation and EAFM planning may inform this process.

For stakeholders, EAFM makes sense as it offers a practical way to engage with complex coastal fishery management planning. Most Asia-Pacific countries now understand the concept of EAFM but still lack the experience and skills to implement it. More capacity development is needed to understand and apply the range of available management measures, as well as monitoring and evaluating management performance, especially in multispecies/multigear fisheries.

#### FOR MORE INFORMATION:

www.fao.org/apfic

## **ATLAFCO**

Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean

#### **News from ATLAFCO**

ATLAFCO has organized several activities. It has covered different fisheries and aquaculture issues that concern the ATLAFCO convention region. Activities include:

## A study on fish aggregating devices (FADs) in the ATLAFCO convention area

In 2021 ATLAFCO conducted a study on an assessment of the use of FADs as fishing tools within its convention area. The general objectives of the mission were to consolidate the existing information on the use and impacts associated with FADs in the ATLAFCO convention area and to propose ways to regulate their use in a sustainable manner. On 2 February 2022, ATLAFCO organized a videoconference to present the study, share its results, ensuring its endorsement and adoption by Member States.

Workshop on "Artisanal fisheries and aquaculture, major components of an inclusive socio-economic development"

As part of the celebrations of the 2022 "International Year of Artisanal Fisheries and Aquaculture" (IYAFA) declared by the UN, ATLAFCO organized the above workshop from 22 to 24 February 2022 in Tangier. Representatives from 18 Member States, 2 regional fisheries bodies, 5 African civil society organizations and 46 speakers attended the workshop via videoconference.

Two hundred million people depend on fishing as a source of animal protein and as their livelihood. This resource comes mainly from small-scale fishing and aquaculture (known as "artisanal"), in which women and young people play a predominant role, but under difficult and precarious working conditions.





# The Fourth Session of the General Assembly of the African Platform of Regional Institutions for Fisheries, Aquaculture and Aquaculture Systems (APRIFAAS)

The presidency of APRIFAAS, which is the mechanism for strengthening institutional coordination and collaboration in fisheries and aquaculture in Africa, was attributed to ATLAFCO in 2021. They invited the African Union, via the African Union-Inter-African Bureau for Animal Resources (AU-IBAR), to co-organize the Fourth Session of the General Assembly (GA) of APRIFAAS in Marrakech on 18-20 April 2022. The Fourth GA was held under the theme of "Strategic Regional Cooperation and Partnerships for the Development of the Blue Economy in Africa" to strengthen the harmonized implementation of the African Blue Economy Strategy (ABES) by AU Member States (AU MS) and Regional Economic Communities (RECs). The participants adopted the Marrakech Declaration.

## Signature of agreement of cooperation between ATLAFCO and IMO

According to the agreement signed on 3 March 2021, the two institutions will consult each other on matters of common interest with a view to ensuring maximum coordination in the work and activities of their respective organizations.

The aim of the agreement is to consolidate the cooperation with IMO to:

- → support the implementation of the relevant conventions;
- promote the establishment of regional cooperation in the field of maritime training; and
- intensify efforts to ensure the protection and preservation of the marine environment, as well as the management of coastal areas covered by ATLAFCO.

#### FOR MORE INFORMATION:

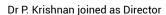
www.atlafco.org www.comhafat.org

### **BOBP-IGO**

Bay of Bengal Programme Inter-Governmental Organisation

#### New Director took charge

Dr P. Krishnan took over as the new Director on 29 December 2021, succeeding Dr Yugraj Singh Yadava, who had led the organization since 2004. Dr Krishnan served as a scientist on the Indian Council of Agricultural Research (ICAR) and has about 20 years of research/ capacity building/policy advocacy experience in the areas of coastal zone management, evidence-based conservation and management, fisheries resource management, environmental law, policy and governance. He is a Fellow of the National Academy of Agricultural Sciences (NAAS), New Delhi, and serves as a Member of the Executive Committee of the Asian Fisheries Society-Indian Branch. He has published over 90 research papers in peer-reviewed journals and about 30 books (as author/editor), as well as policy/strategy papers on various themes.





#### Policy Research Areas (PRA) & Capacity Development Programmes identified

The BOBP-IGO Governing Council has approved the organisation's prioritized research areas (PRA) and capacity development programmes (CDPs).<sup>2</sup> The focus areas include: developing frameworks for near real-time stock assessment; assessing vulnerabilities of the artisanal and small-scale fisheries; governance of blue economy; the use of the indigenous technological know-how (ITK) in fisheries management; and sea ranching and marine fisheries insurance for mitigating climate risks. The organization is also expanding its research network by formalizing relations with R&D institutions and donor agencies.

# Gearing up for the implementation of the BOBLME Project

The second phase of the GEF/NORAD-funded BOBLME Project (BOBLME-2) is all set to start later this year. The BOBP-IGO will be implementing the project during the next five years in its Member Countries, namely: Bangladesh, India, Maldives and Sri Lanka, in association with the FAO and IUCN. The broad objective of BOBLME-2 is to contribute to sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities.

BOBP-IGO as in the Agreement and not the organization. Please use and interpret as such.

#### International Symposium on Marine Fisheries Insurance

The BOBP-IGO organized an International Symposium on "Insulating Marine Fisheries Sector in South Asia from Uncertainties: Global Experience with Insurance", on 6 May 2022 in Chennai, India. The symposium brought together experts from FAO, the World Bank and BoB perimeter countries.

The objectives of the symposium were to: (1) understand the status of insurance in the fisheries sector in South Asia; and (2) promote cross-learning and collaboration in climate risk insurance research. The symposium highlighted that the current insurance regime in the region is inadequate to meet even the business-as-usual situation and there is a clear need for suitable insurance products and governance measures.

#### FOR MORE INFORMATION:

www.bobpigo.org



Dr J.K. Jena, DDG (Fisheries, ICAR releasing the BOBP PRA & CDP



A view of the International Symposium on Marine Fisheries Insurance



A screen-grab of the BOBLME partners' meeting

## **CCAMLR**

Commission for the Conservation of Antarctic Marine Living Resources

# CCAMLR experience with implementing the ecosystem approach to fisheries management

The Commission for the Conservation of Antarctic Marine Living Resources is an international agreement established to conserve Antarctic marine living resources and is an integral part of the Antarctic Treaty system. The convention applies to all marine living resources within the Antarctic marine ecosystem, which is defined as covering all waters south of the Antarctic convergence.

This year CCAMLR celebrates its 40th birthday – it came into force on 7 April 1982. The convention was negotiated between 1975 and 1980, through several meetings convened by the Antarctic Treaty Consultative Parties, and against a background of increasing krill catches. The latter caused widespread concern that this might impact the Antarctic marine ecosystem, where krill is a keystone species on which many predators depend. Consequently, CCAMLR arose from, and is a fundamental part of, the Antarctic Treaty System, which seeks to preserve Antarctica for peace and science. Although CCAMLR is not an RFMO it has some of the attributes of one, and the responsibility for managing fisheries in the waters surrounding Antarctica.

Throughout the convention negotiations there was much attention paid to an ecosystem approach. Unlike many RFMOs at the time, but in line with its origins, the convention's mission was explicitly framed around the objective of conservation. More specifically, conservation includes rational use delivered through application of the ecosystem and precautionary approaches to fisheries management. It is present in CCAMLR's farsighted Article II.

There are currently three types of fisheries in CCAMLR waters. Toothfish are slow-growing deepwater fish that live close to the sea bed and can reach up to 2 metres in length. They are caught on bottom-set longlines. While Patagonian toothfish (Dissostichus eleginoides) are present in the northern part of the convention area, Antarctic toothfish (Dissostichus mawsoni) dwell in the southern region on the continental shelf and slope surrounding Antarctica. They are much soughtafter for human consumption and the combined annual catch is about 15 000 tonnes. Antarctic krill (Euphausia superba) is a shrimplike crustacean which lives close to the ocean surface. Its distribution extends around the entire continent. Populations of Antarctic krill are very large and there are about 60 million tonnes in the Scotia Sea (south Atlantic sector) alone. Krill is a key prey item for many marine animals in Antarctic marine ecosystems. For humans, krill is a source of oil, used as a health supplement, and is eaten as canned or frozen krill tails. It is also

used in aquaculture feed.

Catches of krill, taken by pelagic trawlers, are limited to a small proportion of the population size. In the Scotia Sea, where most of the fishing takes place, the current precautionary catch limit is 5.61 million tonnes. However, until the commission has defined allocations of this total catch limit among smaller management units, the current allowable catch is further limited to a trigger level of 620 000 tonnes. Catches must also be spatially distributed to protect krill-dependent species such as penguins and seals. The catch in 2020 was about 450 000 tonnes.

There is a small fishery for mackerel icefish (*Champsocephalus gunnari*) around some sub-Antarctic islands. Icefish is sold as a table fish.

The commission has implemented an ecosystem approach to fisheries management in the following ways:

- → Conservation measures such as authorization and monitoring of fishing vessels in the convention area, transshipment and trade of harvested marine species, identification of IUU vessels and actions against such vessels, requirements for initiating and participating in new and exploratory fisheries, prohibiting the use of certain types of fishing gear, etc.
- → Requirements for new and exploratory fisheries prioritize research and the acquisition of data, ensuring that fishing is not allowed to expand faster than the acquisition of information necessary to ensure that the fishery can be conducted.
- → Monitoring the effects of fishing on harvested species and on dependent and associated species. CCAMLR's ecosystem monitoring programme (initiated in 1984) aims to detect and record significant changes in critical components of the marine ecosystem within the convention area and distinguish between changes arising from the harvesting of krill and those which are the result of environmental variability. CCAMLR also monitors marine debris in the convention area.



- Rules for determining catch limits for krill and fish that minimize the chances of recruitment impairment, and ensure spawning biomass remains at high levels, while taking ecosystem considerations into account. CCAMLR decision rules have objectives that are more precautionary than single species maximum sustainable yield.
- CCAMLR is developing marine protected areas (MPAs) that are representative of the marine ecosystems in the convention area.
- → CCAMLR makes decisions based on the best available scientific evidence: its scientific committee uses a variety of data to support the ecosystem-based approach. Information is gathered through research projects undertaken by CCAMLR Members, from scientific observers on board fishing vessels, and from an array of research and monitoring programmes.
- → All vessels participating in CCAMLR fisheries must carry an independent scientific observer.

Concerned that IUU fishing compromises the objective of the convention, CCAMLR has adopted specific conservation measures to promote compliance by vessels and vessel operators.

#### FOR MORE INFORMATION:

www.ccamlr.org

## **EIFAAC**

## **European Inland Fisheries and Aquaculture Advisory Commission**

# EIFAAC 31 and appointment of new EIFAAC secretary

EIFAAC 31 was held in Killarney, Ireland, from 22 to 24 June 2022, and hosted by Inland Fisheries Ireland and Irish Department of Environment, Climate and Communications (DECC). The session was attended by 15 countries, who discussed the results achieved by EIFAAC since the Thirtieth Session in 2019. The commission reviewed and endorsed the updated EIFAAC Rules of Procedure and the 2022–2024 work programme.

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The commission adopted four resolutions and one recommendation:

- → EIFAAC/31/2022/Res.1 "On EIFAAC Resolutions, Recommendations and Advisory Notes"
- → EIFAAC/31/2022/Res.2 "On the Code of Conduct for Recreational Fisheries and Invasive Alien Species"
- → EIFAAC/31/2022/Res.3 "On the protection of vulnerable and endangered fish species from unsustainable predation from cormorants"
- → EIFAAC/31/2022/Res.4 "On small-scale fisheries and aquaculture"
- → EIFAAC/31/2022/Rec.1 "On the Code of Practice for Recreational Fisheries".

The commission also reviewed and endorsed the recommendations from the EIFAAC International Symposium on "Inland Fisheries and Aquaculture – Advances in Technology, Stock Assessment and Citizen Science in an Era of Climate Change", held in Killarney, Ireland, from 20 to 21 June 2022. This highly successful EIFAAC symposium was attended by 105 participants from 14 countries.

On 1 May 2022, Raymon van Anrooy was appointed as new FAO secretary to EIFAAC. The session in Killarney was the first session he coordinated. The Secretary received support from the CACFish Secretary, Haydar Fersoy, and a team from the FAO Regional Office for Europe and Central Asia. The EIFAAC Chairman, Petri Heinimaa (Finland) was re-elected by EIFAAC 31 and will continue to lead the commission in the coming years.

#### FOR MORE INFORMATION:

www.fao.org/fishery/rfb/eifaac

## **FIRMS**

#### **Fisheries and Resources Monitoring System**

#### FAO releases the FIRMS Global Tuna Atlas

The FIRMS partnership provides a new approach to data on global tuna fisheries, one which can support the science that the oceans need to address the 2030 climate and sustainability challenges.

In May 2022, FAO released the FIRMS Global Tuna Atlas (GTA), a valuable tool for policymakers, scientists and other experts looking at key species and the sustainability of marine ecosystems.

The Atlas is produced by FAO's Fisheries and Aquaculture division, drawing on the FIRMS Partnership (Fisheries and Resources Monitoring System) under which the five Tuna regional fisheries management organizations collaborate to share data.<sup>3</sup> The objective of FIRMS is to provide quality public information on the global monitoring and management of marine fishery resources. The Atlas was made possible through the support of innovative information technologies from a range of EU H2020 projects; these include BlueBridge and Blue-Cloud, with key contributions from the French Institute for Sustainable Development (IRD), also a FIRMS collaborative partner.

The FIRMS Global Tuna Atlas is an innovative web product that presents authoritative and standardized public data on tuna fisheries in a user-friendly interface. It was made possible thanks to a strong and long-lasting partnership and a broad range of scientific and technical expertise.

The Atlas offers a comprehensive overview of the catches of tuna and tuna-like species dating back up to 100 years in some areas. It includes data on 50 common species with information on up to 150 species in total. It aims to support the monitoring of activities and production of industrial and – increasingly – artisanal fisheries targeting tuna and tuna-like species. This new version of the Atlas has been developed over the past decade.

