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Southern Indian Ocean Fisheries Agreement  
Accord relatif aux Pêches dans le Sud de l'Océan Indien

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# Deep sea RFMO measures in force in 2023 and catches relating to sharks, skates and rays

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<b>Abstract</b>	
<p>This information paper documents the current catches and adopted measures for deepwater sharks by deep-sea RFMOs in the Pacific, Atlantic Mediterranean, and Indian Oceans. This allows SIOFA to undertake quick comparisons with other regions. Shark fisheries, at least deepwater shark fisheries, are largely unregulated in most regions of the ABNJ except perhaps in the NE Atlantic. Commercial demersal fisheries for sharks currently occur in the NW Atlantic (Thorny skate), NEAFC (spurdog), Mediterranean (various species), Indian Ocean (various species), and occasionally the south Pacific (various species). Most species have declined, and some are now closed for targeted fishing.</p> <p>Discarded sharks, which are not landed, are poorly recorded in most regions.</p> <p>The DSF Project will support SIOFA and the other regions to improve deepwater shark assessments, with a focus on discarded species.</p>	

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## **Deep sea RFMO measures in force in 2023 and catches relating to sharks, skates and rays**

Tony Thompson, Consultant, ABNJ Deep-sea Project<sup>3</sup>

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<sup>3</sup> The DSF project is one of four child projects of the 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 other co-financing partners. For more information see: [https://publicpartnershipdata.azureedge.net/gef/GEFProjectVersions/04af037f-61b1-ea11-a812-000d3a337c9e\\_CEOEndorsement.pdf](https://publicpartnershipdata.azureedge.net/gef/GEFProjectVersions/04af037f-61b1-ea11-a812-000d3a337c9e_CEOEndorsement.pdf)

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### Requests to SIOFA

The DSF Project would like to work with its global partners, including SIOFA and the industry group SIODFA, to:

- Support on-board observers in the collection of deepwater shark catch information, including an analysis of challenges in undertaking such a task and identifying solutions,
- Support the uptake of new technologies, where appropriate, by on-board observers to enhance observer safety and data collection, e.g. improved identification guides and use of still and video digital analysis and pattern recognition,

- Support continued ecological risks assessments (ERA) using improved information on distribution and amount of deepwater shark catches, and
- Support sharing mechanisms with other DSF Project partners globally to enhance sustainable fisheries and reduce impacts.

## Overview and summary

Chondrichthyans are typically grouped into four categories for fisheries purposes: pelagic sharks, deepwater sharks and dogfish, skates and rays, and chimera. There is a mixture of terms used to Chondrichthyans in the fisheries literature, and often they are used quite loosely. The approximate taxonomy at the higher level is shown in Figure 1.

In this paper, the term “sharks” will be used to cover all the chondrichthyans.

Sharks are low productivity species with fairly slow growth, long life and a very low reproductive output. They are targeted commercially and, for example, in 2020 a total of 658 000 t was landed globally (EEZ and ABNJ combined) (FishStatJ, 2023), though there have been declining catches since a peak of 840 000 t in 2000 (Figure 2a). Dogfish, which are smaller and purely benthic sharks, show an even more extreme downward trend, indicating that sharks in general appear to be declining (Figure 2b). The current landings of shark catches are around two-thirds of the 2000 peak. Over the same time period, catches of bony fish (teleost) have been approximately constant (Figure 2c). This is easiest explained by increasing fishing effort from 1985-2000 to increase shark catches, followed by decreased shark populations from 2000-2020 resulting in reduced catches. This is a classic pattern of over-fishing.

Many sharks are also discarded in pelagic and demersal longline, gillnet and trawl fisheries, though it is very difficult to get estimates of the extent of this. It is fair to say that it is a significant source of mortality for sharks and a cause for concern.

