NPFC-2025-COM09-OP08

Workshop Report

Application of the precautionary approach to the management of deep-sea fisheries

global environment facility
INVESTING IN OUR PLANET

PARTNERSHIP FOR SUSTAINABILITY AND BIODIVERSITY IN THE OCEAN AREAS BEYOND NATIONAL JURISDICTION

Background

The Deep-sea fisheries (DSF) project is one of five child projects of the Global Environmental Facility (GEF) funded Common Oceans Program Phase II (2022-2027). The DSF project is implemented by FAO and executed by the General Fisheries Commission for the Mediterranean (GFCM), in collaboration with co-financing partners, which include the seven regional fisheries management organizations (RFMOs) responsible for the management of deep-sea fisheries stocks in areas beyond national jurisdiction (ABNJ)[1], as well as other international and national organizations[2]. The objective of the project is to ensure that DSF in the ABNJ are managed under an ecosystem approach that maintains demersal fish stocks at levels capable of maximizing their sustainable yields and minimizing impacts on biodiversity, with a focus on data-limited stocks, deepwater sharks and vulnerable marine ecosystems.

Outcome 1.1 of the DSF project aims to support wider adoption and implementation of international obligations relating to sustainable fisheries, with a target that by the end of the project, four RFMOs have adopted new measures that improve the management of DSF stocks. Contributing to Outcome 1.1, Output 1.1.1 aims to identify gaps in regional obligations to manage fish stocks and propose corrective measures.

In 2023, a desktop study was conducted under Output 1.1.1, which contrasted the conservation and management measures (CMMs) of the seven RFMOs that have a mandate to manage DSF (from here on, dsRFMOs) against obligations outlined in international instruments, in the form of a matrix. The matrix was compiled by considering the international legal framework for ocean and fisheries governance, considering both legally binding and non-binding instruments, with the instruments considered as follows:

- The 1982 Law of Sea Convention (LOSC)
- The 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement)
- The 1995 United Nations United Nations Fish Stocks Agreement (UNFSA)
- The 1995 Code of Conduct for Responsible Fisheries (CCRF)
- The 1999 International Plan of Action for Conservation and Management of Sharks (IPOA-Sharks)
- The 1999 International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity)
- The 2001 International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)
- The 2008 International Guidelines for the Management of Deep-sea Fisheries in the High Seas (DSF Guidelines)
- The 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA)
- The 2010 International Guidelines on Bycatch Management and Reduction of Discards (Bycatch Guidelines)
- The 2014 Voluntary Guidelines on Flag State Performance (VGFSP)

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

[2] International Council for the Exploration of the Sea (ICES), Southern Indian Ocean Deepsea Fishers Association (SIODFA), International Coalition of Fisheries Association (ICFA), and the National Oceanic and Atmospheric Administration (NOAA) of the United States of America

- The 2017 Voluntary Guidelines for Catch Documentation Schemes (VGCDS)
- The 2019 Voluntary Guidelines on the Marking of Fishing Gear (VGMFG)
- The 2022 Voluntary Guidelines for the Regulation, Monitoring and Control of Transshipment (VG Transshipment) outlined in international instruments, in the form of a matrix.

The matrix assessed the uptake of obligations grouped into two main categories:

(i) The long-term conservation and sustainable use of fishery resources through the application of a precautionary approach and the ecosystem-approach to fisheries (EAF). Under this category, only deep-sea target fisheries were considered, as confirmed by Secretariats and/or as defined on the RFMO websites. For each target fishery of each RFMO, it was assessed whether the following conservation and management measures have been adopted, or scientific assessments carried out (from here these will be collectively referred to as "measures"):

a. Establishment of limit reference points
b. Establishment of target reference points
c. Stock assessment
d. Setting or catch or effort limits
e. Application of gear restrictions
f. Development of long-term management plan
g. Measures on discards
h. Mitigation and other measures for endangered, threatened and protected (ETP) bycatch species

