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Voluntary measures to reduce shark bycatch while generating scientifically robust data

European Union

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Abstract	

This information paper on shark bycatches:
- answers the call from the SIOFA Scientific Committee (SC) regarding data gaps on sharks;
- addresses the implementation of voluntary precautionary measures to mitigate shark bycatches and;
- elaborates on possible future European Union research projects on sharks that could be implemented in 2023 according to SC recommendations, contingent on available funding.

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1. INTRODUCTION

1.1 Knowledge gaps

In SIOFA, the delivery of management and conservation measures regulating the capture of sharks as bycatch in well-established fisheries is hindered by gaps in basic knowledge, which is essential to get a clear picture of their status. The SIOFA Scientific Committee (SC) has pointed out this lack of knowledge on several occasions:

- SC3-Para 58 "*The SC discussed that there has been a major expansion in the deepwater shark fishery and that this indicates that **data collection for this fishery should be a priority**.*"
- SC3-Para 74 "*The SC discussed that the sharks ERA report highlighted **the need for better identification of deepwater sharks**, and that this requires harmonised methods and processes for collecting these data.*"
- SC5-Para 146 "*… SIODFA also suggested that it may be **worthwhile to explore tagging studies of deepwater sharks***".
- SC5-Para 151 "*The SC noted the **key findings of the ERA**, specifically that:*
  *• **information on the identification, distribution, stock structure, biology and life history of many deepwater chondrichthyans is lacking and needs to be improved**;*
  *• at-sea identification protocols need to be improved and **efforts should be made to collect information on deepwater chondrichthyans at a species level** in logbook and observer records, with these data being recorded at the best possible resolution in the SIOFA databases;*
  *• **research on species' post-capture mortality and selectivity** would be useful to reduce uncertainties in this assessment…*".
- SC6-Para 128 "**The SC encouraged further work that would help identify deepwater chondrichthyan species.**"

1.2 Precautionary measures

Because of these knowledge gaps, the SC has requested the MoP to consider precautionary measures to mitigate shark bycatch:

- SC5-Para 155 "The SC noted the absence of any attempts or methods to inform the setting of SIOFA-specific bycatch limits and discussed potentially useful bycatch mitigation measures such as:
  *• **Longline gear modifications**, such as the use of nylon snoods instead of wire snoods, noting paragraphs 86 and 87 that discuss potential trade-offs with such an approach*
  *• **Prohibition on the retention of deepwater chondrichthyans***
  *• **Live release, where possible**, of all shark bycatch (see, for example, CCAMLR conservation measure (CM) 32-18)*
  *• **Move-on rules such as those used by CCAMLR** (for example, as per CCAMLR CM 33-03), whereby vessels are required to move-on if bycatch of certain species (including deepwater sharks) exceeds a percentage of the catch limit for that fishery, or exceeds a particular weight/number threshold per fishing operation (e.g. set or tow).*"
- SC6-Para 131 "*Regarding deepwater chondrichthyans, the SC:*
  *• REQUESTS that SERAWG4 include deepwater chondricthyans in its agenda and note any additional work towards reviewing progress against CMM 2019/12 (Sharks) and **potentially the development of precautionary bycatch limits.**"*

In 2022, SC7 made the following recommendations in this regard:

- SC7-Para 177 "*With regard to deep-water sharks, the SC RECOMMENDED that the MoP:*
  - *ENDORSE the **holding of a 2-day workshop** in Tenerife (Spain) in 2023 to: […]*
  - *RECOMMEND that, in areas where vessels are experiencing high shark bycatch, CCPs **consider interim voluntary guidelines to reduce that bycatch**.*
  - *NOTE the need to hold more **detailed discussions on potential gear modifications that could mitigate shark bycatch,** including information on the survival rates of sharks hooked by such gear.*
  - *NOTE that, regarding the voluntary EU measure of releasing all shark species listed as a "high risk" in Annex 1 of the CMM 2019/12 (Sharks) that are alive and in good condition, "in good condition" is ambiguous and open to interpretation and **the measure should be modified to require the release of all the aforementioned shark species that "are alive."**"*

