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Developing Guidance for Supporting the Implementation of an Ecosystem Approach to Fisheries Management by Deep-sea RFMOs

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Abstract

The Ecosystem Approach to Fisheries (EAF) was adopted by the Food and Agriculture Organization of the United Nations (FAO) as a practical framework for fisheries management according to the Code of Conduct for Responsible Fisheries. An EAF recognises that fish and fisheries are part of and dependent upon the entire marine ecosystem and that fisheries management must balance human and ecological considerations in a comprehensive way to achieve sustainable outcomes. This paper elaborates on the inclusion of EAF in international law, the existing guidance to support EAF implementation, and the achievements and challenges remaining for the implementation of the approach by Regional Fisheries Management Organizations (RFMOs) dealing with deep sea fisheries. The implementation of EAF by the RFMOs responsible for demersal and small pelagic species is reviewed and discussed. The authors suggest that future steps should include developing and adopting specific multiannual EAF management and action plans to assist RFMOs in implementing EAF. This should include setting long-term objectives and targets. The process of developing these plans would be enhanced through discussions within joint science-management meetings and workshops within RFMOs.

Keywords: Ecosystem approach, fisheries management, EAF, EAFM, deep-sea fisheries, RFMOs, long-term management plans, targets, reference points

Introduction

The need to account for ecosystem impacts of fishing was first highlighted in international law in article 119 of the 1982 United Nations Convention for the Law of the Sea (UNCLOS, 1982) and reiterated in the 1995 United Nations Fish Stocks Agreement (UNFSA, 1995). The FAO Code of Conduct for Responsible Fisheries (CCRF; FAO, 1995) expanded on the need to maintain important societal benefits associated with fisheries, while ensuring the conservation of stocks and ecosystems. The political commitment to incorporate ecosystem considerations in fisheries management was consolidated in the 'Reykjavík Conference on Sustainable Fisheries in the Marine Ecosystem' in 2001, which has led to the formulation of an ecosystem approach to fisheries (EAF) and its basic principles, based on FAO's perspective (FAO, 2001). The FAO technical guidelines on the ecosystem approach to fisheries describes that: "*An ecosystem approach to fisheries (EAF) strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties of biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries*" (FAO, 2003, Section 1.2, page 14.). To facilitate implementation of these guidelines, FAO prepared various supplements and tools, including Best Practices in Ecosystem Modelling (FAO, 2008), and The Human Dimension to EAF (FAO, 2009a). These have been further supported by FAO developing an EAF Toolbox, an Implementation Monitoring Tool, and a comprehensive e-learning package (FAO, 2012, 2021a, 2023). At the core of FAO's ecosystem approach is the recognition that fisheries management must balance human needs with ecological sustainability, weighing the trade-offs to ensure long-term use.

Seven RFMOs[1] and the Commission for the Conservation

1 General Fisheries Commission for the Mediterranean (GFCM); Northwest Atlantic Fisheries Organization (NAFO); North East Atlantic Fisheries Commission (NEAFC); North Pacific Fisheries Commission (NPFC); South East Atlantic Fisheries Organization (SEAFO); Southern Indian Ocean Fisheries Agreement (SIOFA); South Pacific Regional Fisheries Management Organization (SPRFMO).

of Antarctic Marine Living Resources (CCAMLR) manage demersal and small pelagic finfish and shellfish species in areas beyond national jurisdiction (ABNJ). They are collectively referred to as deep sea RFMOs (dsRFMOs) from here on. Half of them (GFCM, NAFO, SIOFA and SPRFMO) make direct reference to the application of the ecosystem approach to fisheries in their convention or agreement texts. For instance, Article 8 of the Agreement establishing the GFCM recognizes as one of the functions of the Commission "*to adopt multiannual management plans applied in the totality of the relevant subregions based on an ecosystem approach to fisheries…*". Likewise, Article 4(a) of the SIOFA Agreement includes as part of the general principles that "*measures shall be adopted on the basis of the best scientific evidence available to ensure the long-term conservation of fishery resources, taking into account the sustainable use of such resources and implementing an ecosystem approach to their management*". All the deep sea RFMOs (dsRFMOs) are mandated under UNCLOS and UNFSA to ensure that they consider the effects of fishing on the wider ecosystem and make explicit reference to this in their agreements. For instance, Article 4(2)(c) of NEAFC's Convention indicates that in making recommendations the Commission shall "*take due account of the impact of fisheries on other species and marine ecosystems, and in doing so adopt, where necessary, conservation and management measures that address the need to minimise harmful impacts on living marine resources and marine ecosystems*".