#### FOR MORE INFORMATION:

www.fao.org/fishery/geoserver/tunaatlas/

# FIRMS and the Global Record of Stocks and Fisheries (GRSF)

The Twelfth Session of the FIRMS Steering Committee (FSC12, October 2021) reviewed work undertaken during the 2019–2021 intersession period, including the further development of the Global Record of Stocks and Fisheries (GRSF).

The GRSF has two technical objectives in support of two policy goals: 1) register a comprehensive list of distinct stocks and fisheries as part of a global repository; and 2) federate knowledge on the status and trends of stocks and fisheries across various sources. The latter should make provisions for key services to science stakeholders involved in "regional/global state of stocks indicators", in addition to public and private actors involved in ecolabelling, traceability and sustainable fisheries.

Currently the GRSF database contains records on 3 281 stocks and 14 708 fisheries, covering 1 258 species. More than half of the stock records are already publicly available (with the

The four organizations are CCSBT, IATTC, ICCAT, IOTC, WCPFC.

remaining pending validation). A pilot release of around 100 fishing units has been conducted for demonstrative purposes.

The GRSF database is enriched by an interactive web-based system that assigns unique identifiers to stocks and fisheries. The system offers improved and comprehensive stock status data coverage, in support of FIRMS' goal to facilitate the monitoring of the status and trends of all fishery resources.

The GRSF also aims to be a digital companion of the FAO flagship publication, The State of World Fisheries and Aquaculture (SOFIA), and support the United Nations Sustainable Development Goals (SDG) Indicator 14.4.1, "Proportion of fish stocks within biologically sustainable levels". By addressing traceability, transparency, consistency and comparability of stock status across time and geographic scales (national, shared, and high seas stocks), the GRSF and FIRMS can provide a key monitoring instrument to help FAO in fulfilling its custodian role as part of SDG 14.4.1. Work is also under way to integrate data from the SDG 14.4.1

questionnaire, as an additional source of data, thus increasing the geographic coverage of the GRSF.

As a tool supporting traceability and ecolabelling schemes, with the aim of connecting seafood industries and consumers to stocks and fisheries status, the concept of a traceability unit was developed to enable unique identifiers to bring together stocks and fisheries information along the fish value chain.

The GRSF offers additional functionalities and services for advanced users and interoperable systems, including programmatic access through web services for data analyses, as well as by using competency queries and R scripts.

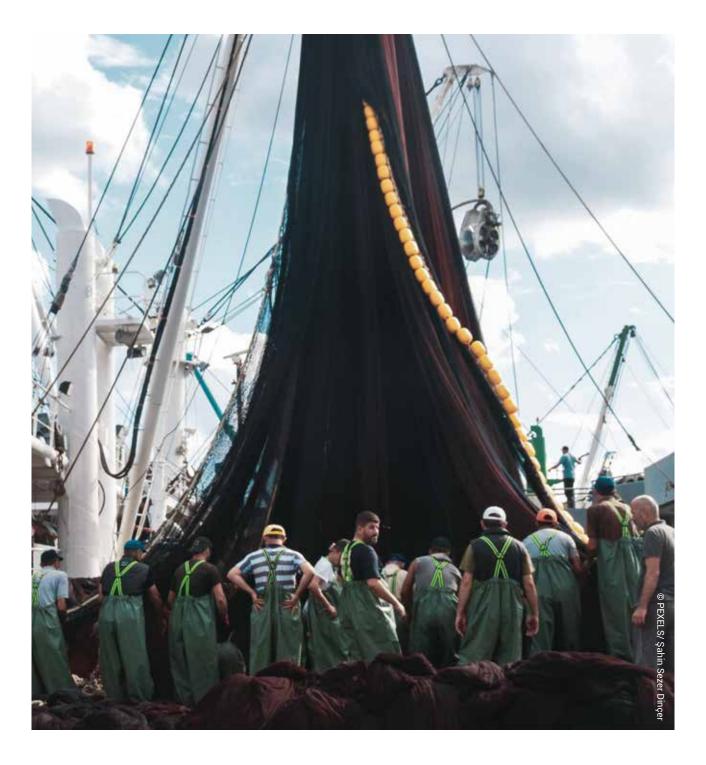
The GRSF was created under the European Union-funded BlueBridge project by FAO, FIRMS and partners, along with collaborative institutions Sustainable Fisheries Partnership (SFP) and the University of Washington (UW). The GRSF aims to be a key collaborative instrument to collectively support the global monitoring of fish stocks and



fisheries status. The technical implementation of the GRSF is conducted by the Foundation for Research and Technology – Hellas (FORTH) and the National Research Council of Italy (CNR). In terms of the GRSF's sustainability, it can rely on a strong partnership that operates under the FIRMS governance umbrella.

#### FOR MORE INFORMATION:

GRSF catalogue: https://bit.ly/3EysQC0 Map viewer: https://bit.ly/3TTG01Z www.fao.org/3/cb2237en/cb2237en.pdf



## **GFCM**

### **General Fisheries Commission** for the Mediterranean

# GFCM regional repository of national legislation (GFCM-Lex)

Regulating fishing activities in the Mediterranean poses a range of legal problems for all parties involved, from national administrations to fishers. Relevant legislation greatly varies depending on country priorities and is often only available in its national language.

Storing and disseminating legislation for the benefit of the general public in the region has proven to be an unpractical and somewhat daunting task in the past: that is until the recently established GFCM regional repository of national legislation (GFCM-Lex) came about. GFCM-LEX aims to address this longstanding problem by facilitating an easy, multilingual and comprehensive online access to fisheries legislation enacted by GFCM contracting parties in the Mediterranean. Moreover, harmonizing the national legislation of GFCM contracting parties will be greatly simplified thanks to GFCM-LEX, thereby contributing to reach SDG 14.A Target in the region.

GFCM-Lex is part of a project that started in 2018, and during its first phase it successfully tested an innovative methodology for collecting national legislation in three pilot countries — Albania, Tunisia, and Türkiye. The second phase is currently ongoing and seeks to bring Algeria, Egypt, Lebanon and Morocco on board. Some important results have been already reported, such as the adoption of Egyptian Law 146/2021, after intense cooperation between the national authorities and the GFCM Secretariat. This new framework law is the first adopted by Egypt after approximately 40 years, and it addresses the protection and development of fisheries.

It also includes provisions that will contribute to implementing the ecosystem approach to fisheries, since GFCM-LEX actively underpins efforts by the GFCM to foster this approach.

Since its inception, the project has engaged a wide range of national stakeholders through dedicated national workshops, coupled with the organization of regional trainings for the beneficiary countries. The most recent regional training session was held in Malaga, Spain, in June 2022, and constituted a landmark achievement. For one thing, the session was supported with expert contributions from selected GFCM partners in the region; this allowed an in-depth focus on issues related to catch, small-scale fisheries, IUU fishing and social welfare. These topics are all relevant to the GFCM-LEX remit.

In the final phase of the project, efforts will be devoted to disseminating GFCM-LEX beyond the Mediterranean region. Working in close coordination with the FAO Fisheries and Aquaculture Department, the commission will aim to tailor such methodology to the specificities and needs of other regions. A joint workshop between the FAO office in Dakar and the GFCM Secretariat was



successfully organized for the benefit of West African countries, and the results obtained will hopefully cement the conviction that GFCM-LEX can be extended and adapted where there is a need to work on national legislation under the stewardship of FAO.

In this regard, it is worth stressing that GFCM-LEX can easily be expanded to include relevant national legislation stemming from the lawmaking powers of other UN bodies, as it relates to the law of the sea. There are currently ongoing efforts to include national legislation on SSF and social welfare within GFCM-LEX through a fruitful cooperation with the FAO Fisheries and Aquaculture Division. Market- and trade-related information is also part of ongoing cooperation, thanks to dialogue with the GLOBEFISH project. Through further cooperation efforts, GFCM-LEX could promote synergies with other sources of legal data and information, such as UNDOALOS and the IMO's World Maritime University. Potential synergies with other RFMOs interested to know more about GFCM-LEX could also be explored.

#### FOR MORE INFORMATION:

www.fao.org/gfcm/activities/monitoring-controland-surveillance/gfcm-lex



## **ICCAT**

## International Commission for the Conservation of Atlantic Tunas

## New commission meeting and new MoU

The International Commission for the Conservation of Atlantic Tunas (ICCAT) met online between 15 and 23 November 2021. Although the conditions were not ideal, the necessary decisions could be taken to avoid a lack of regulation in ICCAT fisheries throughout 2022.

The commission convened to evaluate the results of the 2021 workplan, together with the application status of the regulatory measures in force, and to establish future conservation and management measures. In 2021, full scientific stock assessments were carried out for three species: bigeye tuna (*Thunnus obesus*), Atlantic bluefin tuna (*Thunnus thynnus*) and Mediterranean albacore (*Thunnus alalunga*). In total, 21 new recommendations and 3 resolutions were adopted covering issues on the conservation and fisheries management of Atlantic tuna and tuna-like species.

After four years of long discussions, ICCAT agreed a new conservation measure for North Atlantic shortfin make shark in association with ICCAT fisheries, starting in 2022. The measure aims to end overfishing immediately, and gradually achieve biomass levels sufficient to support maximum sustainable yield (MSY) by 2070, with a probability of at least 60–70 percent. The total fishing mortality was set to a maximum of 250 tennes until the commission receives new scientific advice.

An agreement was reached, allowing for the rollover of the multiannual conservation and management programme for tropical tunas.

This implies a total allowable catch (TAC) for bigeye tuna of 62 000 tonnes for 2022 and a new shorter FAD fishing closure. The annual TAC for yellowfin will remain at 110 000 tonnes. Furthermore, in order to reduce the fishing mortality of juvenile bigeye and yellowfin tuna, a prohibition of two or three months was agreed on the use of FADs in 2022. Finally, it was decided that intersessional meetings of Panel 1 will be held in 2022 to review existing measures and, *inter alia*, develop catch limits and associated catch verification mechanisms for 2023.

An amendment to the ICCAT recommendation for an Interim Conservation and Management Plan for Western Atlantic Bluefin Tuna (Rec. 17-06) was agreed, which set a TAC of 2 726 tonnes inclusive of dead discards for 2022. This amounted to an increase of 376 tonnes.

In 2022, a new stock assessment for the eastern Atlantic and Mediterranean bluefin tuna stock will be conducted to incorporate the most recent available data; it will also use a new stock assessment model. The TAC for 2022 remains at 36 000 tonnes, while the TAC for 2023 shall be decided at the commission's 2022 annual meeting, in accordance with a management procedure (MP) – or based on new scientific advice in 2022 if the MP is not yet available yet.

For the Mediterranean albacore stock, the commission agreed to implement a 15-year rebuilding plan starting in 2022. For 2022 the TAC was set at 2 500 tonnes.

For the North Atlantic albacore stock, an annual TAC of 37 801 tonnes for the 2022–2023 period was agreed. The decision was taken as part of a new conservation and management measure that established and applied a management



procedure, including an interim harvest control rule (HCR) for the stock. The move to set TACs based on management strategy evaluation (MSE) is a first for ICCAT, and a major achievement for the organization. Other priority stocks where MSE is under development include bluefin tuna, North Atlantic swordfish, and tropical tunas.

The management measures for Atlantic swordfish and blue shark were rolled over, and the TACs for 2022 were kept at the 2021 level, in accordance with SCRS advice. A new assessment of the North and South Atlantic swordfish stocks was scheduled for 2022.

The compliance committee noted that the trend toward improved compliance was continuing, although the pandemic caused some difficulties in meeting deadlines, as was to be expected, particularly in the early stages. Letters will be

issued to three contracting parties and three cooperating non-contracting parties, entities or fishing entities for which a range of compliance deficiencies were detected. The committee also made important progress on the schedule of actions to be taken in cases of non-compliance, as well as continued support for the work on online reporting.

The commission, as advised by its permanent working group, agreed on new technical working groups to advance work on catch documentation systems and electronic monitoring. It also agreed to refine measures on the existing bluefin tuna catch documentation scheme, as well as measures on transshipment, VMS measures and vessel listing requirements. A pilot project for remote electronic monitoring was also agreed, in addition to an ad hoc working group to examine labour standards in ICCAT fisheries.

In his address, ICCAT Chair Mr Raul Delgado thanked all contracting parties for their commitment to finally agreeing on a conservation measure for North Atlantic shortfin make shark. alongside other measures that will avoid ICCAT fisheries being in an unregulated situation throughout 2022. However, he also highlighted that no consensus could be reached on the multiannual conservation and management programme for tropical tunas. The commission also elected a new Chairman, Mr Ernesto Pena Lado (European Union) and expressed its profound appreciation for the excellent service that the outgoing Chair, Mr Raul Delgado (Panama) had dedicated to the commission over the past four years. Additionally, the commission elected a new 1st Vice-Chair Ms Zakia Driouich (Morocco) and elected Mr Ramon Chong (Curaçao) as 2nd Vice-Chair.

Finally, ICCAT would like to express its sincerest gratitude to all CPCs and its partners for their valuable contributions to the success of the meeting. The commission's Twenty-third Special Meeting took place in November 2022. The meeting was attended by over 480 delegates from 50 contracting parties, 5 cooperating non-contracting parties, 6 intergovernmental

organizations, 25 non-governmental organizations and 1 non-contracting party.

Twenty-four recommendations (21-01 to 21-024) entered into force on 17 June 2022.

#### **ICCAT-IAC Memorandum of Understanding**

During the Twenty-seventh Regular Meeting of the commission, ICCAT adopted the text of a memorandum of understanding (MoU) to be signed with the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC). On 21 March 2022, the MoU between the two regional management organizations was signed; it aimed to facilitate cooperation between ICCAT and the IAC, supporting efforts to minimize bycatch and enhance the conservation of sea turtle species within ICCAT's convention area.