(ii) Monitoring, control and surveillance (MCS) as an integral part of fisheries management to achieve the objective of long-term conservation and sustainable use of deep-sea species and, to ensure that fishing vessels comply with the CMMs adopted by RFMOs. Under this, it was considered whether each RFMO has adopted measures relating to:

a. Logbooks
b. Observers
c. VMS
d. Boarding and inspection
e. Port State measures
f. Catch documentation schemes
g. Marking of vessels and fishing gear
h. Transshipment

The results of this simplistic exercise indicated that dsRFMOs seemingly have a good uptake of monitoring, control and surveillance (MCS) requirements outlined in international instruments. With respect to measures relating to the long-term conservation and sustainable use of fishery resources, however, uptake across the dsRFMOs was found to be variable. In particular, the uptake of measures relating to the application of the precautionary approach (PA) to the management of target fisheries, such as the establishment of conservation (or limit) reference points and management (or target) reference points (41% and 21% of the 65 DSF considered in the study, respectively), and long-term management plans/strategies (18% of the 65 DSF considered in the study), is generally weak[3].

[3] In a review of the implementation of the International Guidelines for the Management of Deep-Sea Fisheries in the High Seas, Thompson and Reid (2024) came to similar conclusions: https://openknowledge.fao.org/handle/20.500.14283/cd0243en.

Based on these results, the DSF project, with agreement from project partners, convened a workshop on the application of the precautionary approach to the management of deep-sea fisheries to take stock of existing practices, available initiatives and tools, discuss challenges, and importantly, identify further activities that could support strengthened implementation of the PA to the management of deep-sea fisheries by dsRFMOs.

The Workshop

The workshop took place virtually on 15 October 2024, and it was conducted through two identical sessions, one from 07:00-09:30 and the other from 14:00-16:30 CEST, to accommodate different time zones. The agenda of the workshop is provided in Annex 1.

There was a total of 87 participants across the two sessions. It was decided not to include the list of participants in the workshop report, and not to attribute any personal opinions expressed at the workshop, so as to allow participants to express their opinions and views freely. However, it should be noted that all dsRFMOs and their Secretariats, as well as the academic, non-governmental and private sector community were represented at the workshop. The gender ratio was 46 men to 41 women.

In accordance with the workshop agenda (Annex 1):

1. Eszter Hidas, DSF Project Manager, started off the workshop by welcoming participants, explaining the arrangements for the meeting, and providing a short overview of the DSF project and the objectives of the workshop (as per the information provided in the Background section of this document).

2. Sarah Fagnani, Legal and Policy Expert, FAO, then took the floor to provide an overview of the international policy and legal framework for the application of the PA to the management of deep-sea fisheries. She recalled that the UNFSA[4], the CCRF[5] and the DSF Guidelines[6] collectively call for the application of the precautionary approach to the management of fish stocks through the establishment of stock-specific target and limit reference points and long-term management strategies and plans. She also noted that when it comes to the practical application of the PA, the only example of FAO technical guidelines published in this regard date back to 1995[7]. The guidelines deem fishery management plans necessary for all fisheries and recommend considering a long-time scale of at least 20-30 years and expressing operational targets and constraints in the form of target and limit reference points. She also highlighted that all dsRFMOs' conventions refer to the PA and as such, members to these RFMOs are expected to implement the PA and operationalize it through the adoption and effective implementation of conservation and management measures.

3. Rishi Sharma, Senior Fishery Officer, FAO, then provided an overview of the scientific considerations of the application of the PA to the management of deep-sea fisheries. He explained that (see Figure 1):
    - Target and limit reference points are usually defined in terms of biomass (B) and/or

[4] Article 6 and Annex II
[5] Article 7.5
[6] Paragraphs 75-80
[7] 1995 FAO Technical Guidelines for Precautionary Approach to Capture Fisheries and Species Introductions

fishing mortality (F). Target reference points are commonly set to biomass and fishing mortality levels that have a high probability of achieving the maximum sustainable yield (Bmsy and Fmsy, respectively), while limit reference points are usually set at a percentage below Bmsy and above Fmsy, so as not to impair recruitment for the population of concern (these could either be a function of the virgin stock size or the BMSY). Importantly, the levels at which the target and limit reference points are set are the prerogative of the managers of the fishery and greatly influence the overall long-term sustainability of the fishery.