The interpretation of what an ecosystem approach to fisheries management (EAFM) entails, however, differs among the Conventions of dsRFMOs. Most commonly, it is interpreted to include ecological considerations such as non-target and associated or dependent species, as well as the general obligation to protect and preserve the marine environment, for example, as written into the SPRFMO Convention (see Art. 3, Para 1(a)(ii); SPRFMO, 2022). However, some dsRFMOs, such as GFCM, also include social and economic considerations (Art. 2, Para. 2; GFCM, 2014) and NEAFC note that their fisheries should provide sustainable economic, environmental and social benefits (Art. 2; NEAFC, 2006). CCAMLR, formed under the Antarctic Treaty (1959), has a wider ecological remit than the dsRFMOs.

There is a tendency to regard EAFM as a scientific exercise, with scientific committees providing advice to the managers on, for example, reducing impacts on vulnerable taxa like seabirds and deepwater sharks, and to protect fragile benthic habitats from bottom fishing such as vulnerable marine ecosystems. Instead, EAFM is wider and aims to improve fishery management processes by applying risk management principles to determine management actions appropriate to the level of risk posed by the identified issues, including ecological, socioeconomic, and governance issues affecting the sustainable use of resources (FAO, 2012; Fletcher, 2020). Much of these are already considered by the dsRFMOs but not necessarily recognized as part of an EAFM. A greater understanding of an EAFM approach within each dsRFMO would be supported by the development of guidance documents. This could be achieved in joint science-management fora to ensure equal participation of the constituent bodies and to lessen the time taken for formal communication between these bodies (which typically meet only once a year). This would also improve implementation, increase transparency, and provide a wider appreciation of the work of the dsRFMOs.

This paper provides the rationale for the development of guidance for supporting the implementation of EAFM by dsRFMOs. It provides an overview of existing guidance available on the implementation of EAFM, highlights key gaps in implementation, and makes the case for the development of further guidance on the implementation of EAFM specific to dsRFMOs. An extended version of this paper was provided as background information and direction to the Symposium "*Applying the Ecosystem Approach to Fisheries Management in the ABNJ*" held at FAO, Rome on 11–13 March 2025 and formed the basis for an introductory presentation (Thompson, 2025).

Existing guidance for applying EAFM to deep sea fisheries in ABNJ

The FAO EAF Technical Guidelines and the supplements

The FAO 2003 Technical Guidelines for the Ecosystem Approach to Fisheries (EAF Guidelines for here on) was developed to supplement and provide a practical approach to implement the CCRF. They also support UNCLOS by providing guidance to States by elaborating on "*In determining the allowable catch and establishing other conservation measures for the living resources in the high seas, States shall: (a) take measures which are designed, on the best scientific evidence available to the States concerned, to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global; (b) take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened."* (UNCLOS, 1982, Art. 119; see also FAO, 1995, Para. 6.1 & 6.2).

The EAF Guidelines also places the requirements within UNCLOS in a more holistic framework recognising that fisheries are made up of ecological, social and economic

