



**MEMORANDUM OF UNDERSTANDING
ON THE CONSERVATION OF
MIGRATORY SHARKS**

CMS/Sharks/MOS4/10.7
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4th Meeting of the Signatories (Sharks MOS4)
Bonn, 28 February – 2 March 2023
Agenda Item 10

**REVIEWING FISHERIES INDUCED MORTALITY OF
SHARK AND RAY SPECIES
LISTED IN SHARKS MOU ANNEX 1 AND CMS APPENDICES**

(Prepared by the Secretariat and Advisory Committee)

1. This document provides information on the proposed work by the Secretariat to review the impact of bycatch on those migratory shark and ray species listed in CMS Appendices and/or in Annex 1 of the Sharks MOU.
2. The Secretariat has submitted draft decisions to be taken at this meeting to support the implementation of the proposed work on Bycatch, included in [Annex 1](#) for consideration at the meeting.
3. [Annex 2](#) makes suggestions on activities that Signatories may wish to include in their new Programme of Work for the triennium 2023-2025, also discussed under agenda item 12.

Background

4. There is a need to better understand the levels of 'fisheries-induced mortality' of listed shark and ray species. Fisheries-induced mortality includes both targeted take and bycatch¹. Catches will include components that are retained (landings or on-board consumption), discarded dead (i.e., at-haul back, or at-vessel mortality), and those that are discarded alive but may subsequently die due to post-release mortality.
5. Fisheries encompass commercial, artisanal, subsistence, and recreational fisheries. Whilst there are national and international programmes to collate reported landings from fisheries (primarily commercial fisheries), these data may be incomplete for some fisheries and areas. Data relating to other forms of mortality (e.g., total dead discards) are often lacking or estimated. Hence, an improved understanding of total 'fisheries-induced mortality' is required.

MOU Mandates

6. The Sharks MOU includes strong mandates, calling for improved fisheries-related research and data collection to ensure that the taking of sharks and rays in fisheries is appropriately managed to ensure sustainable levels of exploitation for all species listed in Annex 1 of the Sharks MOU, and to include the prohibition of taking those shark and ray species listed in Appendix I of CMS.
7. Activity 4.2 of the [Conservation Plan](#) (Annex 3 to the MOU) requests Signatories to 'develop programmes to monitor directed shark² fisheries and shark bycatch, including programmes such as vessel monitoring systems, inspections, and on-board observer or monitoring programmes.'

¹ The definition here includes those catch components that may be described as 'bycatch' or 'incidental catch'.

² As per the Sharks MOU, the term shark is here used to refer to any species in the Class Chondrichthyes (= Class Elasmobranchii and Class Holocephali) and includes sharks, rays, skates and chimaeras.

8. The Conservation Plan also includes three activities under the section regarding bycatch. Activities 5.1 to 5.3 request Signatories to:
- a) *'The extent practicable, develop and/or use selective gear, devices, and techniques to ensure that the take of sharks in fisheries is sustainable and appropriately managed and that mortality of non-utilized catches is minimized to the greatest extent possible.'*
 - b) *'Liaise and coordinate with fishing industries, fisheries management organizations, academic institutions, and environmental non-governmental organizations (NGOs) to develop and implement incidental capture mitigation mechanisms in national waters and on the high seas, prioritizing work to avoid the capture of protected sharks in accordance with paragraph 13i of the MoU.'*
 - c) *'Promote capacity building for the safe handling and release of sharks' to reduce post-release mortality.*

CMS COP13 Decisions on Bycatch

9. At the 13th Meeting of the Parties to the Convention on Migratory Species of Wild Animals (COP13) Decisions [13.62 and 13.63 on Bycatch](#) were adopted, also inviting the Sharks MOU Advisory Committee (AC) to support implementation.

Decision 13.62 directed to the Scientific Council

"The Scientific Council and the Working Group on Bycatch are invited, subject to the availability of funds and in cooperation with other relevant organizations such as the Sharks Memorandum of Understanding (MOU) Advisory Committee and Regional Fisheries Management Organizations to:

- (a) review current data and knowledge about levels of bycatch of CMS-listed chondrichthyan species and existing measures to mitigate bycatch based on species, fishing area, fisheries, fishing season, and gear type;*
- (b) based on the above, identify priorities for bycatch mitigation and make recommendations to Parties and the CMS Sharks MOU on the most effective and appropriate measures to mitigate and reduce bycatch based on the above categories, while ensuring that recommended measures do not act to the disadvantage of other CMS-listed marine species.*

Decision 13.63 directed to the CMS Secretariat

The Secretariat is requested to, subject to the availability of funds:

- ...
- (b) support the Scientific Council with the implementation of its task agreed in Decision 13.62, including by commissioning a review on bycatch in chondrichthyan species and by facilitating cooperation between the Scientific Council and the Sharks MOU Advisory Committee.*