#### FOR MORE INFORMATION:

www.iccat.int



## **ICES**

## International Council for the Exploration of the Sea

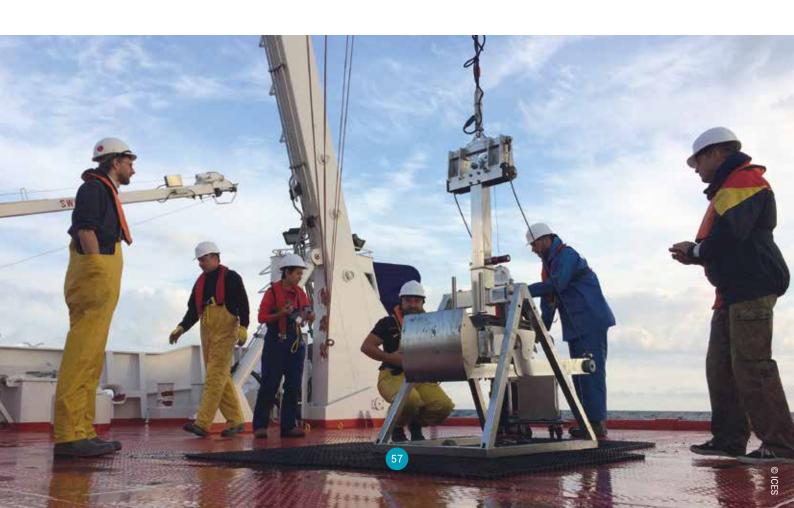
#### ICES provides management scenarios with trade-offs for the effects of bottom-contacting fishing gear

Over the past five years, ICES has developed management tools to evaluate the impacts of bottom fishing on seafloor ecosystems. In doing so, they have provided options to managers with evidence-based scenarios that ensure that conservation targets can be met while fishing continues.

Fishing with mobile bottom-contacting gear is the main physical pressure exerted on the seafloor across Europe and affects many sea bed habitats. As management measures and

fisheries actions can reduce the impacts of mobile bottom-contacting gears on such habitats, many fisheries managers want to know the financial consequences and environmental gains of a proportional reduction in the footprint of bottom-fishing activity.

These so-called trade-offs between fisheries and the seafloor have been explored by ICES using a suite of management scenarios that could be used to reduce pressure and impact on the sea bed, at a relatively low cost to the fisheries. Management measures considered gear design and operations, prohibitions by gear type, freeze-trawling footprint, nearshore restrictions and zoning, prohibitions by habitat type, multipurpose habitat management, invertebrate bycatch quotas, habitat-impact quotas, and the removal of effort.



The main result of this analysis is that fishing is not spread homogenously across regions in Europe. Rather, a large proportion of landings and revenue from bottom fisheries are obtained from a relatively small part of each region. ICES suggests that the most cost-effective management is to allow fishing in the core fishing grounds – which account for 90 percent of catches – and restrict fishing in peripheral areas where fishing is light, and there is therefore a greater likelihood that the seafloor has not yet been damaged by bottom towed gear (ICES, 2021a). After running tests, ICES has shown that the removal of less than 10 percent of total bottom trawling effort from peripheral fishing grounds (Baltic Sea, Greater North Sea, Celtic Seas, the Bay of Biscay and the Iberian coast) would increase the overall trawl-free area to over 40 percent for each seafloor habitat type. By reducing bottom fishing pressure, the relative abundance of sensitive and habitat-forming species would improve and contribute to increased seafloor complexity, which serves as a refugium for species. Population connectivity is enhanced, as is the seafloor's resilience to stressors and its capacity to adapt to climate change.

Fisheries could also benefit directly from reduced bottom trawling pressure, as fish abundance will increase, encouraging fish to move from closed areas to those that remain open, leading to an improved catch per unit of effort.

However, not all the potential benefits of reduced bottom fishing effort are currently well-enough understood to be modelled at a regional scale, and thus evaluate the management scenarios.

In order for ICES advice to be the most useful to managers and stakeholders, showing the core fishing grounds, pressure, and impact. These maps are part of the regional assessments that allow users to explore the various options and assessments for specific (sub)regions. Users can view unfished, lightly fished, or heavily fished areas and adjust the thresholds to find tipping points between a healthy, productive seafloor and an area that no longer has a positive environmental status.

The advice has been produced in ICES Transparent Assessment Framework tool (TAF) (ICES, 2021b), where everything is reproducible and when new data is received, it can simply be inputted.

#### FOR MORE INFORMATION:

www.ices.dk



## **IPHC**

## International Pacific Halibut Commission

Although the IPHC focuses on a single species, the secretariat understands that the Pacific halibut population is part of a larger ecosystem and the fish's niche changes with different life stages. Many of the projects in which the secretariat is currently engaged are collaborative; they involve other agencies, and revolve around understanding biomass trends, migration, and how Pacific halibut responds to changing environmental conditions both in terms of distribution and physiology. All of these contribute to a greater understanding of Pacific halibut within the north Pacific ecosystem. Below is a sample of the body of work being undertaken in 2022.

This year the secretariat is undertaking a full stock assessment, which occurs every three years. The ensemble of four population models, and the varied data sets on which they are based, will be re-evaluated to ensure they continue to produce reliable information on the trend and status of the Pacific halibut stock for decision-making by the commission and stakeholders. The annual fishery-independent setline survey (FISS), a coastwide survey and a critical input for the stock assessment, yields information about population trends, spatial distribution, demographics, and bycatch of other species. The FISS was successfully carried out during the pandemic. In recent years, and continuing in 2022, the secretariat has engaged in a management strategy evaluation process involving stakeholders, scientists and commissioners, which is critical to the development of a healthy harvest strategy.

Management procedures related to coastwide fishing intensity and distribution of fishing mortality have been evaluated against commission objectives. Size limits and multi-year

assessments are being evaluated in 2022. This process brings together stakeholders, scientists and commissioners to identify management procedures that are robust in the face of population and ecosystem uncertainty while meeting sustainability, ecosystem, and fishery objectives.

The secretariat engages in a variety of biological and ecological studies designed to help answer questions about physiological (e.g. growth and maturity) and population processes (e.g. distribution and migration, and stock structure). A recent highlight is a collaborative project that resulted in the completion and publication of the Pacific halibut genome, an invaluable resource that is currently being applied to conduct genomics studies on population dynamics.

The IPHC has recently received external funds from competitive grants including: National Fish and Wildlife Foundation, North Pacific Research Board, Bycatch Reduction Engineering Program-NOAA, Saltonstall-Kennedy Grant Program-NOAA and North Pacific Research Board. These grants fund collaborative projects aimed at addressing fishery discard estimates, whale depredation, and stock structure.

#### FOR MORE INFORMATION:

www.iphc.int





## **IWC**

#### **International Whaling Commission**

# Ecosystem services on the agenda at the IWC

As one of the first international organizations with a mandate to conserve as well as regulate catches, the IWC has long recognized the importance of understanding and protecting marine ecosystems. In recent years, the commission has also focused on the role played by cetaceans themselves in maintaining balanced and healthy ecosystems.

The commission adopted resolutions directing work on the latter issue in 2016 and 2018 (IWC, 2022), and both its conservation and scientific committees have focused efforts on different aspects of this topic. More recently, a multidisciplinary workshop was held in April on the "Socio-Economic Values of the Contribution of Cetaceans to Ecosystem Functioning".

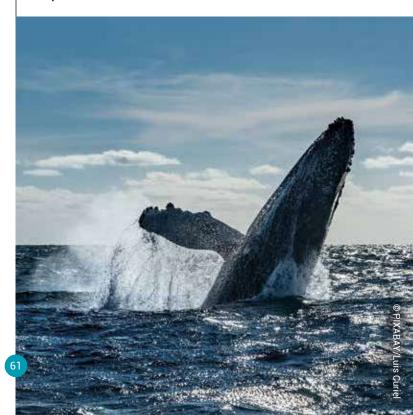
In recent years, a range of global organizations have contributed to a rapid increase in knowledge and interest in the role played by whales in ecosystems. In 2019, the International Monetary Fund published a report (Chami et al., 2019) exploring the economic value of whales in ecosystem functioning. The report estimated that each great whale sequesters approximately 33 tonnes of carbon, equivalent to 30 000 trees, and suggested an average monetary value of USD 2 million for each animal based on global carbon market prices. In 2022, the Sixth Assessment Report of the International Panel on Climate Change proposed whales as potential blue carbon ecosystems.

The IWC April workshop was led by the IWC Conservation Committee. Guest speakers and participants included social scientists and economists, as well as specialists in marine ecology and cetacean biology. It also reviewed existing economic and social valuation techniques for the ecosystem services provided by cetaceans. In doing so it identified potential new methods for assessing their contributions in monetary terms and making use of those values in the design and implementation of policy.

The workshop also identified knowledge gaps and developed a list of priority recommendations to address these and advance research. Finally, it proposed approaches for incorporating cetaceans' contribution to marine ecosystem function into the decision-making processes of the IWC and other relevant organizations.

#### FOR MORE INFORMATION:

https://iwc.int

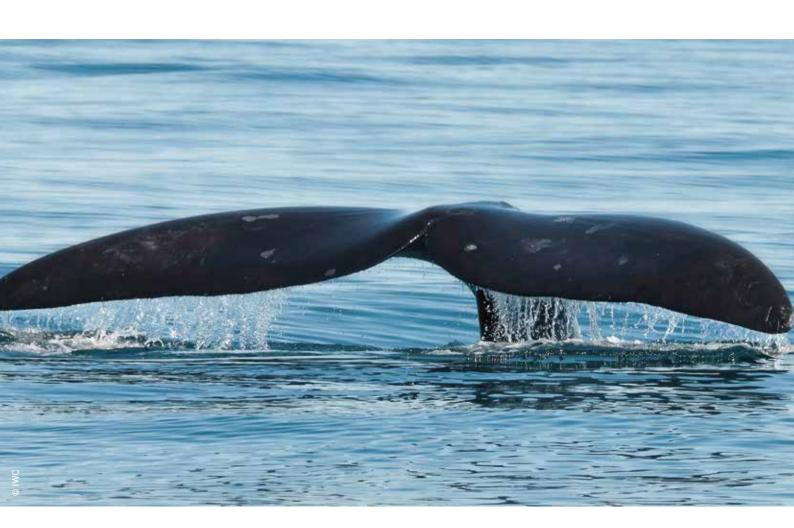


#### How do whales contribute to reducing carbon in the atmosphere?

Firstly, just as trees capture carbon in the terrestrial ecosystem, whales capture carbon in the ocean ecosystem. A large whale can store a vast amount of carbon over the course of a life that may last 100+ years. When the animal dies it sinks to the sea bed, locking in this large carbon store for centuries.

Whale excrement performs a second important service to the ecosystem.

It acts as a fertilizer for phytoplankton, a microscopic creature that lives on the surface of the ocean and is very effective at both capturing carbon and releasing oxygen. The whale's waste contains the iron and nitrogen that phytoplankton need to grow. Many whales feed in deep water and come to the surface to breathe, bringing these valuable minerals up to the phytoplankton in a process known as "the whale pump."



## LTA

#### **Lake Tanganyika Authority**

# The LATAFIMA project and the regional charter

In collaboration with FAO, LTA is implementing the Lake Tanganyika Fisheries Management Project (LATAFIMA), as part of the programme on the contribution of sustainable fisheries to the blue economy of Eastern Africa, Southern Africa and the Indian Ocean (EA-SA-IO) region known as ECOFISH.

The project is funded by the European Union under the ECOFISH programme and is jointly implemented by FAO and the Lake Tanganyika Authority. Its aim is to improve the management of Lake Tanganyika fisheries at the regional and local levels by solving the challenges facing the fisheries sector within the Lake Tanganyika region. The major challenge is linked to the current overexploitation of its fishery resources. Its overall objective is to improve equitable economic growth by promoting sustainable fisheries through mechanisms that support the fight against illegal, unregulated and unreported fishing. The aim

is to stop the dramatic fall in the lake's fish production, which is mainly attributable to illegal fishing gears that capture very young fish, sometimes even larvae.

The LATAFIMA project aims to rationalize fishing activities in Lake Tanganyika; to this end, as well as reducing the exploitation of immature fish, studies were planned in four riparian countries on the three commercial fish species in Lake Tanganyika. The first thing to do was determine a size limit below which these fish should not be caught. For this, the sizes of sexual maturity had to be established in order to recommend the minimal size for capture to be applied in all four countries.

The next studies are related to the socioeconomic impact of immature fish capture and the use of prohibited gears. To ensure the coherence of fisheries governance activities on Lake Tanganyika it is crucial that the required catch size for these species is the same across the whole lake and for the four riparian countries. The exercise involved three main species of pelagic fish, which are subject



Burundi National Sensitization Team after attending training on understanding the charter for its dissemination.

to massive commercial fishing: Lates stappersii, Stolothrissa tanganicae and Limnothrissa miodon.

The group of experts that conducted the studies was also asked to analyse fishing practices in Lake Tanganyika and the parameters that deserve specific measures, especially:

- the concept of illegal capture and the concrete methods of its implementation;
- devices to be prohibited;
- desirable technical characteristics for legal gears; and
- → relevance of defining periods and/or areas when/where fishing is prohibited.

Based on the results of the studies, the Lake Tanganyika Authority Secretariat and LATAFIMA project team prepared a binding legal document containing sustainable management measures for Lake Tanganyika fisheries, with the support of national and international experts. The document was then submitted to the government authorities of the four LTA countries for endorsement.

To counteract the decrease in Lake Tanganyika's fishery resources, the governments of Burundi, the Democratic Republic of the Congo, the United Republic of Tanzania and Zambia adopted, on 16 December 2021, the Regional Charter of Lake Tanganyika Authority Member States on fisheries sustainable management measures in Lake Tanganyika and its basin.

The charter defines the fisheries management measures – namely the authorized size of nets, the size of hooks, the fishing close season, etc. In addition, it redefines offenses and relevant penalties, and clarifies the legal capture size. More pertinently, the minimal capture sizes for the three main species were set as follows:

- → Lates stappersii: 260 mm (26 cm) of total length
- → Limnothrissa miodon: 110 mm (11 cm) of total length
- → Stolothrissa tanganicae: 100 mm (10 cm)



Minister of Agriculture and Fisheries Mashimba Ndaki (centre) cutting the ribbon to mark the launch of the charter. To his left is the Permanent Secretary of the Fisheries-PS (left) and the Regional Director of Fisheries & Aquaculture for LTA (left of the PS) and leaders from Rukwa, Katavi and Kigoma regions.