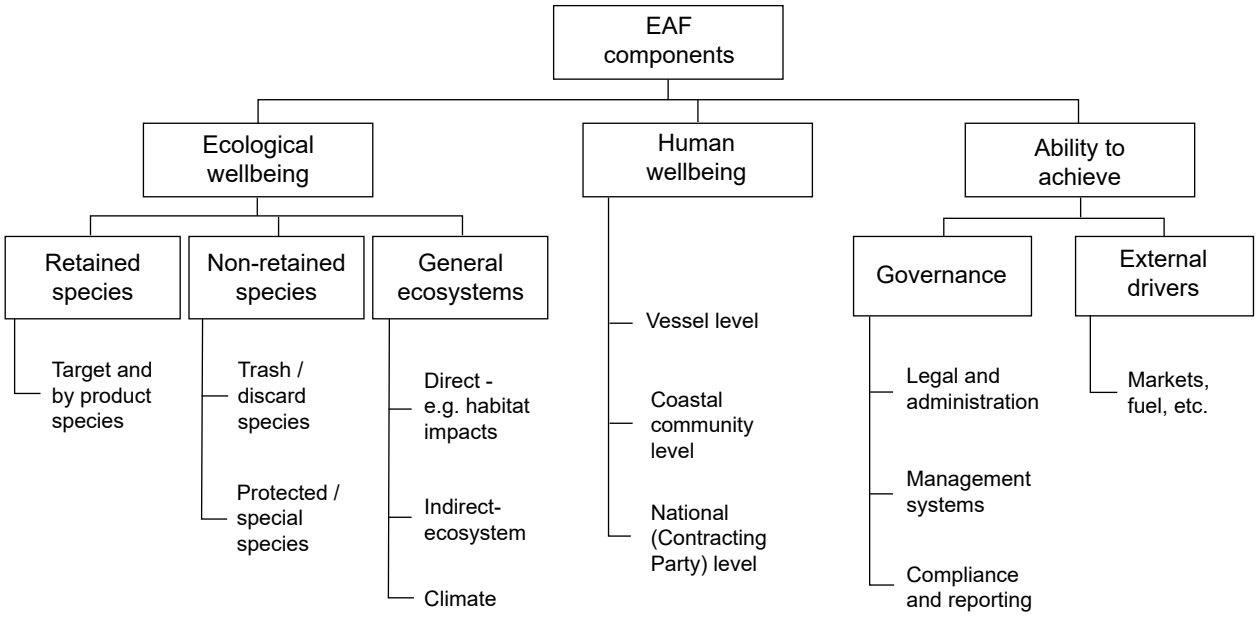

Fig. 1. The 13 key EAF components. Redrawn from Figure 2 of Fletcher (2020).

dimensions and that effective implementation requires a well-structured governance system. Further, greater realisation regarding human impacts on the environment was developing quickly at the turn of the century, promoted by Agenda 21 (UNCED, 1992), the Reykjavik Declaration (FAO, 2001), and the Earth Summit (WSSD, 2002), making the EAF Guidelines timely. However, the EAF Guidelines have no legal status and are an aid to help managers, scientists, and various stakeholder groups, promoting an understanding of the importance of EAF in fisheries management and provide guidance on implementation.

EAF is promoted by FAO as a risk-based management planning process that accounts for issues across different dimensions of sustainable development: environmental protection, economic development, and social wellbeing. In terms of EAFM, this is expressed as the dimensions or component groups: ecological well-being, human well-being and the ability to achieve (Fig. 1). Typically, although not always, dsRFMOs are mandated to manage the ecological dimension that includes retained species, non-retained species and fisheries impacts more generally on the ecosystem. There have been calls to consider more explicitly the implications of external drivers of deep-sea fisheries (DSF), such as climate-change and cross-sectoral interactions. On the other hand, the consideration of human dimensions[2] is generally outside of the mandate of the dsRFMOs and so is rarely discussed, but they are important to national delegations and discussed internally and can drive the positions of individual Contracting Parties at dsRFMO meetings.

2 The human dimension includes social, cultural, economic, political and institutional processes and factors (FAO, 2009a)

In relation to governance, the EAF Guidelines stress the importance of stakeholder engagement which operates at two separate but overlapping levels in dsRFMOs. Engagement starts with national discussions. This usually involves discussions with the fishing industry, which can typically address various socioeconomic interests and objectives, and increasingly over the last 20 years has included environmental groups concerned with biodiversity conservation, and the achievement of the Sustainable Development Goals (SDGs) and Global biodiversity Framework (GBF) targets. The RFMO's scientific advice is also considered nationally, and together these cement the Contracting Party positions. These all underpin the implementation of EAF. The next level of engagement occurs at the RFMO meetings, and particularly at the decision-making management committee level. Here, any national positions are then "translated" into biological or ecological proposals for developing and adopting fisheries measures for stock management (effort or catch control, etc.) and reducing impacts (gear modifications, seasonal, temporal and permanent area closures, etc.).