Suggested approach to implement part a) of Decision 13.62

10. Reported data on bycatch are often difficult to compare because the term “bycatch” is not consistently defined, and reporting standards differ between countries and organizations. An analysis of current levels of bycatch based on available data is, hence, difficult and might lead to false results. Additionally, bycatch may not accurately reflect the overall impact of fishing on shark and ray populations, as it only captures a portion of the mortality caused by fishing.
11. As mentioned in paragraphs 4 & 5 above, to develop effective conservation measures it is important to accurately assess the overall impact of fishing on shark and ray populations, taking into account all sources of fisheries-induced mortality.
12. To implement part a) of Decision 13.62, the AC and the Secretariat, therefore, suggest reviewing and critically appraising current data and knowledge regarding the levels of “fisheries-induced mortality” of those shark and ray species listed in Appendices I and II of CMS and/or Annex 1 of the Sharks MOU, with the aim to prioritize areas and species for the application of bycatch mitigation measures to reduce fisheries-induced mortality.
13. It is proposed to conduct a pilot study for two defined regions, based on the Fishing Areas used by the Food and Agriculture Organization of the United Nations (FAO). The purpose would be to develop a standardized methodology for understanding fisheries-induced mortality on shark and ray that can subsequently be applied to other areas. Data will be broken down based on FAO Fishing Area, taxon, and, where available, by the type of fishery (e.g., industrial, artisanal, recreational), gear type, and fishing season.
14. In the first instance, it is proposed that FAO Fishing Areas 37 (Mediterranean and Black Seas) and 87 (Southeast Pacific) should be the focus. These regions are important for a contrasting range of shark and ray species listed in the Appendices of CMS and may have varying degrees of information and data available.
15. The Mediterranean basin, which is known to have a range of shark and ray species of unfavorable conservation status, includes more than 20 Range States and Territories, as well as a range of fisheries and data availability (including national data, and data compiled by the General Fisheries Commission for the Mediterranean (GFCM), International Commission for the Conservation of Atlantic Tunas (ICCAT) and FAO).
16. The Southeast Pacific is bordered by a more limited number of Range States, but also with a larger spatial extent of high seas that may be exploited by long-distance fleets and with data potentially available through other fisheries bodies (e.g., Inter-American Tropical Tuna Commission (IATTC) and the South Pacific Regional Fisheries Management Organization (SPRFMO)). Focusing on two contrasting geographical areas is expected to help inform and refine the methods that would subsequently be applied in following regional studies.
17. The review will focus on current levels of fisheries-induced mortality (landings, dead discards, and estimated post-release mortality) utilizing different data sources, such as peer-reviewed literature, international, regional, and national databases, and grey literature (which may be of greater relevance to some species or regions). Furthermore, relevant Regional Fisheries Bodies (RFBs), governments, agencies and researchers will be contacted to obtain further data through data requests or bilateral interviews.
18. The aim of the review will be to identify important data gaps and qualitatively infer the potential magnitude of under-reported catch (dead discards, landings, and live releases) for species or fisheries for which such data are limited within the two case-study areas (FAO Fishing Areas 37 and 87). Annex 1-listed species that occur in these areas is provided in Table 1.

19. The review will help identify some of the priorities that need to be addressed to reduce fisheries-induced mortality of CMS and Sharks MOU-listed shark and ray species, particularly in the case-study areas. It will also collate and summarize available knowledge of at-vessel and post-release mortality at a global level, including sub-lethal effects, for those species interacting with various fisheries.
20. This approach will allow for an appropriate methodology to be developed that will facilitate subsequent reviews in remaining FAO Fishing Areas (which are currently out of the scope of the suggested review).

Table 1. Occurrence of shark and ray species listed on CMS Appendices and Sharks MOU Annex 1 for FAO Major Fishing Areas 37 (Mediterranean and Black Seas) and 87 (Southeast Pacific). ● = present; ⊙ = edge of distribution/extralimital records; ○ = absent, ? = uncertain; NA = Not applicable.