Shark fisheries, at least deepwater shark fisheries, are largely unregulated in most regions of the ABNJ except perhaps in the NE Atlantic. Commercial demersal fisheries for sharks currently occur in the NW Atlantic (Thorny skate), NEAFC (spurdog), Mediterranean (various species), south Pacific occasionally (various species), and Indian Ocean (various species)

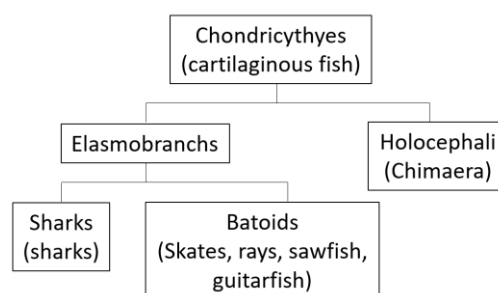
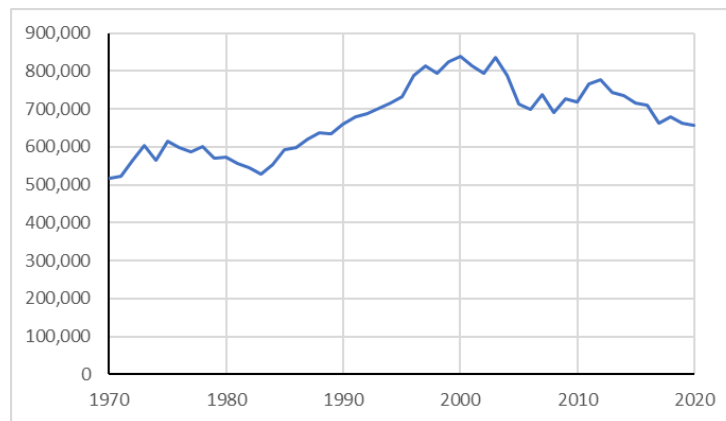
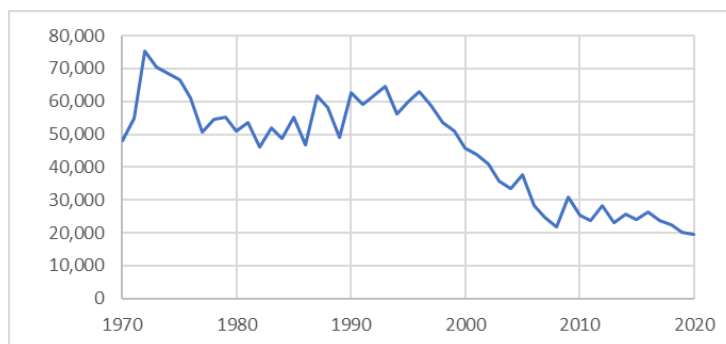


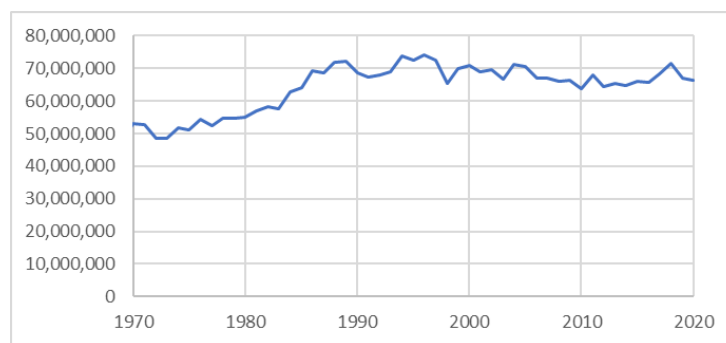
Figure 1. General taxonomy for the higher levels of cartilaginous fishes. In this paper, the term “sharks” will be used to cover all the chondrichthyans.



(a)



(b)



(c)

Figure 2. Global catches from the EEZs and ABNJ of marine waters for (a) chondrichthyans (pelagic and demersal sharks, dogfish, skates, rays and chimera), (b) dogfish, and (c) bony fish (FishStatJ, 2023).

(Table 1). Some RFMOs have asked their contracting parties to make efforts to reduce shark mortality, and most require live release. The use of gillnets is banned in the south Pacific and Southern Ocean, and a recommended ban occurs in the southeast Atlantic. Bottom trawls are also banned in the Southern Ocean. There are a few required gear modifications in various regions that would help reduce shark mortality, for example, sorting grids on shrimp trawls in the northwest and northeast Atlantic, and the setting of gillnets more than 70 cm above the seafloor in the north Pacific. The most significant measure, that may actually reduce shark mortality, are move-on rules in the south Pacific and Southern Ocean.