FAO has produced several supplements to the EAF Guidelines, covering both topics of general relevance to all fisheries and fishery-specific applications, such as bottom fisheries in the high seas (discussed in the next section). Among the general supplements, key examples include: FAO (2008), which addresses the use of ecosystem models to inform management decisions; FAO (2009a), which covers the human dimensions of EAF, including social, economic, and institutional aspects; FAO (2012), a toolbox guiding practitioners through the main planning and implementation steps; FAO (2021a), a tool for tracking

progress in EAF implementation; and FAO (2021b), a legal diagnostic tool to help countries assess how well their national policies and laws align with EAF. In addition, FAO has developed a digital hub and a series of e-learning courses on EAF principles and tools to further support global uptake (https://www.fao.org/fishery/en/eaf-net). The EAF Guidelines and its supplements note the importance of applying the precautionary approach when implementing EAF.

FAO Deep-sea Fisheries Guidelines

The *International Guidelines for the Management of Deep-sea Fisheries in the High Seas* (DSF Guidelines) (FAO, 2009b) were developed at the request of the twenty-seventh session of the Committee on Fisheries (COFI) of FAO, in order to assist States and RFMOs in sustainably managing DSF and in implementing the United Nations General Assembly (UNGA) Resolution 61/105, paragraphs 76–95, concerning responsible fisheries in the marine ecosystem. They are arranged in five sections: scope and principles, key concepts, governance and management, management and conservation, and special requirements of developing states.

The DSF Guidelines were developed in accordance with an EAF and cover different dimensions, in particular the ecological dimensions (retained species, non-retained species, and general ecosystems) and the human dimension in terms of governance and management (data reporting and assessment, enforcement and compliance, management measures and plans). They also note the importance of collecting socio-economic data (*e.g.* on catches, value of landings and employment in the harvesting and processing sectors) by States and the need to develop specific guidelines for this purpose.

The greater part of the DSF Guidelines is given to the protection of vulnerable marine ecosystems from significant adverse impacts that may be caused by fishing with bottom contact gears. These are very slow-growing and structure-forming benthic habitats prone to physical damage from fishing gears and are protected typically by closures to bottom fishing gears.

The long-term sustainable management of demersal fish stocks and the reduction of bycatch is also an important part of the DSF Guidelines and clearly falls under an EAF concept. RFMOs should adopt sets of measures to respond to short-term situations and be guided by defined long-term multi-annual management objectives. The measures should be tailored on a case-by-case basis to the characteristics of each fishery using biological reference points set at levels that ensure, at a minimum, that fish stocks are harvested at levels that are sustainable in the long term.

Current gaps for implementing EAF-compatible management systems by dsRFMOs

There have been two recent reviews of the implementation of EAFM by dsRFMOs in the ABNJ.

Review of the implementation of EAFM by dsRFMOs

The first review by Fletcher (2020) systematically went through 13 of FAO's EAFM components that sit within three component groups (ecosystem wellbeing, human wellbeing, and the ability to achieve) in a desktop study using publicly available web-based information to assess implementation by the dsRFMOs. Results showed that the governance component was well covered, and the ecological component was mostly to partially covered. The top scorer within the ecological wellbeing group related to the retained species, since this has been considered as the primary focus of the RFMO mandates as given in their Conventions. The other four components in this group related to impacts (non-retained species, "special" species, direct fishing effects, and cumulative ecosystem effects), which is a more recent and growing focus of the dsRFMOs. CCAMLR's mandate covers all aspects of the ecosystem and so it covers these more directly. Climate effects were placed in two components and had low scores mainly owing to challenges in how it should be implemented. The remaining three components under consideration all had low scores and all are considered outside of the remit of the dsRFMOs. Nevertheless, these are addressed at the national level, but this was outside the scope of this review.

Fletcher (2020) found no comprehensive assessments or documentation from the available dsRFMO public information that guide their EAF implementation. Yet, his review showed that many aspects of EAF have already been covered by the dsRFMOs. He noted that the critical steps required for developing a 'compliant' EAF management plan and overall system of governance is to outline all the potential EAF-related actions and assess the risks and opportunities systematically. Such documentation provides the best basis to determine relative priorities and what level (if any) of management intervention is required. The significant efforts that each of the dsRFMOs has already made could easily be integrated into a fully EAF-compliant system.

He also noted that most of the dsRFMOs have delegated dealing with EAF to a science-based working group. Yet implementing an EAF approach are the responsibilities of both the managers and scientists. Adopting an EAF approach should be an overarching management strategy

Table 1. Average level of implementation of each of the EAF components by dsRFMOs.