- In order to achieve Bmsy or Fmsy at a high probability, it is good practice to set the target B a little higher than Bmsy and the target F a little lower than Fmsy, to allow for a management buffer.
- Blim and Flim represent levels of the stock that should certainly not be exceeded without jeopardizing the recruitment potential of the stock.
- Different organizations represent biomass-based and fishing-mortality based reference points differently, but they are essentially all some proxy of Bmsy and Fmsy targets.
- Trigger points represent points where a management decision must be taken on the management of a stock, applying either an output or input control measure.
- There are good examples of this type of management approach in Australia, Canada, South Africa and United States of America.
- Importantly, reference points are primarily only relevant if placed as part of a harvest strategy. Harvest strategies set out harvest control rules (HCR), which are a set of pre-agreed rules that are applied in order to ensure that a given fishery continually seeks to achieve target reference points and avoid limit reference points.
- Harvest strategies are developed through a multi-stakeholder dialogue. The process includes defining the management objective of the fishery, setting the target and limit reference points, agreeing on acceptable levels of risk, and defining the management procedures, including for when trigger points are reached.
- The best performing management procedure can be chosen through running models with different parameters and assessing the performance indicators.
- A good example of a successful implementation of a harvest strategy is by the Convention for the Conservation of Southern Bluefin Tuna.

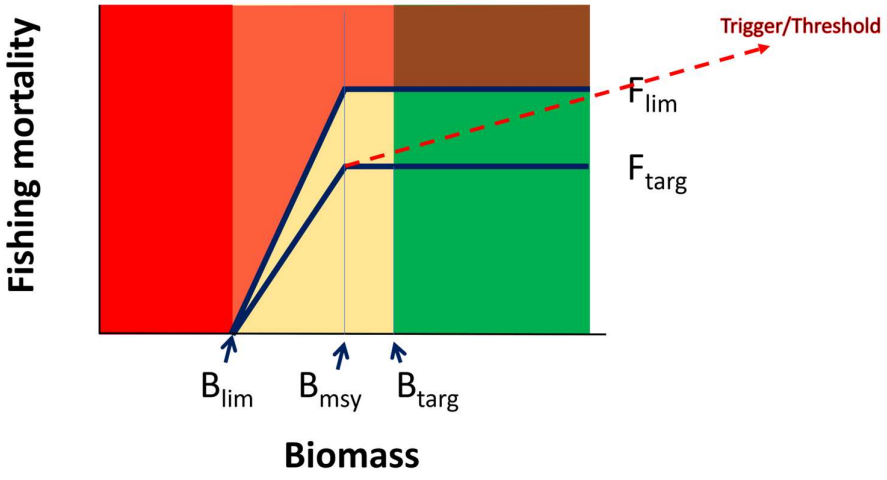
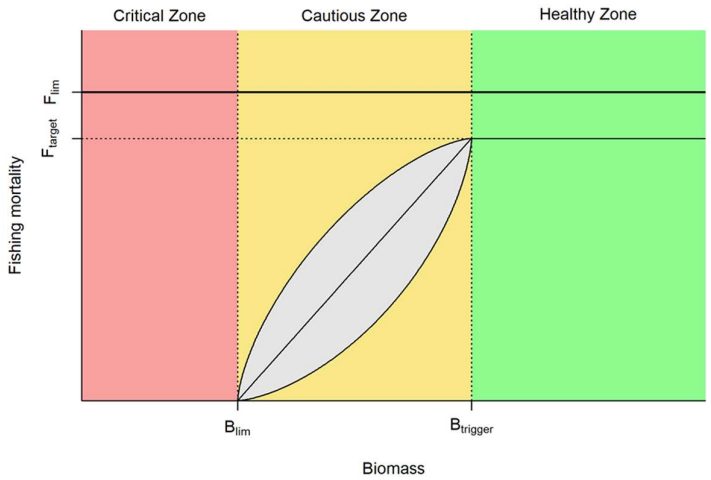