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Otherwise, there are almost no measures that will effectively reduce shark mortality (Table 2).

Table 1. Average annual catch of pelagic and demersal shark (=chondrichthyans) in by selected regions with fisheries management.

<b>Shark habit</b>	<b>NAFO ABNJ 2010-2021</b>	<b>NEAFC ABNJ 2019-2021</b>	<b>GFCM All Mediterranean 2010-2020</b>	<b>SEAFO ABNJ 2010-2020</b>	<b>NPFC NW Pacific (including EEZ) 2010-2020</b>	<b>SPRFMO 2010-2018</b>	<b>SIOFA 2013-2020</b>	<b>CCAMLR All areas 2010-2021</b>
Pelagic	7225	1	228	5729	26464	?	Yes (unpublished)	?
Demersal	4078	593	8592	3		70	1500	246

Table 2. Summary of the types of measures adopted by RFMOs (see measures listed below for detail).

<b>Measure</b>	<b>NAFO</b>	<b>NEAFC</b>	<b>GFCM</b>	<b>SEAFO</b>	<b>NPFC</b>	<b>SPRFMO</b>	<b>SIOFA</b>	<b>CCAMLR</b>
Report catches	Y (discard & retained) for listed spp (8 pelagic, 3 dogfish, 8 skates, Greenland shark)	Y annually (discards and retained) (27 spp on list including deepwater sharks proper).	Y	Y	? (observers may record deepwater shark catches but the information has not been requested by NPFC)	Y	Y	Y
Shark finning (carcass disposed at sea)	Prohibited	Prohibited	Prohibited	Prohibited	?	?	?	?
Directed fishing ban	Greenland shark only	Deepwater sharks (17 spp) Porbeagle, Basking shark, 3 spp skate, 2 spp rabbit fish,	None	Recommended deepwater shark ban.	None	None	Deepwater sharks not to be targeted (especially those listed as high-risk)	All species
Targeted shark fisheries	Thorny skate (TAC)	Spurdog (TAC) Kitefin, leafscale gulper sharks and Portuguese dogfish were fisheries but now closed.	Request to CPs to reduce elasmobranch mortality, especially those listed in Barcelona Convention.	None (seem to be few shark in the region)	No deepwater shark fishery in ABNJ	Occasional for kitefin and birdbeak sharks (e.g. 2010 & 2014)	No targeted shark fisheries. Bycatch fisheries on Portuguese dogfish, birdbeak dogfish, gulper shark), kitefin shark. SC	None

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							currently working on catch limits.	
Gear modifications	280/220mm targeted skate fishery <22mm sorting grid in 3L & 3M shrimp fishery	<22mm sorting grid in shrimp fishery	None (some mesh regulations in certain areas but would not reduce shark mortality)	Recommended ban on gillnets	Gillnets to be set >70cm above seafloor.	Gillnet ban	Recommendation in CMM 2016/05 that deepwater gillnets should not be used.	Ban on gillnets
Live release	Y	Y	Y	Y				Y
Other measures						5nm or 10nm move-on rules for specified sharks spp caught in exploratory toothfish line fisheries for NZ, Chile and EU.		5 nm move-on rule if 5% skates (16% others) caught in toothfish line fisheries.

Provided below are regional shark catches and measures adopted by the deep-sea RFMOs and valid in 2023. Every attempt has been made to ensure the accuracy of the information provided, but readers are requested to verify this with the RFMO websites before using the information cited here. The ABNJ catches have been taken from the RFMO websites where available, and these in most cases represent landings. Very little information on quantities of sharks discarded is available, though isolated studies and observation do exist in the grey literature.