Regarding fishing seasons, fishing closure in Lake Tanganyika shall be observed from 15 May to 15 August each year in the four Lake Tanganyika riparian countries.

After the document was approved by the four governments in December 2021, capacity-building workshops for Fisheries Administration officials and agents, representatives of fisher organizations and fishmongers operating on Lake Tanganyika were organized from May to June 2022 in Rumonge (Burundi), in Kalemie (Democratic Republic of the Congo), Mpulungu (Zambia), Rukwa (United Republic of Tanzania) to raise awareness and popularize the charter. These workshops were followed by official ceremonies to launch the charter popularization campaign by national and local authorities.

To date, these popularization activities are under way in the four countries, and LTA, together with its partners, is looking for funds to support the implementation of the charter.

#### FOR MORE INFORMATION:

https://lta-alt.org



The LTA Executive Director participated in the National Day of Burundi during the launch of the charter.



Dr Sunil, a regional fisheries expert from the Mauritius headquarters of the EcoFish Program, was among the guests attending the launch ceremony in Rumonge, Burundi.



National sensitization team in Kalemie, Democratic Republic of the Congo, taking training seriously in order to disseminate the charter in their respective areas.



The LTA Director of Fisheries and Aquaculture was among the facilitators who trained the national sensitization team. Here she is leading a discussion with participants in the Rukwa region, in the United Republic of Tanzania.



Fishermen listening to the speech delivered by the Honourable Minister for Livestock and Fisheries.



The LTA Executive Director also attended the launch ceremony.

## **LVFO**

#### **Lake Victoria Fisheries Organization**

#### Lake Victoria Fisheries Organization is collaborating with partners in fish conservation

by Dr Shigalla Mahongo, Executive Secretary

The Lake Victoria Fisheries Organization (LVFO), a specialized institution of the East African Community (EAC) mandated to coordinate the management and development of fisheries and aquaculture in the EAC region, is partnering with Burundi, Kenya, Uganda, and the United Republic of Tanzania in the conservation of critical fish breeding areas on Lake Victoria. This is in line with its mission to support conservation, sustainable management, and the development of fisheries and aquaculture value chains in the EAC region.

With support from the European Union, and through the project on the "Contribution of sustainable fisheries to the blue economy of the Eastern Africa, Southern Africa and the Indian Ocean Region" E€OFISH programme, the conservation and management of biodiversity hotspots and breeding/nursery areas is considered critical in enhancing the survival of juvenile fish and increasing biodiversity.

The Lake Victoria basin is currently facing rapid urbanization and industrialization, and critical habitats for fish breeding and nursery areas are being destroyed because of human activities and an increased use of illegal gears (see photo). These breeding and nursery areas therefore require fisheries laws for the proper management of fish.

Fish breeding areas (FBAs)/spawning grounds are areas in the water where female and male fish meet to mate, with female fishes laying eggs, and the male fishes releasing spermatozoa to fertilize them. The fertilized eggs hatch into fish fry which develop into fingerlings; the fingerlings grow into juvenile fish, which then swim out to open deep waters to become mature fish.

Illegal fishing gear, which harms fish breeding areas, being destroyed.



As part of the operational framework, in March 2019 the LVFO Council of Ministers approved harmonized guidelines for the establishment and management of fish breeding and nursery areas in Lake Victoria. The guidelines provide the necessary guidance on harmonizing procedures for the development of national guidelines, raising awareness, identification, mapping, validation, gazettement, marking and monitoring, as well as the evaluation of fish breeding and nursery areas.

They also outline the responsibilities of different stakeholders.

As Lake Victoria is a shared ecosystem, these harmonized guidelines ensure conformity in the establishment and management of fish breeding and nursery areas in the partner states, in line with existing international frameworks that call upon parties to protect critical habitats. The FAO Code of Conduct for Responsible Fisheries calls upon all critical fisheries habitats to be protected and rehabilitated. Article 114 sub-Article 2(b) (ii) of the treaty which established the East African Community provides for the adoption of common regulations for the protection of shared aquatic resources. The convention for the establishment of LVFO also provides for contracting parties to harmonize national measures for the sustainable utilization of the fisheries resources.

Breeding and nursery areas have been identified in Kenya (36), Uganda (42) and the United Republic of Tanzania (147) as well as through the ECOFISH Project. These areas (figure 5) are to be physically marked to indicate breeding area coverage and to ensure that there is no fishing in those areas. The programme will enable partner states to procure

and install a demarcation system and manage the selected sites in each country.

Community participation is being promoted during the marking process, with the involvement of all relevant stakeholders for the purpose of buy-in and ownership. The type of marks promoted are environmentally friendly, protecting the ecosystem and other lake users, but consideration is also given to practicality, costs/affordability, acceptability, visibility and durability. The markers considered are those that can withstand physiochemical environmental conditions and are difficult to vandalize, so as to avoid frequent replacement. They include plastic drums anchored by concrete blocks, floaters with reflectors, jerry cans, lights, black plastic drums, blue plastic drums and white jerry cans joined by ropes and anchored by sinkers, among others.

The programme targets Nile perch and Nile Tilapia as key fish species that are critical to international, regional and domestic consumption, both for nutrition and food security.

#### FOR MORE INFORMATION:

https://lvfo.org



Figure 5. Nile tilapia breeding/nursery areas and Nile perch nursery areas

Source: Author's own elaboration.

# **NAFO**

### **Northwest Atlantic Fisheries Organization**

### **News from NAFO**

The global COVID-19 pandemic once again presented challenges for NAFO. The organization continued to conduct its business virtually in 2021, including hosting its annual meeting online for the second time in its history. At the 2021 Annual Meeting, NAFO achieved significant progress with key decisions on the sustainable management of NAFO-managed fish stocks, the protection of vulnerable marine ecosystems (VMEs) and the review of its precautionary approach framework.

Several measures were adopted to enhance its protection for VMEs, in particular to safeguard black coral and sea pens. These measures include:

- → Protection of all seamounts at fishable depth (i.e. shallower than 4000 metres) within the NAFO Regulatory Area, through the addition of seven new closed areas and extensions to the boundaries of existing closures.
- A five-year rollover of the current closures to protect VMEs in the NAFO Regulatory Area, along with the addition of five further closed areas.
- As a precautionary measure, an additional four VMEs closed areas were adopted for two years to allow the organization's scientific council to conduct additional analysis incorporating the most recent fishery data.

As a result of these decisions, over 372 000 km<sup>2</sup> – approximately 14 percent of the NAFO Regulatory Area – is closed to bottom fishing to protect VMEs. This demonstrates NAFO's commitment to the ecosystem approach to fisheries management and, specifically, to the protection of VMEs, which has been an obligation for regional fisheries

management organizations (RFMOs) since 2008, following United Nations General Assembly (UNGA) Resolutions.

Several other significant decisions were made during the annual meeting:

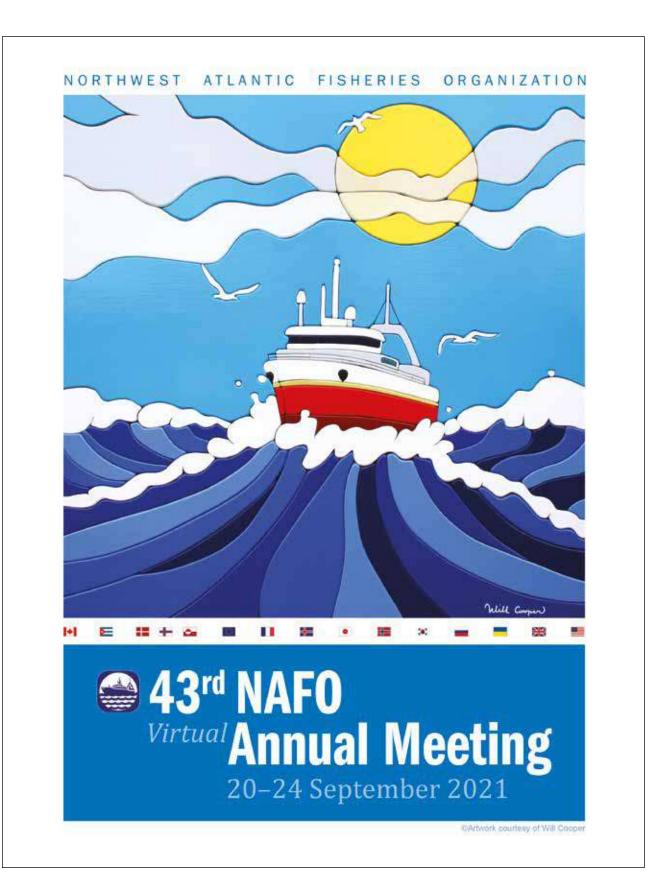
- Progress achieved to review NAFO's precautionary approach framework.
- Continued additional conservation measures for cod in Div. 3M, including maintaining port inspection efforts and limiting bycatch during the first guarter closure of 2022.
- → NAFO elected Temur Tairov (Russian Federation) as NAFO's new President and Chair of the Commission, and Deirdre Warner Kramer (United States of America) as Vice-Chair of the Commission. Karen Dwyer (Canada) was elected Chair of the Scientific Council and Diana González-Troncoso (European Union) was elected as Vice-Chair of the Scientific Council.

During the meeting, the closure of the shrimp fishery in Div. 3M for 2022 was also agreed. NAFO will continue to work between sessions to review the current management approach to this stock.

As NAFO continues to navigate the global COVID-19 pandemic in 2022, meetings have resumed online and in person, with most meetings offering a hybrid format. The Forty-fourth Annual Meeting will take place on 19–23 September 2022 in Portugal.

### FOR MORE INFORMATION:

www.nafo.int



# **NAMMCO**

#### **North Atlantic Marine Mammal Commission**

# International observation focus 2022: hunting in West Greenland

The NAMMCO agreement was signed and came into force in 1992. The accomplishments of the 30 years that have passed were celebrated throughout 2022 with several events and initiatives such as:

#### Showcasing marine mammals as food

The NAMMCO Conference and Showcase Marine Mammals – a Sustainable Food Resource took place on 5–6 October 2022, in Tórshavn, Faroe Islands. The conference and a modern gastronomic showcase aimed to highlight and stimulate discussion on the role marine mammals play in supporting livelihoods and ensuring sustainable and resilient food systems.

Developing healthier, more sustainable and more equitable food systems to ensure food security is one of the great societal challenges of our time. The UN Food Systems Summit 2021 emphasized this multifaceted challenge and the crucial importance of transforming food systems, if we are to achieve the Sustainable Development Goals (SDGs).

NAMMCO and its Member Countries – the Faroe Islands, Greenland, Iceland and Norway – all share a strong commitment to SDG 14: to conserve and sustainably use the oceans, seas and marine resources for sustainable development. Whaling and sealing, when carried out locally and sustainably, have a low environmental footprint and contribute to SDG 14. As they improve livelihood and support economic growth in many, often remote places, they also contribute to SDG 1, 2, 8, 10, 11 and 12, and therefore to the blue economy.

The conference looked at the potential of marine mammals as a future food resource within a holistic approach that understands and weighs up the sustainability aspects (environmental, societal and economic), together with food safety and health impacts. The conference also brought together chefs from whaling and sealing countries to showcase how marine mammals are used in different food cultures, and discussed the potential for a more creative and innovative use of sustainable marine mammal products in modern gastronomy, as in New Nordic Cuisine.





# Responsible use: the importance of experience, training and the transfer of knowledge

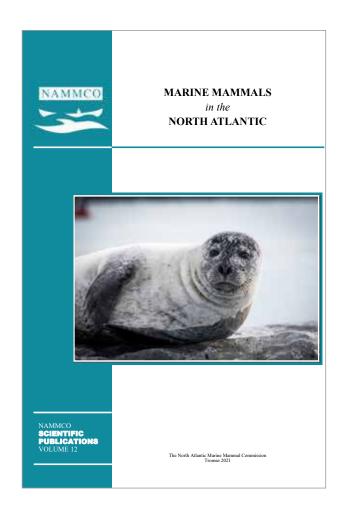
NAMMCO is committed to a precautionary management regime that considers hunters' safety and hunting efficiency, monitoring, and the transfer of knowledge.

To this end, NAMMCO will produce a series of short informative videos on topics related to marine mammal hunts. The overall rationale is to ensure the safety of hunters while achieving optimal animal welfare outcomes by visualizing best practice, and the optimal use of equipment for increasing instant death rate (IDR) and decreasing time to death (TTD).

The first in this series of videos has been published, and is freely accessible on NAMMCO website. The video supplements the commission manual and shows how to safely handle the gear and weapons deployed in large whale hunts using a harpoon gun and explosive grenades.

#### FOR MORE INFORMATION:

www.nammco.no





# **NASCO**

### **North Atlantic Salmon Conservation Organization**

The North Atlantic Salmon Conservation
Organization (NASCO) held its Thirty-ninth Annual
Meeting in its home city of Edinburgh, Scotland,
United Kingdom, in June 2022. Important new
commitments to enhance the conservation of
imperiled wild Atlantic salmon populations were
agreed, along with new approaches for future work
to reduce its carbon footprint.

After almost two years of negotiations, a key outcome was the adoption of an innovative approach for the regulation of the salmon fishery at West Greenland in the "Multi-Annual Regulatory Measure for Fishing for Atlantic Salmon at West Greenland", WGC(22)10. This fishery has

experienced overharvests of established limits in recent years. To address this, the evidence-based regulatory measure sets a precautionary upper limit that is well below the catch limit. At the latest, the fishery will be closed when the upper limit is reached. This is a dynamic process that will incorporate future fishery data and information to allow the upper limit to be refined for each year of the four-year measure.

In addition, the North-East Atlantic Commission confirmed that the Decision Regarding the Salmon Fishery in Faroese Waters in 2021 / 2022, 2022 / 2023 and 2023 / 2024, NEA(21)16, will continue to apply.



In other actions, NASCO considered with alarm the threat that Pacific pink salmon, an invasive species spreading throughout the North Atlantic, now poses to wild north Atlantic salmon. NASCO adopted a statement highlighting this threat and calling on parties to cooperate and initiate corrective measures without delay: "Statement of the Council Regarding Pink Salmon, Oncorhynchus gorbuscha, in the NASCO Convention Area", CNL(22)47.