Group	EAF Component	Score*
Ability to achieve	Compliance, reporting and review	2.6
	Management systems	2.0
	Legal and administration	2.5
	Non-environmental external drivers	1.3
Ecological wellbeing	Retained species	2.4
	Non-retained species	2.0
	"Special" species	2.1
	Direct fishing effects	2.1
	Cumulative ecosystem effects	1.6
	Climate	1.3
Human wellbeing	National social/economic	1.0
	Vessel social/economic	0.6

* 1= Partly, 2 = Mostly, and 3 = Fully implemented. Values in this table are the average scores across the seven dsRFMOs and CCAMLR. Compiled from Figure 20 of Fletcher (2020).

within each dsRFMO, and should result in the generation of clear, holistic assessments that would facilitate the development of clearly articulated and integrated long-term management plans.

Review of the implementation of the DSF Guidelines by dsRFMOs

The second review was by Thompson and Reid (2024) on the implementation of the DSF Guidelines by dsRFMOs. The DSF Guidelines encompass many aspects of EAF including retained species, non-retained species, and ecosystem considerations by way of the protection of vulnerable marine ecosystems (VMEs). The methods of analysis were similar to those used by Fletcher but had more categories which reflected the greater operational detail in the DSF Guidelines (Table 2).

The conclusions support Fletcher's (2020) findings but provide a greater insight into the details of implementation. The indicators in the monitoring, control and surveillance group were well implemented, as were those indicators in the VME group for protecting VMEs from significant adverse impacts (SAIs). This reflects the considerable effort that dsRFMOs have put into these indicators, though they still have their challenges, but at least most of the control measures are in place.

The implementation of the fishery assessments group was more variable and reflects the immediate objectives of managing the targeted fisheries in the short-term using control measures (note that the effectiveness of these measures was not assessed). This was typically consistent with the scientific advice on these fisheries where there are projections over the next 2–4 years. The fish stock biomass was also known for only some of the major targeted stocks and reflects the difficulty in undertaking these assessments. However, it is quite possible to manage a stock sustainably without knowing the stock biomass.

Less well implemented were the use of reference points and long-term management plans; both are integral to EAF and both help guide management towards achieving longer term objectives. Non-target bycatch limits are another aspect that requires further improvement. This includes minor species that are landed, fish species of no commercial value that are discarded, and certain vulnerable and protected groups like deepwater sharks and seabirds. Under an EAF, it is clearly important to know the total removals from the system and to set limits where appropriate for conservation purposes.

Summary of gaps in EAFM implementation by dsRFMOs

The implementation of the International Guidelines for the Management of Deep-sea Fisheries in the High Seas adopted in 2008 (FAO, 2009b) was reviewed by looking at 18 indicators grouped under fishery assessment, VMEs and monitoring, control and surveillance (MCS) (Thompson and Reid, 2024). The dsRFMOs have implemented many aspects of EAFM that extend well beyond their normal claims of "*We apply EAFM by protecting VMEs*" and the like. As detailed above, EAFM includes the RFMO work on retained species for sustainable fisheries where dsRFMOs score highly. The dsRFMOs also have a well-defined governance system and MCS procedures are operational. There are some gaps that would help with

Table 2. Average level of implementation of each of various indicators in the DSF Guidelines by dsRFMOs.

Group	Indicator	Implementation score*
Monitoring, control and surveillance (MCS)	On-board observers	40
	Verification	67
	Haul level catch reporting	67
	IUU vessel list	100
	Fishing vessel list	100
	VMS	75
Fishery assessments	Target TAC set	85
	Target biomass known	37
	Reference points and management plans	20
	Non-target bycatch limits	37
	Exploratory fishing protocol	75
	Existing bottom fishing area	60
Vulnerable Marine Ecosystems (VMEs)	Reporting encounters	25
	Threshold	87
	Avoiding SAIs	87
	VME closures	75
	Identification guide	75
	VME and SAI defined	100

* Percent of dsRFMOs implementing the activity – 100 percent is fully implemented. Compiled from Figure 8 of Thompson and Reid (2024) .

the understanding and implementation of EAFM. These include:

General aspects

- An EAFM global guidance document to build on existing documents but focused on dsRFMOs.
- Outlining all EAF-related issues and associated risk assessments.
- Long-term management plans and objectives.
- Greater involvement of fisheries managers to guide EAFM process.
- Considering working with dsRFMOs Contracting Parties on socio-economic components of EAFM.