Scientific name	37	87	Scientific name	37	87
<i>Squalus acanthias</i> ³	●	NA	<i>Rhinobatos rhinobatos</i>	●	○
<i>Squatina squatina</i>	●	○	<i>Rhynchobatus australiae</i>	○	○
<i>Alopias pelagicus</i>	○	●	<i>Rhynchobatus djiddensis</i>	○	○
<i>Alopias superciliosus</i>	○	⊙	<i>Rhynchobatus laevis</i>	○	○
<i>Alopias vulpinus</i>	●	●	<i>Anoxypristis cuspidata</i>	○	○
<i>Cetorhinus maximus</i>	●	●	<i>Pristis clavata</i>	○	○
<i>Carcharodon carcharias</i>	●	●	<i>Pristis pectinata</i>	○	○
<i>Isurus oxyrinchus</i>	●	●	<i>Pristis pristis</i>	○	●
<i>Isurus paucus</i>	⊙	●	<i>Pristis zijsron</i>	○	○
<i>Lamna nasus</i>	●	●	<i>Mobula alfredi</i>	○	○
<i>Rhincodon typus</i> ⁴	⊙	●	<i>Mobula birostris</i>	○	●
<i>Galeorhinus galeus</i>	●	●	<i>Mobula eregoodoo</i>	○	○
<i>Carcharhinus falciformis</i>	⊙	●	<i>Mobula hypostoma</i> ⁵	○	○
<i>Carcharhinus longimanus</i>	?	●	<i>Mobula kuhlii</i>	○	○
<i>Carcharhinus obscurus</i>	●	?	<i>Mobula mobular</i> ⁶	●	●
<i>Prionace glauca</i>	●	●	<i>Mobula munkiana</i>	○	●
<i>Sphyrna lewini</i>	⊙	●	<i>Mobula tarapacana</i>	○	●
<i>Sphyrna mokarran</i>	⊙	●	<i>Mobula thurstoni</i>	○	●
<i>Sphyrna zygaena</i>	●	●	Total no. of CMS-listed species	17	22

Work being undertaken to implement part b) of Decision 13.62

21. A review of the most effective and appropriate measures to mitigate and reduce bycatch is being undertaken by the CMS COP Appointed Councillor for Bycatch. The study will be made available to the 6th Sessional Committee of the Scientific Council and CMS COP14, scheduled to be held in July and October 2023, respectively. The review will focus on the efficiency and practicality of different bycatch mitigation measures and will provide recommendations on best practice mitigation measures to CMS Parties and subsequently Sharks MOU Signatories.

³ Only the Northern hemisphere population is listed.

⁴ On October 18, 2021, a whale shark *Rhincodon typus* Smith, 1828 was sighted off the coast of Samandağ (Hatay city, Turkey, NE Mediterranean Sea), by a commercial long-liner. (see: [Turan, Cemal & Gürlek, Mevlüt & Ergüden, Deniz & Kabasakal, Hakan. \(2021\). A NEW RECORD FOR THE SHARK FAUNA OF THE MEDITERRANEAN SEA: WHALE SHARK, RHINCODON TYPUS \(RECTOLOBIFORMES: RHINCODONTIDAE\). 10.19233/ASHN.2021.20.](#))

⁵ Includes *M. rochebrunei*.

⁶ Includes *M. japonica*.

Action requested:

22. The Meeting is requested to:

- a) Take note of the CMS COP13 Decisions and agree to support CMS on their implementation;
- b) Review and agree on a final version of draft decisions of the meeting in Annex 1 to this document;
- c) Review and agree on Activities as suggested in Annex 2 to this document and consider including those in the Programme of Work 2023-2025.

DRAFT DECISIONS OF THE MEETING

Signatories

1. Agreed to assist CMS in the implementation of CMS COP13 Decisions 13.62 (a) and 13.63 (b);
2. Welcomed the proposed approach as suggested by the Advisory Committee to focus on fisheries-induced mortality instead of bycatch for the reasons outlined in [CMS/Sharks/MOS4/Doc.10.7](#) and agree to undertake the pilot study for FAO Fishing Areas 37 (Mediterranean and Black Seas) and 87 (Southeast Pacific).

ANNEX 2

DRAFT ACTIVITIES FOR INCLUSION IN THE PROGRAMME OF WORK 2023-2025

No.	Activity	Mandate ⁷	Priority ranking ⁸	Time frame ⁹	Responsible entity ¹⁰	Funding needs for implementation	Secretariat staff required for implementation (working days)
Species Conservation/Habitat Conservation							
X. Reviewing fisheries-induced mortality of shark and ray species listed in Sharks MOU Annex 1 and CMS Appendices							
x.1	Provide technical support to the review.	MOS4 decisions	tbd	tbd	AC		
x.2	Provide financial support for the completion of the pilot study for two FAO areas.	MOS4 decisions	tbd	tbd	SIG (SEC: if funds were provided through the Secretariat)	€50,000 (consultancy: funding is available already)	P staff: 10 G staff: 1 (managing donor agreement, recruitment, and supervision of consultant)

⁷ Conservation Plan (CP), Terms of Reference of the Advisory Committee (AC TOR), Terms of Reference of the Secretariat (SEC TOR)

⁸ Core Secretariat activities and suggested priorities (High, Medium)

⁹ Year(s) during which activity should be implemented

¹⁰ Signatories (SIG), Advisory Committee (AC), Secretariat (SEC), Conservation Working Group (CWS), Consultants, Cooperating Partners (CooP)