NASCO also adopted a "Statement on Salmon Farming from the Council of NASCO", CNL(22)49. The statement urges the development of innovative salmon farming technologies, both at sea and on land, to advance the implementation and attainment of the international goals for the management of sea lice and containment of farmed salmon agreed by NASCO and the International Salmon Farming Association in 2009, SLG(09)5.

Finally, NASCO agreed forward-leaning approaches for conducting its work in the future that includes expanded use of electronic meetings to reduce the organization's carbon footprint.

#### FOR MORE INFORMATION:

www.nasco.int





# **NEAFC**

#### **North-East Atlantic Fisheries Commission**

# Implementation of the ecosystems approach to fisheries management by NEAFC

by Darius Campbell, Secretary of NEAFC

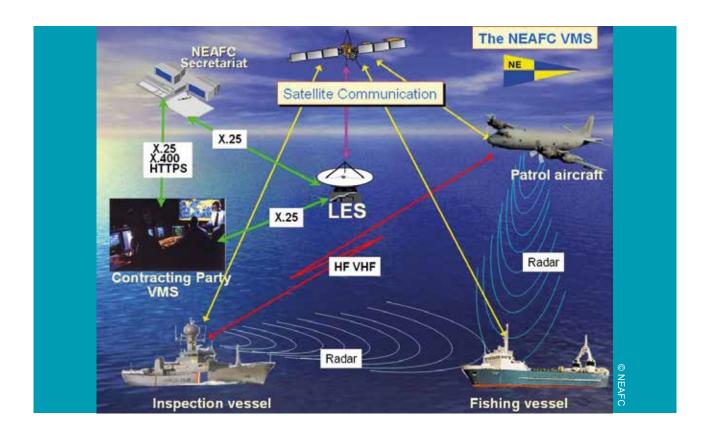
The North-East Atlantic Fisheries Commission aims to ensure the long-term conservation and optimum utilization of fishery resources in the convention area, with the aim of providing sustainable economic, environmental and social benefits. Historically NEAFC has focused on the target species of the fisheries being managed, and bycatches of other economically important species. This reflects the importance of the effective management of commercial fisheries, in which NEAFC's big pelagic stocks are worth USD 2-3 billion a year. This not only reflects the socioeconomic importance of the stocks to particular contracting parties or to their coastal communities, but also their global importance as a relatively low-carbon, low-impact source of protein. Our fish is exported from the northeast

Atlantic all over the world, including to less developed regions.

Acknowledging this socioeconomic aspect has not stopped NEAFC also focusing on environmental aspects. Since the 1990s, there has been increasing NEAFC focus on fisheries' effects on other parts of the marine ecosystem and on the protection of biodiversity. This included an amendment of the convention in 2006 to make it clearer that NEAFC had a legal mandate to adopt conservation and management measures that were not aimed at fish stocks or bycatch, but instead aimed at minimizing harmful impacts on other parts of the marine ecosystem and at conserving marine biodiversity.

Having good science that builds in ecosystem perspectives is key to an approach that also aims to maintain the natural structure, balance and functioning of marine ecosystems and important species. Unlike most other RFMOs, NEAFC has no scientific capacity in itself; rather, it relies on the International Council for the Exploration of the Sea





(ICES) for scientific advice. This intergovernmental organization builds the precautionary approach and ecosystem-based management into its scientific advice, notably through ecosystem and fisheries overviews. Through its MOU with ICES and regular bilateral meetings, NEAFC is able to discuss broader developments and their impact on advice. This includes ensuring its requests for advice are considered in light of climate effects and other ecosystem considerations.

This separation between science and policy in NEAFC aims to ensure transparency about a rational process for decisions. However, with such a separation, there is a limited ability of fisheries managers in NEAFC to respond to the nuances in advice. Ultimately managers need a number from ICES, e.g. "How much of this stock should I catch this year? Should I close this or that area to fisheries, and when?" Under our model, the ecosystem aspects have to be built into the ICES advice, not added as a layer of consideration by the managers themselves. NEAFC is also able to

ask ICES for advice on technical aspects such as selecting the gear to deal with bycatch, etc. These technical solutions tend to be applied at a national level rather than being mandated across NEAFC. In this respect, NEAFC-wide measures lie more in the early roots of the convention on minimum mesh sizes, as well as in restrictions on the depth at which gill nets can be deployed.

As explained above, NEAFC adopts measures focused on biodiversity conservation. This includes bans on shark finning and bans on discarding, as in some of its older regulations, as well as regulations on lost, abandoned and discarded fishing nets. The latter aim not only to reduce marine pollution but also address the problem of ghost fishing. This also applies to the consideration of impacts and measures relating to bycatch, managing deep-sea stocks, and to bans on targeting certain sharks and deep-sea elasmobranchs. NEAFC has implemented recommendations prohibiting directed fisheries at basking shark, porbeagle, spurdog, deep-sea sharks, rays and chimaeras.



One barrier to overcome in this respect is being able to monitor bycatch. This is an area that is fundamental to understanding whether there is a concern for NEAFC (e.g. fish or bird bycatch) and how to make improvements if there are bycatch issues.

Deep-sea fisheries are another point of focus in implementing ecosystem-based management. This issue rose to greater prominence in NEAFC in the late 1990s. In 2016, the commission adopted the NEAFC approach to deep-sea fisheries conservation and management. This meant that species/stocks are understood to fall into one of four categories requiring a different character and level of regulation. These categories include stocks with specific measures, and stocks in which directed fisheries are not authorized.

Building on this, in 2018 NEAFC adopted a recommendation on deep-sea fisheries that moved from effort limitation to one based on the precautionary approach.

The requirement to effectively manage species not already provided for under other measures ensures that these fisheries expand gradually, and that any new or expanding fisheries provide relevant data to assess sustainability based on the best available scientific information. This approach is reflected in the advice which NEAFC asks of ICES to provide on these deep-sea stocks. In addition to the deep-sea fisheries, a very clear example of a biodiversity-focused measure in NEAFC is the one related to vulnerable marine ecosystems (VMEs), which include deep-sea sponges and corals. Since

2004 NEAFC has closed VME areas to bottom trawling and fishing with static gear.

In 2008, NEAFC adopted a new recommendation on bottom fishing. It was a comprehensive measure incorporating all the relevant elements from the 2006 UN General Assembly resolution and the work within FAO. This remains NEAFC's general approach to the protection of VMEs. Continuing developments right up to the current date mean that regular bottom fisheries can only take place in areas that are defined as "existing bottom fishing areas", based on actual fishing taking place there within a specific reference period (1987-2007). Outside these areas, only exploratory bottom fisheries can be authorized, and these are subject to severe restrictions. This effectively means that the entire regulatory area has been closed to bottom fishing by NEAFC in areas where the best available scientific advice indicates that vulnerable marine ecosystems occur or are likely to occur. The remaining areas where bottom fishing is allowed make up a very small proportion (around 2 percent) of the total regulatory area.

An ecosystem approach is iterative, learning from implementation, monitoring and review. Like many RFMOs, NEAFC has strong and effective monitoring, control, and surveillance systems both at sea and at port, to enforce the binding regulations we have in place. The ability to license and monitor fishing activities and deal with control and compliance issues is fundamental to the binding nature of regulations, and compliance with them, under an RFMO such as NEAFC. This is essential to NEAFC's ability to deliver an ecosystem-based approach to fisheries management. Above and beyond enforcement, an ecosystem approach also means constantly looking at the scientific evidence.

Scientific advice on key stocks is updated annually by ICES, and NEAFC updates the binding recommendations to these stocks annually. But this also happens with measures such as

our VME closures. Every five years, NEAFC also carries out a review of the effectiveness of the binding recommendation on VMEs, and a five-yearly renewal of the closed areas. ICES is also undertaking a benchmarking process for its VME advice this year.

The commission is not static in its considerations, it continues to evolve. With this in mind, the working group on the future of NEAFC aims to ensure it remains a modern and effective RFMO in all respects.

For a long time NEAFC has recognized that applying an ecosystem-based management approach to oceans, taking into account the different impacts on ecosystems, implies that all organizations involved in the regulation/ management of human activities in the marine environment are cooperating and coordinating actions under their different legal mandates. So, while NEAFC can consider and manage the effects of fisheries on the other parts of the marine ecosystem and on biodiversity, NEAFC's legal competence remains limited to managing fisheries. There is thus an imperative to work with other organizations with complementary legal competences to manage human activities. One key cooperation is between NEAFC and OSPAR (the commission for the protection of the marine environment of the North-East Atlantic) under a "collective arrangement" on area-based management in areas beyond national jurisdiction.

An ecosystem approach includes consideration of social and economic aspects. Like most RFMOs, the NEAFC Convention does not provide for explicit common social or economic objectives at the regional level. Rather, contracting parties are expected to include social and economic aspects in their discussions at the national level and reflect this implicitly in their negotiation positions.

### FOR MORE INFORMATION:

www.neafc.org

# **NPAFC**

#### **North Pacific Anadromous Fish Commission**

### News from the NPAFC Secretariat

The North Pacific Ocean is home to multiple species of anadromous Pacific salmon that regularly migrate from freshwater to the sea and back. Salmon's ecological role is complex as they facilitate energy transfer directly and indirectly at multiple trophic levels in many ecosystems.

Throughout the International Year of the Salmon (IYS) initiative, several high seas expeditions were conducted to study the winter ecology of salmon and identify the mechanisms regulating salmon abundance and production. The 2019 International Gulf of Alaska Expedition was the first successful, comprehensive study in decades; it considered stock abundance, composition and condition of the stocks of five Pacific salmon species in winter. The second expedition, in March 2020, was a continuation of the international scientific efforts to establish greater research capacity for understanding the consequences of the changing ocean environment.

Five vessels from Canada, the Russian Federation and the United States of America participated in the 2022 IYS High Seas Research Expedition, between February and April of 2022. Their combined efforts sampled 131 stations over approximately 2.5 million km<sup>2</sup> in the Central and Eastern North Pacific Ocean, and they caught 2 321 salmon and steelhead trout. Surveys included the measuring of water column properties, primary productivity measurements, zooplankton, micronekton, squid and fish sampling. An autonomous underwater glider with hydroacoustic capabilities was deployed in the northern Gulf of Alaska to provide additional data on the physical and biological conditions salmon face during the winter months. A total of 942 environmental DNA (eDNA) samples were collected,

representing an eDNA dataset that is unprecedented in terms of its spatial coverage of the North Pacific Ocean. Salmon sharks were successfully tagged and released, which allows some insight into the migratory patterns of salmon predators.

A large array of collected samples for genetic, physiological and health research, in addition to hydroacoustic records, microplastic pollution net samples, and video recordings for floating microplastic surveys are being processed in the relevant laboratories. All data collected as part of the 2022 IYS Expedition will be made publicly available via the IYS data catalogue.



The IYS entered its final stage with the IYS Synthesis Symposium in Vancouver, Canada on 4–6 October 2022.

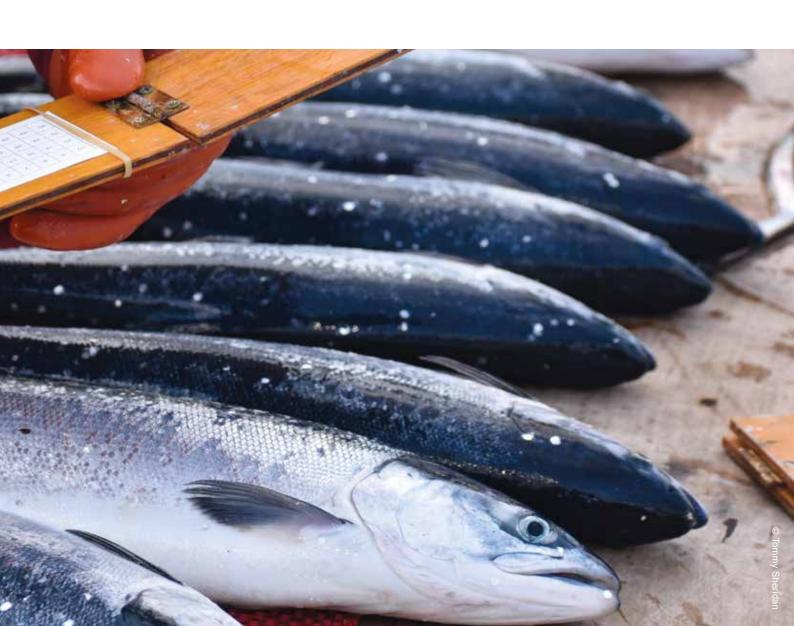
The enforcement agencies of NPAFC Member Countries ended the 2021 patrol season with over 140 ship patrol days and 489 aerial patrol hours. Radar satellite imagery and analytic support to help identify dark fishing vessels and support surface patrols were also provided. Summary patrol reports show that significant Pacific salmon bycatch exists in the massive pelagic fisheries in the northwestern

North Pacific Ocean. A high incidence of vessels not transmitting or transmitting incorrect AIS information was also noted. These disturbing findings will be further discussed at the NPAFC Annual Meeting and with partner RFMOs.

### FOR MORE INFORMATION:

www.npafc.org

IYS data catalogue: https://iys.hakai.org/dataset



# **PICES**

### **North Pacific Marine Science Organization**

### **News from Members**

by Sonia Batten, Executive Secretary

The North Pacific Marine Science Organization (PICES) is a science organization, rather than a regional fisheries management organization. However it partners with the commissions with whom it shares an area of interest (both geographic and scientific) to coordinate and integrate research from the climatic, physical and biological foundations of the ocean system as well as the dynamics of higher trophic levels, including fisheries and human communities. These partnerships enable PICES to provide the scientific basis for policy decisions that the RFMOs and other agencies must come to, and receive input on the science and information needs required for effective and sustainable resource management.