Specific aspects

- Bycatch (retained and discarded) recording and associated bycatch limits.
- Improved risk assessments on vulnerable species.
- Cumulative ecosystem effects, including from fishing, mineral extractions and climate change.
- Greater development of species specific and ecosystem indicators and reference points.

A way forward for implementing EAF in dsRFMOs

An EAF concept brings together the various components of fisheries (ecological, social and economic) and identifies the institutional conditions required for its implementation. When considering dsRFMOs specifically, we note that:

- Generic technical guidelines on EAF (mainly from FAO) and specific guidance applicable to DSF are available to support a greater alignment of dsRFMOs with an EAFM.
- Many aspects of EAF are already implemented, but an overall management plan is lacking in most dsRFMOs.
- The management and science committees within

dsRFMOs deal almost exclusively with the ecological component of EAF. Whereas their members nationally are also concerned with the social and economic aspects of fisheries.

- While our understanding of species interactions and ecosystem dynamics continues to improve, these remain complex areas requiring sustained research and funding.
- The best available information should be used, and precaution applied where risks are high or knowledge is limited. The EAF and the precautionary approach emphasize that uncertainty or lack of knowledge is not a reason for inaction.
- And finally, climate change is affecting the ABNJ, which may not significantly impact the short-term stock assessments, but will affect longer-term ecosystem, social and economic conditions. It will also increase uncertainty. Long-term targets and goals are still required, but they become harder to quantify and adopt.

The conclusions from the above indicate that we already have much of the information required to implement EAFM in dsRFMOs. The EAFM symposium convened groups of scientists, managers, academics, and other stakeholders from around the world. There was impressive dedication to implement EAF from all participants present, but there is a need for a more consolidated approach by scientists and managers within dsRFMOs. We believe that one way forward to enhance implementation is for each dsRFMO to develop and adopt multiannual long-term EAF management and action plans, based on best available knowledge and guided by appropriate science-management dialogues, to address priorities and critical gaps for the sustainability of deep-sea fisheries in the high seas. This can be a concrete way to consolidate knowledge, recognize and give visibility to ongoing developments and increase transparency about management objectives and actions. The guidance provided by FAO, past, present and future, can help dsRFMOs develop their regionally specific long-term management plans.

The ecosystem approach is increasingly recognized as a long-term commitment in ocean governance, reflected in major international frameworks such as UNCLOS and the 1994 Agreement relating to the Implementation of Part XI of UNCLOS (ISA, 1994), the Convention on Biological Diversity (CBD, 2022) and its Kunming-Montreal Global Biodiversity Framework (GBF), and the recently adopted Agreement on Biodiversity Beyond National Jurisdiction (BBNJ, 2023). Since the early 2000s, international organizational and stakeholder engagement in ABNJ has expanded markedly, requiring that these evolving global instruments and targets be incorporated into, or explicitly linked with, fisheries management, including through the application of EAF as a sector-specific implementation of the broader ecosystem approach.

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Disclaimer

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References

Antarctic Treaty. 1959. The Antarctic Treaty. 53 p. https://documents.ats.aq/ats/treaty_original.pdf

BBNJ. 2023. Agreement 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. UNGA A/CONF.232/2023/4. https://digitallibrary.un.org/record/4013344/files/A_CONF.232_2023_4-EN.pdf

CBD. 2022. Kunming-Montreal global biodiversity framework. https://www.cbd.int/gbf

FAO. 1995. Code of Conduct for Responsible Fisheries. Rome, FAO. 41 p. https://www.fao.org/3/v9878e/V9878E.pdf

FAO. 2001. Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem. IN. The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem. Reykjavik, Iceland, 1–4 October 2001. Appendix 1, C2001/INF/25. https://openknowledge.fao.org/server/api/core/bitstreams/8f2c9c9d-9d36-49eb-a479-30a76c73b505/content/y2211e.htm

FAO. 2003. The ecosystem approach to fisheries. *FAO Technical Guidelines for Responsible Fisheries*, No. 4, Suppl. 2. Rome, FAO. 112 p. https://www.fao.org/3/a-y4470e.pdf