2. EU voluntary measures to minimise shark bycatch and support sustainable harvesting levels

Considering the SC7 recommendations, the EU proposes that its vessel operating in the SIOFA Area implements voluntary precautionary measures on a temporary basis from 1 July 2022 until MoP10 to minimise shark bycatch while at the same time generating scientifically robust data. The proposed voluntary measures consist of six actions grouped into three categories:

2.1 Enhanced data collection

i. **100% scientific observer coverage on board**
The vessel will ensure a 100% scientific observer coverage on board for all trips in the SIOFA Area. Observer data will be provided at the finest taxonomic resolution possible, as required under CMM 2021/02 (Data Standards) minimising data collection gaps on shark bycatches.

ii. **Remote Electronic Monitoring (REM) supporting the identification of shark bycatch species**
100% Electronic observer coverage of the fishing trips from 1 October 2022: Broadly, the REM system will be composed of 1 single digital camera in the hauling area, with the aim of supporting the identification of shark bycatch species and to compare both physical and electronic observation data. The images of the REM system will be sent to the Spanish Institute of Oceanography, which will be in charge of their storage and subsequent processing for the indicated purposes, reporting on results to the Shark Workshop to be held in 2023 prior to SC8.

2.2 Precautionary measures

iii. **Release of all shark species listed as a "high risk" in Annex 1 of CMM 2019/12 that are alive**
Further to the SC7 recommendation, the vessel will release all shark species listed as a "high risk" in Annex 1 of the CMM 2019/12 that are alive.

iv. **Longline bait modification pilot study**
The vessel will carry out a pilot study on how different types of fishing baits to analyse those that better avoid shark bycatch rates. The pilot study will be designed and carried out by the Spanish Institute of Oceanography. The results will be presented to the Shark Workshop to be held in 2023 prior to the SC8.

2.3 Potential Future Research

v. **Tagging study on deepwater sharks**

A shark tagging program would be designed and implemented for the SIOFA Area. Electronic data collection tags (around 20-30 tags) with satellite transmission (Popup Archival and Spot Transmitting Tags) will be deployed, covering the main shark bycatch species reported in SIOFA waters, notably Portuguese dogfish (*Centroscymnus coelolepis*).

This research would be implemented by the Spanish Institute of Oceanography with an estimated cost of 200,000 EUR and 12 months of continuous monitoring and implementation. Expected start date: 2023.

vi. **Post-release survival of deepwater sharks caught in longline fisheries**

Current estimates for post-release mortality (PRM) for shark species in longline fleets in SIOFA are very rare. PRM estimates are critical to understanding total fishing mortality. This pilot project would benefit from the use of electronic tags and particular attention would be given to assessing how handling influences recovery time.

This research would be implemented by the Spanish Institute of Oceanography with an estimated cost of 30,000 EUR and 8 months of implementation. Expected start date: 2023.

The implementation of actions v and vi are contingent on the necessary funding being available.

The six actions listed above would contribute to minimising shark by-catch in the SIOFA Area, while supporting scientific advice (data needs, research to identify more selective fishing baits to minimise deep sea shark by-catch, and assessing shark mortality) to support consideration of and agreement in the MoP on possible appropriate fishing mortality and harvest levels, as provided for in paragraph 2 of CMM 2019/12 (Sharks).

The effectiveness of these voluntary measures would be increased if other fleets operating in the SIOFA Area would also implement them, as appropriate.

2.4 Timeline

	July	August	September	October	November	December	January	February	March	April	May	June	July
Enhanced data collection		100% scientific observer coverage on board											
				Remote Electronic Monitoring supporting the identification of shark bycatch species					Interim Results		Final Results		
Precautionary measures		Release of all shark species listed as a "high risk" in Annex 1 of CMM 2019/12 that are alive											
				Pilot study on different fishing baits used to better avoid shark bycatch					Final Results				
Future research				Tagging study on deepwater sharks					Interim Results			Final Results	
				Post-release survival of deepwater sharks caught in longline fisheries					Final Results				
MOP Meetings	MOP9												MOP10
SIOFA Scientific Meetings									Shark Workshop				
									SC8				