Figure 1 – Reference points, trigger points and harvest control rules

These presentations were followed by two concrete examples of the application of the PA by dsRFMOs:

4. Fernando Gonzales from the Oceanographic Institute of Vigo, co-Chair of the Joint Commission-Scientific Council Working Group on Risk-Based Management Strategies of NAFO, presented the revised NAFO PA Framework, which was approved by the NAFO Commission in 2024. He explained how this new framework came about, including highlighting key features of the original framework and the challenges and issues experienced with its implementation, and explaining the rigorous testing that was conducted through simulations before the revised framework was approved. He explained that the main features of the new PA framework include:
    - Three biomass zones – critical, cautious and healthy – delimited by two biomass reference points. The critical zone is below Blim, the cautious zone is between Blim and Btrigger, and the healthy zone is above Btrigger (see Figure 2);
    - A "leaf" HCR rather than linear approach, meaning that the framework is less prescriptive and allows managers to set exploitation levels inside the zones delineated by the leaf (see Figure 2); and
    - A table of allowable fishing mortality ranges and agreed management objectives for the different biomass zones to guide the choice of the final management measures (see Figure 3).

    He also highlighted the upcoming challenges with implementing the new framework, including:
    - Estimating the reference points for all stocks, as several are currently missing;
    - Implementing the framework for stocks for which only survey information is available; and
    - Implementing the framework for species with special biological characteristics (small pelagic and redfish).



Framework	F limit (F_{lim})	F target (F_{target})	B trigger ($B_{trigger}$)	B limit (B_{lim})
Reference Point	Fmsy	$0.85*F_{msy}$	$0.75*B_{msy}$.	$0.3*B_{msy}$

Figure 2 – The newly adoped NAFO precautionary approach (PA) framework

PA Zone	F levels	Objective
Healthy Zone ($B>B_{trigger}$)	A range of F at above and below F_{target}.	keeping the stock in the healthy zone
Cautious Zone ($B_{lim}<B<B_{trigger}$)	F should be within the leaf (potential harvest space).	avoid falling below Blim and promote stock growth.
Critical Zone ($B<B_{lim}$)	F should be as low as possible. Range of options and associated risk.	rebuild the stock out of the Critical Zone.

Figure 3 – NAFO PA framework management actions

5. Elisabetta (Betulla) Morello, Senior Fisheries Officer from the GFCM presented the background and process for the development and implementation of long-term management plans for deep-sea stocks in the Mediterranean and Black Sea. She explained that the key catalyst for developing these plans was the adoption of guidelines for the development of multiannual management plans by the 36th session of GFCM in 2012. A roadmap was then put together to assess the technical feasibility of these guidelines, and the result of this exercise saw the birth of the current GFCM tool to summarize all information required by decision/makers to start discussing management plans, i.e. the technical elements for management. The core of this document is a toolbox of potential alternative measures applicable to the fishery in question but it also includes :
    - scope of the management plan;
    - updated status of the stocks;
    - objectives;
    - indicators and reference points;
    - fisheries management measures;
    - decision rules;
    - scientific monitoring;
    - research priorities;
    - monitoring, control and surveillance (MCS); and
    - revision of the plan.

    Betulla explained that currently, GFCM management plans are mostly foreseen to be implemented in two stages:
    - A transitional phase, implementing transitional precautionary measures while data and information are collected towards determining potential measures for
    - A second phase, implementing long-term adaptive measures.