FAO. 2008. Fisheries management. 2. The ecosystem approach to fisheries. 2.1 Best practices in ecosystem modelling for informing an ecosystem approach to fisheries. *FAO Fisheries Technical Guidelines for Responsible Fisheries*, No. 4, Suppl. 2, Add. 1. Rome, FAO. 78 p. https://www.fao.org/3/a-i0151e/i0151e00.pdf

FAO. 2009a. Fisheries management. 2. The ecosystem approach to fisheries. 2.2 Human dimensions of the ecosystem approach to fisheries. *FAO Technical Guidelines for Responsible Fisheries*, No. 4, Suppl. 2, Add. 2. Rome, FAO. 88 p. https://www.fao.org/3/i1146e/i1146e.pdf

FAO. 2009b. International Guidelines for the Management of

Deep-sea Fisheries in the High Seas. Rome, FAO. 92 p. https://www.fao.org/3/i0816t/I0816T.pdf

FAO. 2012. EAF Toolbox: The ecosystem approach to fisheries. Rome, FAO. 172 p. https://openknowledge.fao.org/server/api/core/bitstreams/7ee8ec8d-703b-4341-895a-6331ef44e635/content

FAO. 2021a. Ecosystem approach to fisheries implementation monitoring tool – A tool to monitor implementation of the ecosystem approach to fisheries (EAF) management. User manual. Rome, FAO. 80 p. https://doi.org/10.4060/cb3669en

FAO. 2021b. A diagnostic tool for implementing an ecosystem approach to fisheries through policy and legal frameworks. Rome. https://doi.org/10.4060/cb2945en

FAO. 2023. Ecosystem approach to fisheries: Introduction. FAO e-learning Academy, Rome, FAO. https://elearning.fao.org/course/view.php?id=784

Fletcher, W.J. 2020. A review of the application of the FAO ecosystem approach to fisheries (EAF) management within the areas beyond national jurisdiction (ABNJ). Rome, FAO. 303 p. https://doi.org/10.4060/cb1509en

GFCM. 2014. Agreement for the Establishment of the General Fisheries Commission for the Mediterranean. Rome, FAO. 15 p. https://gfcmsitestorage.blob.core.windows.net/website/Basic%20Texts_Agreement/GFCM_Agreement-e.pdf

ISA. 1994. The International Seabed Authority. https://isa.org.jm/

NEAFC. 2006. Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries. London, NEAFC. 11 p. https://www.neafc.org/system/files/Text-of-NEAFC-Convention-04.pdf

SPRFMO. 2022. Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean. Wellington, SPRFMO. 52 p. https://sprfmo.int/assets/Basic-Documents/Convention-and-Final-Act/SPRFMO-Convention-2023-update-12May2023.pdf

Thompson, A. B. 2025. Introduction to the symposium. Presentation to "Applying the Ecosystem Approach to Fisheries Management in the ABNJ" symposium. Day 1, 09:00. 13 slides. https://eafm-symposium.nafo.int/Portals/3/Documents/Discussions/1.0-Thompson-Intro-Final-Rev.pdf

Thompson, A. B., and Reid, K. 2024. Review of the implementation of the International Guidelines for the Management of Deep-sea Fisheries in the High Seas. FAO Fisheries and Aquaculture Technical Paper, No. 703. Rome, FAO. 342 p. https://doi.org/10.4060/ca7692en

UNCED. 1992. AGENDA 21 - United Nations Conference on Environment & Development Rio de Janerio, Brazil, 3 to 14 June 1992. 351 p. https://sdgs.un.org/sites/default/files/publications/Agenda21.pdf

UNCLOS. 1982. United Nations Convention on the Law of the Sea. United Nations, New York. 202 p. https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

UNFSA. 1995. Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. United Nations, New York. 40 p. https://www.un.org/oceancapacity/sites/www.un.org.oceancapacity/files/files/Projects/UNFSA/docs/unfsa_text-eng.pdf

WSSD. 2002. Report of the World Summit on Sustainable Development Johannesburg, South Africa, 26 August–4 September 2002. United Nations, New York. 173 p. https://digitallibrary.un.org/record/478154/files/A_CONF.199_20-EN.pdf