Many of the PICES expert groups, convened with the appropriate lifespan to address specific topics, have been advocating ecosystem-based approaches to fisheries management. A full list of past and current expert groups, together with their products, is available on the PICES website at Members - PICES - North Pacific Marine Science Organization; below some highlights:

- → The final report of Working Group 19 on "Ecosystem-based management science and its application to the North Pacific".
- → The activities of the section on climate change effects on marine ecosystems, which has convened 12 workshops or topic sessions to date, at both PICES and ICES (International Council for the Exploration of the Seas) annual meetings and science conferences. The workshops discussed and addressed aspects of ecosystem-based fisheries management under a changing climate.
- → Two current joint working groups with ICES on integrated ecosystem assessments (IEA) for:

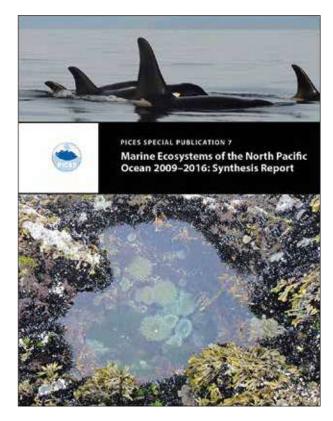
   The Central Arctic Ocean (WG39 working-groups PICES North Pacific Marine Science Organization), and 2) The Northern Bering and Chukchi Seas (WG44 working-groups PICES North Pacific Marine Science Organization).
- → Fisheries and ecosystem-based management is also one of the key topics to be addressed by SmartNet, the PICES-ICES United Nations Decade of Ocean Science for Sustainable Development programme. Further details can be found here and will continue to be posted as the programme develops over the rest of the Decade: SmartNet (ices.dk).

#### FOR MORE INFORMATION:

www.pices.int

### **Upcoming PICES events**

- → The ICES/PICES/FAO International Symposium on "Small Pelagic Fish: New Frontiers in Science for Sustainable Management" will take place on 7-11 November 2022 in Lisbon, Portugal. More information can be found here: 2022 Pelagic Symposium - Scope - PICES.
- → The PICES/ICES/FAO/IOC/IMR International Symposium on "Effects of Climate Change on the World's Ocean 5" will take place on 17–21 April 2023 in Bergen, Norway. More information can be found here: 2023 5th Climate Change Symposium - Background - PICES.





# **PSC**

#### **Pacific Salmon Commission**

### News from PSC

by John Field, Executive Secretary

The PSC has released its report on incorporating environmental indicators in salmon assessment models, and the limitations in doing so. As the North Pacific ecosystem experiences climate change, it is widely recognized that salmon productivity and ecology are also changing. Salmon forecasting and assessment methods must incorporate this change, and the report summarizes discussions from the 11 May 2021 PSC workshop on the topic including recommendations for future action. See details on the publications section of PSC website.

On a related matter, the PSC has launched a series of monthly seminars on climate change, Pacific salmon, and the associated management challenges. To date, topics have included heatwaves and ocean blobs, salmon range expansion to the Arctic, indigenous knowledge systems, and management strategy evaluations. Live events are restricted to PSC delegates, but all sessions are recorded and posted on our YouTube channel.

Somethander Haggs.

Finally, the PSC is also working with the North Pacific Marine Science Organization (PICES) to finalize a memorandum of understanding (MOU) between the two organizations. Both have a shared interest in Pacific salmon productivity and overlapping geographic areas of focus. A more formal relationship would be mutually beneficial: PICES could provide access to relevant marine ecosystem science through platforms such as workshops and topic sessions at annual meetings, and the PSC can provide salmon research focus and access to salmon data for PICES scientists. Improvements in our understanding of climate change and marine factors affecting Pacific salmon population dynamics can lead to advancements in population modeling and stock assessment research.

The collaboration would contribute to the success of both organizations by:

- enhancing the current understanding of Pacific salmon status and trends, climate change impacts and associated management implications;
- promoting the collection of, and access to, data, models and other information; and
- identifying gaps in knowledge and needs to be addressed.

It is hoped the MOU will be approved by the respective governing bodies in late 2022 or early 2023.

#### FOR MORE INFORMATION:

www.psc.org

PSC YouTube channel: https://bit.ly/3FzMdf9

# **SIOFA**

### **Southern Indian Ocean Fisheries Agreement**

### News from SIOFA

by Thierry Clot, Executive Secretary of SIOFA

The SIOFA Secretariat is located in Saint-Denis, Réunion Island. Though operates with a relatively small staff, efforts are under way to explore the possibility of expanding the organization's headquarters and personnel.

A new science officer was recruited at the start of 2022 and has given a significant positive impetus to the coordination of scientific work in SIOFA's activities.

Efforts have been made to secure additional funding and boost the number of scientific projects carried out, with the aim of significantly advancing knowledge in the SIOFA area.

Many meetings have taken place virtually in recent years. While these have been effective, SIOFA is looking forward to returning to physical meetings. The next meeting of the parties and compliance committee meetings were held in June–July 2022 in Réunion Island, allowing for the virtual participation of those delegations unable to travel, in a hybrid format. Along the same lines, the 2023 meeting of the SIOFA Scientific Committee and its subsidiary bodies is scheduled to take place in Tenerife, Canary Islands.

Progress has been made towards increased cooperation with other organizations, especially CCAMLR and IOTC.

#### FOR MORE INFORMATION:

www.apsoi.org



# **SPRFMO**

### **South Pacific Regional Fisheries Management Organisation**

### News from SPRFMO

In January 2022, SPRFMO held its Tenth Commission meeting (COMM10), Ninth Compliance and Technical Committee (CTC9), and Ninth Finance and Administration Committee (FAC9). The Ninth Scientific Committee meeting was held in September/October 2021 – all of these were held virtually using the Microsoft Teams platform.

The SPRFMO Scientific Committee meeting (SC9) took place over five days, with two threehour sessions per day, and attracted over 150 participants. The meeting reviewed and assessed over 80 working papers and provided recommendations on a wide range of issues, including: new TAC recommendations, stock assessment development, VME protection, deepwater issues, squid management, and habitat monitoring. The commission accepted and endorsed the SC9 report and appreciated the substantial progress made. Significantly, the SC held 3 remote workshops and 13 web meetings over the course 2021, prior to SC9, to move forward with the workplan and manage the SC workload more effectively throughout the year.

The SPRFMO annual meeting (comprised of CTC9, FAC9 and COMM10) took place over 10 days (albeit with rest days) from 18 to 28 January 2022. Despite the limitations of a virtual format, COMM10 was able to adopt several decisions including, inter alia: the SC multiannual workplan; the 2022/23 budget and associated contributions; accreditation for two observer programmes (Republic of Korea and Taipei, Taiwan Province of China); the 2022 Final Compliance Report and IUU Vessel List. In addition, CNCP status was renewed for three delegations (Curaçao, Liberia

and Panama) and granted to Belize as a first-time applicant. Amendments to eight conservation and management measures and the adoption of one new CMM (NZ Exploratory Toothfish) was also achieved.

Memoranda of understanding have been extended with CCAMLR and CPPS. A proposal for SPRFMO to join the IMCS Network was endorsed and SPRFMO's participation in the GEF-funded FAO ABNJ Deep Seas Project was approved. In compliance-related initiatives, the SPRFMO Compliance Manager, Mr Randy Jenkins, continues to serve as the chairperson for the informal Pan-Pacific Fisheries Compliance Network.



Mr Luis Molledo, European Union, continues as the Chairperson of the Commission, with Mr Michael Brakke, United States of America, as the Vice-Chairperson. The Compliance and Technical Committee elected Ms Katherine Bernal, Chile, as the new CTC Chairperson. Mr Jimmy Villavicencio, Ecuador, continues as the Finance and Administration Committee Chairperson, and Mr Andres Couve, Chile, was appointed as FAC Vice-Chairperson. Dr Jim Ianelli, United States of America, continues as the Scientific Committee Chairperson, with Dr Niels Hintzen, European Union, as the SC Vice-Chairperson. The organization welcomed a new Data Manager, Dr Tiffany Vidal, from the United States of America, who began work with the secretariat in November 2021.

The full report of the commission and all related documents are available on the SPRFMO website.

### **Upcoming meetings of SPRFMO:**

- → Tenth Meeting of the Finance and Administration Committee 2023 (FAC 10), Manta, Ecuador, 6–15 February 2023
- → Tenth Meeting of the Compliance and Technical Committee 2023 (CTC 10), Manta, Ecuador, 6-15 February 2023
- → Eleventh Meeting of the Commission 2023 (COMM 11), Manta, Ecuador, 6-15 February 2023

### FOR MORE INFORMATION:

www.sprfmo.int



# WECAFC

### **Western Central Atlantic Fishery Commission**

### **News from WECAFC**

The WECAFC region has been very active and incredibly productive in the lead-up to the Eighteenth Meeting of the Commission, the meeting of the scientific advisory committee (SAG), and the celebration of the International Year of Artisanal Fisheries (IYAFA).

- The scientific advisory group (SAG) met virtually from 25 to 27 April 2022. The meeting was attended by more than 30 observers, conveners of 11 working groups, and SAG members. The SAG reviewed the state of fisheries in the region, received updates and recommendations from working groups, and discussed other emerging and continuing issues of concern for the region. The endorsed conservation and management measures, together with other instruments and information of a scientific and technical nature, are slated to be tabled at the commission's next session.
- 2. The Eighteenth Session of the WECAFC Commission will be held on 26–29 July, hosted by the Government of Nicaragua. This is the commission's highest level of decision-making, at which Member States will debate critical issues in the region and set the priorities and actions for the next biennial period. More information on this event can be accessed on the webpage of the Eighteenth Session of the Western Central Atlantic Fishery Commission (FI-739-18). In the meantime, below a snapshot of highly relevant matters to be discussed as part of deliberations:

- → 2022-2027 strategic plan
- → Revised Rules of Procedure
- → Strategic reorientation
- → Data collection reference framework (DCRF) in the WECAFC area
- Regional "Fish Spawning Aggregation Fishery Management Plan: Focus on Nassau Grouper and Mutton Snapper" (FSAMP).
- Regional Strategy on the Management of bycatch and discards in Latin American and Caribbean [WECAFC] bottom trawl [shrimp and groundfish] fisheries
- Regional Plan of Action for the Conservation and Management of Sharks, Rays and Chimaeras in the WECAFC area
- → The Caribbean Regional Management Plan for the Moored Fish Aggregating Device (MFAD)
- → Effects of the COVID-19 pandemic on the fisheries and aquaculture sector in the region and responses for recovery
- → Safety at sea and decent work in fisheries and aguaculture in the region
- → International Year of Artisanal Fisheries and Aquaculture (IYAFA) 2022
- Updates on the UN Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction.



- Since the last RSN Magazine, several working groups have met virtually to consider important scientific and management issues. These included moored fisheries aggregating devices (MFADs), shark conservation and management, and queen conch.
- 4. The WECAFC Secretariat is continuing to implement several externally funded projects. The StewardFish and CC4Fish projects hosted by the secretariat officially set to close on 30 June and 31 August respectively were positively evaluated by local, national and regional stakeholders.
- 5. The European Union DG-MARE successfully reviewed and funded a project proposal to support the secretariat's efforts to coordinate the celebration of IYAFA 2022 in the commission's area of competence. It also has a component on raising scientific evidence and building capacity for the effective implementation of the regional conservation and management of queen conch. Furthermore, preparations are ongoing for additional proposals to the EU DG-MARE programme on actions relating to the management of fish spawning aggregations
- 6. IYAFA 2022 is actively being celebrated in the region. The regional coordination has selected 25 champions, including fisheries ministers and directors, researchers, fishworkers and fish farmers, as well as civil society organizations. In addition, there are ongoing preparations for the first-ever regional Women in Fisheries Forum to be held at the Gulf and Caribbean Fisheries Institute meeting in November.

### FOR MORE INFORMATION:

www.fao.org/fishery/rfb/wecafc/en Eighteenth session of WECAFC: www.fao.org/fishery/en/meeting/41343







### **CONTRIBUTIONS FROM:**

Letter 1: From ATLAFCO

Letter 2: From BOBP-IGO

Letter 3: From ICCAT

Letter 4: From IPHC

Letter 5: From NAFO

Letter 6: From NAMMCO

Letter 7: From NASCO

Letter 8: From SIOFA

Letter 9: From SPRFMO

Letter 10: From WECAFC



# Letter 1

### From: **ATLAFCO**





I would like to address the theme of artisanal fishing and the blue economy: Find a balance between the development of all activities and the need to ensure the continuity and stability of the more traditional activities, taking into account the socio-economic role of artisanal fishing.

Artisanal fishing is of cardinal importance in almost all African countries. It is the main component of the blue economy, both in terms of employment and poverty reduction. The condition and livelihoods of artisanal fishing communities are intimately linked to the state of ocean ecosystems.

The development of new activities within the framework of the blue economy, represents potential risks (various types of pollution) on the marine environment and marine ecosystems, as well as increasingly aggressive spatial competition with traditional activities such as fishing. To derive maximum benefit from the development of the blue economy in our region we must be cautious and careful in the application of blue economy strategies. This includes the expansion of industrial aquaculture, marine protected areas, the tourism industry, mining and other developments under the guise of sustainable use of marine resources.

A balance must be struck between the development of all activities and the need to ensure the continuity and stability of more traditional activities, considering the socioeconomic role of artisanal fishing. Thus, care must be taken not to encroach on fishing areas and deprive artisanal fishing communities, and in particular women, of food and sustainable livelihoods, which can have serious consequences. It is a question of integrating the social issues pertaining to coastal communities, in addition to the need for their participation in the decision-making processes that affect them. In any strategy for the development of the blue economy, special attention should be given to artisanal fisheries, as a vulnerable and fragile sector, with the constant concern to promote the sustainable development of coastal communities.

Best wishes,

Abdelouahed BENABBOU Executive Secretary of ATLAFCO











### Letter 2

From: **BOBP-IGO** 



Dear RSN Members,

Greetings from BOBP-IGO!

The ecosystem approach to fisheries (EAF) is widely recognized as a means of achieving sustainable fisheries management, while one of the barriers limiting the transition from traditional management is adjusting to a new regime of evidence-based decision-making. Science-based policy and regional cooperation are the heart and soul of the EAF.