    She highlighted that to date, there are 11 multiannual management plans in the Mediterranean and Black Sea, and four of these are for deep-sea stocks: one for European hake and deep-water rose shrimp in the Strait of Sicily, and three for deep-water red shrimp fisheries in the Strait of Sicily, Levant Sea and Ionian Sea. These plans all have a combination of effort and catch limits for a transitional phase from 2023-2025, and aim to transition towards adopted harvest control rules based on management strategy evaluations for the period 2026-2030.

Finally,

6. Shana Miller from The Ocean Foundation presented an overview of harvest strategies developed using management strategy evaluation (MSE), also known as management

procedures. She talked about the key elements of harvest strategies, including management objectives, data collection program, stock status estimation method, and harvest control rule (HCR). The HCR is the operational part of a harvest strategy, using a pre-agreed rule to set fishing limits based on stock status. Ms. Miller discussed the harvest strategy development process, emphasizing its iterative nature with collaboration among fishery managers, scientists, and stakeholders. She stressed the benefits of the harvest strategy approach, including its ability to implement the precautionary approach, ecosystem approach to fisheries management, and climate-ready management for both data-rich and data-limited stocks. The speaker gave an update on harvest strategy development, implementation, and opportunities at the RFMOs, including for deep sea stocks. She ended by sharing a website developed in partnership with the Common Oceans Tuna 2 project, www.harveststrategies.org, as an online clearinghouse for multilingual educational materials on the topic.

The presentations were followed by discussion which was facilitated in the morning session by Mr Paul de Bruyn, Executive Secretary of the Indian Ocean Tuna Commission, and in the afternoon session by Mr Alejando Anganuzzi, former coordinator of the Common Oceans Program Phase I, and advisor to the Common Oceans Program Phase II.

The discussion was organized around six key questions posed to participants:

1. How can stakeholders, including governments, NGOs, and the fishing industry, collaborate to implement the PA to ensure sustainable deep-sea fisheries?
2. What can we learn from successful precautionary management of deep-sea stocks, such as those we heard today and others?
3. What could be the benefits and incentives for an effective implementation of the PA?
4. What are the key challenges or concerns for effectively applying the PA to deep-sea fish stocks? Are there any special concerns relative to deep-sea fisheries or is the situation similar to other fisheries?
5. What processes, guidance or training is needed?
6. How could the deep-sea fisheries project be involved or help to advance the application of the PA to the management of deep-sea fisheries?

The questions generated good discussions with participants.

The key messages generated from the sequence of presentations, and the key feedback received from participants, are summarized below.

Key Outcomes

<u>Key messages derived from the presentations included that:</u>

- There's a need to implement a PA to the management of deep-sea fisheries to ensure their long-term sustainable management, as called for by the international policy and legal framework (including UNFSA, CCRF and the DSF Guidelines) and RFMO Conventions;

- From a scientific perspective, achieving this requires the establishment of long-term, stock-specific management plans, which should include:
    - Setting clear, long-term, stock-specific management objectives through stakeholder consultation, which aim to balance biological, social and economic considerations;

    - Establishing target and limit reference points, both in terms of biomass and fishing pressure, which can trigger specific management actions when reached;
    - Using management strategy evaluations to assess the performance of different management regimes in achieving the set management objectives, and
    - Defining a harvest strategy, including harvest control rules, which describe how the fishery will be operated to guarantee the long-term sustainability of the stock;

- Different dsRFMOs have taken different approaches to implementing the precautionary approach to the management of deep-sea stocks:
    - NAFO uses the PA framework for all stocks under its management mandate that do not have a specific MSE; the framework aims to keep stocks in the healthy zone, defined as above 0.75 of Bmsy; it allows managers room for flexibility to choose from a range of fishing mortality levels at various biomass levels within the cautious zone, defined as between 0.3 and 0.75 of Bmsy;
    - GFCM, among other strategies, has adopted stock-specific management plans for a number of its deepwater shrimp stocks, taking a step-wise approach, with transitional measures in place until data are collected and management strategy evaluations are conducted, and the long-term management plan applied once harvest control rules are agreed;

- Extensive tools and materials are available to support RFMOs through the development of long-term, stock-specific harvest strategies and these can be accessed at www.harveststrategies.org.