Collaborative research programmes at the regional level are crucial for an improved understanding of shared resources, effective coordination among stakeholders and more harmonized policymaking. Nearly all scientific research from the BOB region is carried out in collaboration with the Global North, which could be attributed to the history of scientific development. The issue of concern is that this trend has not reversed: rather, it has strengthened over time, despite noticeable growth in the number and size of fisheries R&D agencies in the region.

Recognizing this, the BOBP is taking steps to create networks for the region's university students in order to implement joint programmes. We have launched the BOB-Policy Research Group (BOB-PRG), a virtual and voluntary platform enabling researchers both young and experienced to network, and the early responses are quite encouraging. We hope that our efforts will contribute to the UN Decade of Ocean Science for Sustainable Development to "initiate a coordinated framework responding to regionally driven priorities to improve the scientific knowledge base".

We will keep you posted about our progress and would also like to hear from you about the status and initiatives to promote regional research among your Member Countries.

Warm regards,

P. Krishnan Director, BOBP-IGO











From: **ICCAT** 

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Dear Colleagues,

**Letter 3** 

I would like to relate the International Commission for the Conservation of Atlantic Tunas' experience in the implementation of an ecosystem approach to fisheries management.

First, ICCAT's experience in the implementation of an ecosystem approach to fisheries management is based on assessing the impacts of fishing on the ecosystem; this is primarily achieved through the assessment and management of the main target species. The assessment of target and bycatch species is conducted by scientific working groups dedicated to this purpose. There are several; they include sharks, Atlantic bluefin tuna, billfish, small tunas, swordfish, albacore and tropical tunas. In addition to these assessments, which support the maintenance of these stock at levels at or above maximum sustainable yield, some assessments integrate environmental variability into the advice, or are currently exploring the use of this environmental variability. Supporting the mandate to assess fishing impacts is a complex system for data reporting, data management, research programmes, stock assessment, and decision-making.

In addition to assessing the impact of fishing on target species, ICCAT has a subcommittee on ecosystems and bycatch. This subcommittee addresses broader ecosystem considerations such as sea turtle and seabird bycatch, as well as studies and measures to mitigate bycatch and its effects on species impacted by ICCAT fisheries. It has initiated impact evaluations of seabirds, sea turtle and bycatch shark species at several scientific meetings. Finally, the subcommittee on ecosystems is developing an ecosystem report card for ICCAT, including the development of status indicators, pressure indicators and reference levels.

Second, in 2019 the ICCAT Convention text was amended to encompass a broader mandate than had been previously considered. Specifically Article IX 1(a) states that:

"The Commission may, on the basis of scientific evidence, make recommendations designed to: (i) ensure in the Convention area the long-term conservation and sustainable use of ICCAT species by maintaining or restoring the abundance of the stocks of those species at or above levels capable of producing maximum sustainable yield; (ii) promote, where necessary, the conservation of other species that are dependent on or associated with ICCAT species, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened."

It is important to note that ICCAT's experience in implementing elements of the ecosystem approach to fisheries management predates the amendment to the convention text. In practice, ICCAT has been addressing concerns related to non-target species for some time. In 2015, ICCAT's Recommendation 15-11 states that when making recommendations pursuant to Article VIII of the convention, the commission should apply an ecosystem approach

to fisheries management. Moreover, ICCAT currently has 20 active recommendations addressing bycatch species. These were implemented as early 1995 to address shark bycatch (see link), 2007 for birds, and 2010 for sea turtles.

Thirdly, ICCAT contracting parties take socioeconomic aspects into consideration within their discussions about management measures and explicitly so when making allocation decisions. For example, Recommendation 15-13 sets out criteria for this purpose that explicitly considers, *inter alia*:

- → the interests of artisanal, subsistence and small-scale coastal fishers;
- → the needs of the coastal fishing communities, which are dependent mainly on fishing for stocks;
- → the needs of the region's coastal States, whose economies are overwhelmingly dependent on the exploitation of living marine resources, including those regulated by ICCAT;
- → the socioeconomic contribution, for stocks regulated by ICCAT, of fisheries to developing states, notably Small Island Developing States and developing territories from the region;
- → the respective dependence on the stock(s) of coastal states, and of the other states that fish species regulated by ICCAT;
- → the economic and/or social importance of the fishery for qualifying participants whose fishing vessels have habitually participated in the fishery in the convention area;
- → the contribution of the fisheries to the national food security/needs, domestic consumption, income resulting from exports, and the employment of qualifying participants, for the stocks regulated by ICCAT; and
- → the right of qualified participants to engage in fishing on the high seas for the stocks to be allocated.

Finally, ICCAT conducts a range of work on biometry, ecology, and oceanography, with a principal focus on the effects of fishing on stock abundance, including stock assessment, as well as management strategy evaluation (MSE) for major stocks. In addition, it undertakes bycatch fisheries monitoring, including the management of fish aggregating devices (FADs), live and dead discards.

Best wishes to you all.

Camille Jean Pierre MANEL ICCAT Executive Secretary











# From: **IPCH**



Dear Colleagues,

**Letter 4** 

The IPHC completed its Ninety-eighth Annual Meeting in January 2022, unanimously agreeing on a total exploitation yield mortality for Pacific halibut of 18 697 tonnes for 2022. The Pacific halibut biomass appears to be stable after a multi-year decline that lasted into the early 2010s: this was primarily caused by decreasing size at age, and recent low recruitment into the population.

The primary function of the IPHC is understanding the biology and ecology of Pacific halibut and the fisheries they support; and it serves the larger fisheries community by contributing knowledge that can be applied to other north Pacific fish species. One strength of the IPHC is its ability to foster collaborations with stakeholders and other agencies that involve species interactions. An example of this was a project that brought together stakeholders, manufacturers and scientists to discuss and brainstorm ideas to protect longline catches of fish from whale depredation. Depredation has become a problem in fisheries around the world. Not only does depredation reduce the yield and increase the effort expended by harvesters, it may endanger the whales if they become entangled in the gear.

Now that the COVID-19 pandemic is easing, the secretariat looks forward to fully engaging with stakeholders throughout the convention area.

Warm regards,

David T. Wilson Executive Director









**Letter 5** 

From: **NAFO** 



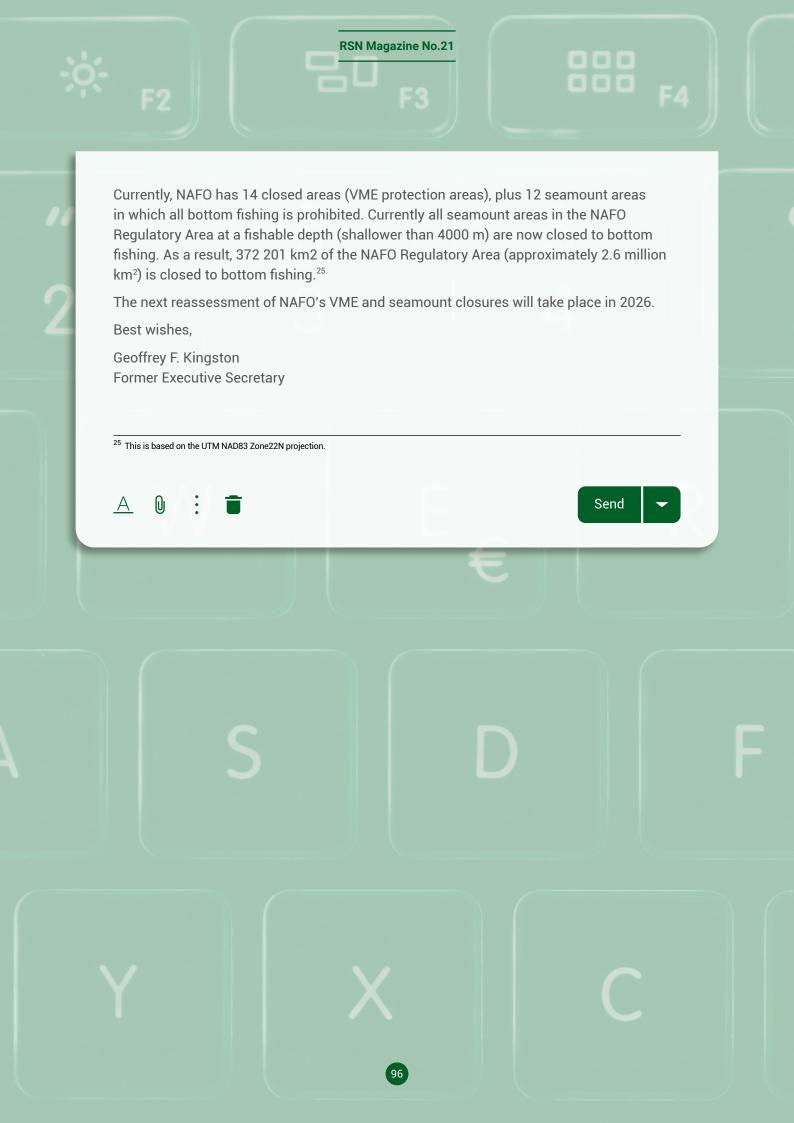
Dear Members,

In 2005, NAFO began the process to formulate and adopt measures to implement an ecosystem approach to fisheries in the NAFO Regulatory Area. In 2007, NAFO amended its convention in order to incorporate, inter alia, an ecosystem approach to fisheries management. Since then, the organization has made significant progress.

NAFO has two working groups focused on the ecosystem approach, namely the Scientific Council Working Group on Ecosystem Science and Assessment (WG-ESA), and the Working Group on the Ecosystem Approach Framework to Fisheries Management (WG-EAFFM). The WG-EAFFM was established as a joint group between the commission and scientific council to establish better dialogue between the two NAFO constituent bodies and to provide recommendations for commission decisions in this area. The focus of these working groups has been the protection of vulnerable marine ecosystems (VMEs), but recently more work is being done on an overall ecosystem approach.

On the latter, NAFO has also developed a comprehensive ecosystem approach road map which involves the development of ecosystem production modeling, multispecies assessments, and single stock assessment as part of a three-tiered approach. NAFO has also been focusing on the development of ecosystem summary sheets as a means of communicating ecosystem-level advice to managers. In August, NAFO had an ecosystem approach workshop planned with the goal of drafting specific ecosystem level objectives for the road map and identifying elements to achieve them.

NAFO has relied heavily on area-based management tools to protect VMEs in the NAFO Regulatory Area, in particular area closures. The first NAFO closures – of four seamount areas to bottom fishing – started in 2006. Since then, NAFO has put in place multiple measures to protect VMEs. These include thresholds for encounters with VMEs within the existing bottom fishing areas (e.g. "move on" rules) and prohibiting bottom fishing in fishing areas outside of the established fishing footprint, except under a specific exploratory fishery protocol. NAFO also reassesses its bottom fishing activities every five years.



### **Letter 6**

### From: **NAMMCO**



Dear All,

Since its inception, NAMMCO has acknowledged that marine mammals, like other living resources, are part of a much larger whole, and that resource management is the management of human activities. An ecosystem approach to human removals is not only warranted but required.

Discussing the sustainability of a resource requires identifying and quantifying all the human activities that impact it, and balancing their effects as effectively as possible. All these impacts, and their cumulative effects, must be included in population modelling and forecasting. Impacts can be immediate and direct (e.g. hunting, bycatch) or indirect and longer-term (e.g. reduction in sea ice, pollution, noise).

Ensuring both sustainability and responsibility requires periodic assessments of the hunted marine mammal populations/stocks, and careful management of the human activities impacting these populations. In an effort to implement such an approach, since 2017 the mandate of scientific working groups has included, at the request of the NAMMCO Council, the need to consider and discuss the existence, range, and influence of all anthropogenic impacts.

In December 2022 NAMMCO will organize a disturbance workshop to assess the anthropogenic impacts of mining, as well as the related shipping and ice-breaking, on marine mammals activities in Canada and Greenland. In doing so, it will look at the behavioural response and the population responses and including demographic changes and the consequences it may have on sustainable catches.

Best regards,

NAMMCO Geneviève Desportes General Secretary











### **Letter 7**

### From: **NASCO**



Dear Colleagues,

The establishment of NASCO in 1984 resulted in major reductions in harvests of wild Atlantic salmon. Those salmon fisheries which do occur within the permitted areas have been assessed by ICES as having "no, or only minor, influence on the marine ecosystem".

During NASCO's last Performance Review, it was noted that:

"The ecosystem approach is highly relevant to the management of Atlantic salmon stocks, which have a complex life cycle and are vulnerable to threats at each stage of their development, covering spawning areas, juvenile habitat, migration routes and feeding areas in the ocean... The ecosystem approach is particularly relevant to NASCO in terms of its international role in addressing the impact of fishing; not just fishing targeted on salmon, but fishing for other species in areas of salmon migration or high seas feeding grounds. (CNL(12)11, section 5.4.2)."

The ecosystem approach remains highly relevant to the management of Atlantic salmon. The Third Performance Review of NASCO takes place this year (2022). In the terms of reference for the performance review, one of the criteria is the "Extent to which NASCO has adopted and applied an ecosystem approach" CNL(21)22. We eagerly look forward to receiving the review panel's report in spring 2023.

Kind regards,

NASCO Emma Hatfield Secretary











### **Letter 8**

# From: **SIOFA**



Dear Friends,

Despite being a "young' RFMO, SIOFA has made significant steps forward to ensure, as per Article 2 of the Agreement:

"The long-term conservation and sustainable use of the fishery resources in the Area through cooperation among the Contracting Parties, and to promote the sustainable development of fisheries in the Area, taking into account the needs of developing States bordering the Area that are Contracting Parties to this Agreement, and in particular the least developed among them and small island developing States."

While not yet operationally ready to address complex issues such as the ecosystem approach to fisheries, progress has been made in several directions that might enable a broader approach to fisheries management in the future. From the resource stocks perspective, harvest strategies are being explored and will be the focus of further considerations in 2023. Similarly, new work is being prepared to model the distribution of species and assess protected areas, and gain further knowledge on the demersal habitats of the high seas of the Indian Ocean.