Participants' perceived benefits of applying the PA to the management of fish stocks through long-term management plans/harvest strategies

- Management strategy evaluations and the development of harvest strategies help scientists, managers and other stakeholders come together and discuss/agree on the management objective and the acceptable level of precaution/risk for a fishery;

- The initial time and effort spent developing a harvest strategy is later paid off by removing the need to negotiate catch limits.

Participants' perceived challenges with applying the PA to the management of deep-sea fish stocks through long-term management plans/harvest strategies

- There's poor biological and economic data availability to feed into a harvest strategy model;

- Many deep-sea fisheries are multi-species by nature, it is therefore difficult to apply a harvest strategy;

- RFMO Science Committees are overwhelmed, there a too many demands and not enough time and resources, and conducting management strategy evaluations and developing harvest strategies are very labor intensive and time consuming;

- Managers are also overwhelmed, they cannot follow the meaning of the outcomes of management strategy evaluations; in some RFMOs the science/manager interface is not facilitated as no actual forum for discussion exists, such as for example working groups.

Concrete suggestions for how the DSF Project could support a strengthened implementation of the precautionary approach to the management of DSF stocks

- Provide clear guidance on what is the PA to the management of target fisheries;
- Provide guidance on the elements of management strategy evaluations and harvest strategies, including the setting of management objectives and target and limit reference points;
- Develop a compendium of good practice examples;
- Provide training to scientists to improve their communication skills to managers on difficult, technical topics such as the outcomes of management strategy evaluations;
- Create a roster of independent scientists that RFMOs can call on to support management strategy evaluations and harvest strategy development (to address capacity shortages);
- Provide training for managers in management strategy evaluations and harvest strategy development, including providing tools and roadmaps on how managers can/should engage in the process;
- Support the development/establishment of science-manager forums in RFMOs where these don't exist;
- Promote and communicate widely on the tools available for management strategy evaluations and harvest strategy development, including for data poor situations.

Annex 1

Time	Item	Speaker
07:00-07:10/ 14:00-14:10	Introduction and objectives	**Eszter Hidas**, DSF Project Manager
07:10-07:15/ 14:10-14:15	Overview of international requirements for the application of the PA to fisheries management	**Sarah Fagnani**, Policy and Legal Expert, FAO
07:15-07:40/ 14:15-14:40	Scientific considerations to the application of the PA to fisheries management	**Rishi Sharma**, Senior Fishery Officer, FAO
07:40-07:55/ 14:40-14:55	The NAFO PA framework – an example	**Ray Walsh** and **Fernando Gonzales-Costas**, Co-Chairs of NAFO WG-RBMS
07:55-08:10/ 14:55-15:10	GFCM long-term management plans for shrimp – an example	**Elisabetta Morello**, Fishery Officer, GFCM
08:10-08:40/ 15:10-15:40	Management strategy evaluations and harvest strategies – an overview	**Shana Miller,** The Ocean Foundation
08:40-09:20/ 15:40-16:20	Facilitated discussion	**Paul de Bruyn,** IOTC **Alejandro Anganuzzi**, Tuna Project
09:20-09:30/ 16:20-16:30	Conclusions	**Eszter Hidas**, DSF Project Manager

The Common Oceans Deep-sea fisheries project brings together a global partnership dedicated to advance responsible deep-sea fisheries management and biodiversity conservation in areas beyond national jurisdiction (ABNJ). Funded by the GEF and led by the United Nations Food and Agriculture Organisation (FAO), it works in collaboration with the seven deep-sea RFMOs, the private sector, and international organizations.

COMMON OCEANS | Deep-sea fisheries project
Food and Agriculture Organization of the United Nations (FAO)
common-oceans@fao.org