Best regards,

Thierry Clot
Executive Secretary











Letter 9

# From: **SPRFMO**



Dear Members,

The ecosystem approach to fisheries management (EAF) is embedded within the SPRFMO Convention. It forms part of the organisation's objective to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems that are home to these resources. The SPRFMO Commission is mindful that effective conservation and management measures (CMMs) must be based on the best scientific information available, as well as the application of the precautionary approach and an ecosystem approach to fisheries management.

By adopting an integrated approach to the above, SPRFMO decisions are considered with reference to the functioning of the wider marine ecosystems in which they occur. Some examples include the ecosystem-based elements in bottom fisheries, and prohibiting the use of large-scale pelagic driftnets and deepwater gillnets. We might also point to SPRFMO's efforts to minimize the bycatch of seabirds, its procedures for the management of new and exploratory fisheries, and its conservation and management measures (CMM) on fishing gear and marine plastic pollution in the SPRFMO Convention Area.

One of the primary functions of the SPRFMO observer programme is to collect scientific information that can be used for the effective assessment and management of SPRFMO fisheries resources. This includes information on both target species and bycatch, as well as how fishing activities interact with the environment and species in the convention area, in order to corroborate future scientific advice, while also considering ecosystem factors. It is notable that, since 2021, five national programmes have achieved SPRFMO accreditation, and others are currently going through the accreditation process.

Following the first SPRFMO performance review, the scientific committee continues to build on its multi-year workplan. The plan incorporates an EAF, including: work on non-target and associated or dependent species, delivery of bottom fishery impact assessments including work on VMEs, habitat monitoring and associated external environmental drivers, engaging with other ABNJ initiatives, and supporting research in the Nazca and Salas y Gomez ridges area.

Regards,

SPRFMO Craig Cloveridge Acting Executive Secretary









### Letter 10

From: WECAFC



Dear Colleagues,

The WECAFC region sends you its warmest wishes and is proud to share our regional efforts towards greater recognition of the ecosystem approach to fisheries and our celebration of the International Year of Artisanal Fisheries. We will close by highlighting a newly implemented climate change adaptation project in Belize, a WECAFC Member State.

Recognizing the importance of a holistic management approach, efforts have been ongoing to contribute to the preparation of a project concept for funding by the GEF. The project – "Enhancing capacity for the adoption and implementation of EAF in the shrimp and groundfish fisheries of the North Brazil Shelf Large Marine Ecosystem (EAF4SG)" – comes at a critical time for the region. The marine environment is degrading rapidly, which leads to an unsustainable use of the resources, habitat destruction, and pollution.

Within the three project countries – Guyana, Suriname and Trinidad and Tobago – shrimp and groundfish species are vital to the countries' revenue and fisher livelihoods. However, there is clear evidence of their over-exploitation and weak governance approach. This project will bring together key components to increase capacity development in the Member States.

Key project components will be:

- → development of EAF management information systems;
- → strengthening the governance arrangements for EAF management;
- → leveraging business opportunities to promote sustainable fishing practices; and
- creating an enabling environment for knowledge management and lesson learning associated
   with the Caribbean Large Marine Ecosystems plus Strategic Action Plan (CLME+SAP)
   priorities.

Not only can the project be scaled up to other regions, it will significantly move the region and Member Countries towards a more sustainable and equitable approach to managing its fisheries and associated habitats.

At the same time, the region is actively celebrating the International Year of Artisanal Fisheries and Aquaculture, with generous support from the European Union DG-MARE. Two very important activities this year demand highlighting. First, facilitated by the secretariat, the regional coordination committee selected 25 IYAFA champions from across the region.

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These champions represent individuals and organizations who demonstrate exemplary commitment to safeguarding the region's social and ecological sustainability of small-scale fisheries and aquaculture. Next, capitalizing on the momentum provided by the year, planning has begun to host the first regional Women in Fisheries Forum, alongside the Gulf and Caribbean Fisheries Institute Meeting in November. This event will bring together women from across the region and the small-scale fisheries and aquaculture (SSF/A) value chain to discuss, share and unpack the visible and invisible barriers women face within the fisheries and aquaculture sector. The session is still being developed, but discussions around financial security, insurance, business development and asset building are among the proposed topics. We anticipate sharing details of this significant event soon.

Lastly, we would like to highlight two projects supported by the climate finance community: the Green Climate Fund (GCF) projects in Saint Lucia, and the project launched in Belize. Both projects have similar aims. The Belize project enhances adaptation planning and increases climate resilience in the coastal zone and fisheries sectors. The project was launched earlier this year (2022). The goal is to increase the resilience of Belize's coastal zone and fisheries sectors to climate change impacts. This includes: improving data and information systems related to climate change; developing a comprehensive adaptation plan for the sectors; prioritizing adaptation options; and developing a concept note for the GCF on one of the prioritized project ideas for the fisheries and coastal zone sectors.

Supporting women's equitable participation in climate change adaptation and mitigation measures to achieve far-reaching conservation impacts, improved community responsiveness, and the successful implementation of climate-related policies, is central to the above. Three primary outcomes include: a stronger governance of adaptation planning and institutional coordination; the provision of evidence to design adaptation solutions for maximum impacts in Belize; and an increase in adaptation finance.



Group presentation at Monkey River Village Community Center: Fifth Women in Fisheries Forum 2022 Photo: © Jeffy V. Gomez, National Project Coordinator

By highlighting these three experiences from our region, we have sought to demonstrate that our approach to mainstreaming EAF is multifaceted and innovative. Indeed, we recognize that to achieve this objective we must also work to strengthen the supporting components, including the resource users and the impact of climate change on this approach. We are confident that the lessons learned from these initiatives will provide valuable insights for our region and other subregions.

Best,

Yvette Diei-Ouadi Secretary









Send













# **CONTRIBUTIONS FROM:**

**ATLAFCO:** Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean

**BOBP-IGO:** Bay of Bengal Programme – Inter-Governmental Organisation

IPHC: International Pacific Halibut Commission

IWC: International Whaling Commission

**NAFO:** Northwest Atlantic Fisheries

Organization

NAMMCO: North Atlantic Marine Mammal

Commission

**NASCO:** North Atlantic Salmon Conservation Organization

**PICES:** North Pacific Marine Science

Organization

**PSC:** Pacific Salmon Commission

**SIOFA:** Southern Indian Ocean Fisheries

Agreement

SPRFMO: South Pacific Regional Fisheries

**Management Organisation** 

**WECAFC:** Western Central Atlantic Fishery

Commission



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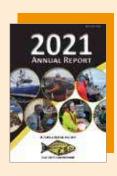




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## All publications and documents are available on the NAFO website: www.nafo.int/Publications

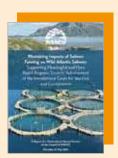
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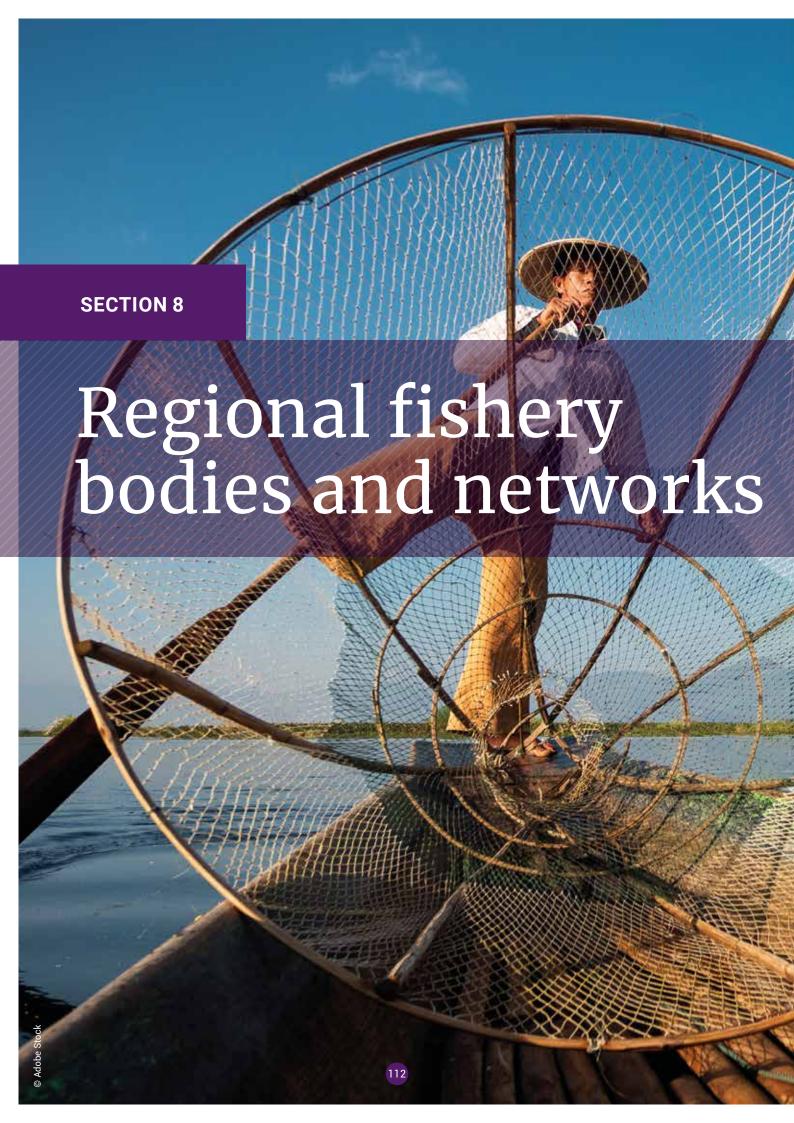
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# Regional fishery bodies and networks

Following UN Regional groups of Member States (United Nations, 2022)





# MEMBERS

	Regional fisher	ies management organizations
<b>2</b> 222 <b>2</b>	CACFish	Central Asian and Caucasus Regional Fisheries and Aquaculture Commission
	CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
	CCSBT	Commission for the Conservation of Southern Bluefin Tuna
	СТМЕМ	Joint Technical Commission of the Maritime Front
	GFCM	General Fisheries Commission for the Mediterranean
	IATTC	Inter-American Tropical Tuna Commission
	ICCAT	International Commission for the Conservation of Atlantic Tunas
	IOTC	Indian Ocean Tuna Commission
22222	IPHC	International Pacific Halibut Commission
	IWC	International Whaling Commission
22222	LVFO	Lake Victoria Fisheries Organization
	NAFO	Northwest Atlantic Fisheries Organization
	NASCO	North Atlantic Salmon Conservation Organisation
	NEAFC	North-East Atlantic Fisheries Commission
	NPAFC	North Pacific Anadromous Fish Commission
	NPFC	North Pacific Fisheries Commission
22222	PSC	Pacific Salmon Commission
2222	RECOFI	Regional Commission for Fisheries
2222	SEAFO	South East Atlantic Fisheries Organisation
	SIOFA	Southern Indian Ocean Fisheries Agreement
	SPRFMO	South Pacific Regional Fisheries Management Organisation
22222	WCPFC	Western and Central Pacific Fisheries Commission
	Regional fisher	ies advisory bodies
2222	APFIC	Asia-Pacific Fishery Commission
	ATLAFCO	Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean
	BCC	Benguela Current Convention
2222	BOBP-IGO	Bay of Bengal Programme Inter-Governmental Organisation
	CCBSP	Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea
2222	CECAF	Fishery Committee for the Eastern Central Atlantic







	CIFAA	Committee for Inland Fisheries and Aquaculture of Africa
2222	COPPESAALC	Commission for Small-Scale Artisanal Fisheries and aquaculture of Latin America and the Caribbean
22222	COREP	Regional Fisheries Commission for the Gulf of Guinea
2222	CRFM	Caribbean Regional Fisheries Mechanism
	EIFAAC	European Inland Fisheries and Aquaculture Advisory Commission
22222	FCWC	Fisheries Committee for the West Central Gulf of Guinea
2222	FFA	Forum Fisheries Agency
2222	GLFC	Great Lakes Fishery Commission
22222	LCBC	Lake Chad Basin Commission
22222	LTA	Lake Tanganyika Authority
2222	MRC	Mekong River Commission
2222	NAMMCO	North Atlantic Marine Mammal Commission
2222	OSPESCA	Organization of the Fisheries and Aquaculture Sector of the Central American Isthmus
2222	SEAFDEC	Southeast Asian Fisheries Development Center
2222	SPC	Pacific Community
22222	SRFC	Sub-Regional Fisheries Commission
2 2 <b>2 2</b> 2	SWIOFC	South West Indian Ocean Fisheries Commission
2 2 2 2	WECAFC	Western Central Atlantic Fishery Commission
	Permanent obs	ervers
2222	ACAP	Agreement on the Conservation of Albatrosses and Petrels
2222	ACFR	Advisory Committee on Fishery Research
2222	CPPS	Permanent Commission for the South Pacific
2222	CWP	Coordinating Working Party on Fishery Statistics
2222	FIRMS	Fisheries and Resources Monitoring System
2222	GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
<b>2</b> 222	ICES	International Council for the Exploration of the Sea
<b>≗</b>	NACA	Network of Aquaculture Centers in Asia-Pacific
	PICES	North Pacific Marine Science Organization
0 0 0 0	RAA	Aquaculture Network for the Americas



#### **Section 1**

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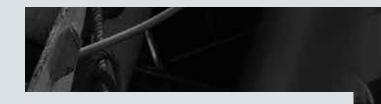
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# Regional Fishery Body Secretariats' Network

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- Delivering effective, inclusive and sustainable fisheries and aquaculture development
- Working with member states and multi-stakeholder partnerships to establish efficient accountability frameworks
- Tackling challenges and developing capacity of members

























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This magazine is based on RSN contributions from secretariats of regional fisheries management organizations, regional fisheries advisory bodies, and related networks and partners, as well as colleagues from FAO and other agencies and organizations working on matters relevant to these bodies.

The Fisheries and Aquaculture Division of FAO hosts and provides the RSN Secretariat services, the venue for biennial meetings, and works with the network day-to-day on technical and operational issues. In this context, the Secretariat will continue working with its members, partners and colleagues, to ensure, as much as possible, that voices and experiences from different regions are being considered.

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- > Regional fishery bodies and networks