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## Introduction

Pelagic and deepwater sharks are caught in many diverse fisheries around the world. The value of world trade in shark commodities approaches USD 1 billion per year. Further, many are caught and discarded resulting in largely unquantifiable impacts on their populations. FAO published the “International Plan of Action for the Conservation and Management of Sharks” in 1999 and developed as associated database of shark measures (FAO, 2022). The shark-IOPA guidelines aims to:

- Ensure that shark catches from directed and non-directed fisheries are sustainable;
- Assess threats to shark populations, determine and protect critical habitats and implement harvesting strategies consistent with the principles of biological sustainability and rational long-term economic use;
- Identify and provide special attention, in particular to vulnerable or threatened shark stocks;
- Improve and develop frameworks for establishing and coordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between States;
- Minimize unutilized incidental catches of sharks;
- Contribute to the protection of biodiversity and ecosystem structure and function;
- Minimize waste and discards from shark catches in accordance with article 7.2.2.(g) of the Code of Conduct for Responsible Fisheries (for example, requiring the retention of sharks from which fins are removed);
- Encourage full use of dead sharks;
- Facilitate improved species-specific catch and landings data and monitoring of shark catches;
- Facilitate the identification and reporting of species-specific biological and trade data.

The UNGA Res. 61/105 adopted in 2007, in paragraph 10, highlighted the importance of the above list and urged States to take action providing a list of required actions. This list was repeated almost every year, with increasingly stronger wording, up to and including the last session in 2022 (UNGA Res. 77/33 paragraph 30).

What has been achieved twenty-five years after the publication of the IOPA on sharks? Some of the commercially caught and landed pelagic and demersal shark species have been assessed to provide estimates of stock status, though several of these have been closed due to low stock size and non-viable fisheries. Shark-finning has been strictly controlled, and fins must now usually be kept with the carcass until after landing (this promotes full utilization but does not necessarily reduce shark mortality). And there a few measures about calling for live-release and asking for a move-on when a certain trigger value is reached. Again, little to actually reduce mortality.

Biological knowledge and data-reporting is likely fairly good for the landed species, mainly due to strong and enforceable at-sea and at-port inspection procedures. But there is still little data for discarded species of sharks caught incidentally, and very little information on the status of these discarded species. Some regions have specifically listed species they consider vulnerable and they are beginning to form a focus for attention.

This document lists shark-related measures adopted by deep-sea RFMOs for ease of access to examine the range of measures adopted globally.

## **The Deep-sea Fisheries under the Ecosystem Approach (DSF) project**

The DSF Project (2022-2027) follows on from the Deep-sea project (2014-2019) and has the same focus on reducing impacts on various incidentally caught species, including deepwater sharks. This paper is an updated and extended version of one of the baseline documents that lists the current measures relating to sharks. The DSF project has an output (output 2.3.1) to assess the impacts of DSF on deepwater sharks and to propose mitigation measures when required. This principally aims to support contracting parties to apply the measures adopted by RFMOs and to assess if DSF are impacting on shark populations. The project's activities are:

- Activity 1: Collect data on deepwater sharks
- Activity 2: Assess impacts on deepwater sharks
- Activity 3: Assess effectiveness of mitigation options
- Activity 4: Hold a symposium and publish report

There are other outputs in the DSF Project, in addition to output 2.3.1, that aim to assist RFMOs and States in reducing impacts on deepwater sharks. These include:

- Output 1.1.1 on regional obligations in support of international instruments,
- Output 2.1.1 on frameworks to improve science-management interface, including the application of the precautionary approach and ecosystem approach to fisheries, and
- Output 2.1.3 on the use of new technologies to support on-board observers,

Further details are provided in the DSF Project document (FAO, 2022b).

## **NAFO**

Source of information: NAFO, 2023a

Thorny skate is a directed fishery with a TAC of 7000t in 2023.

Catch statistics from NAFO's STATLANT 21A (NAFO, 2023b) for 2010-2021 with coastal states omitted (Canada, USA, SPM, Greenland). All sharks selected. This likely represents an ABNJ catch.

<b>Species/taxa</b>	<b>Average annual catch in tonnes (2010-2021)</b>
Boreal (Greenland) Shark - GSK	4
Dogfishes (NS) - DGX	50
Great blue shark - BSH	6761
Large sharks (NS) - SHX	24
Porbeagle - POR	4
Rays stingrays mantas (NS) - SRX	0.2
Shortfin mako shark - SMA	460
Skates (NS) - SKA	3998
Thorny skate (starry ray) - RJR	2

## **Article 12 – Conservation and Management of Sharks**

### *Duties of the Contracting Party*

1. Each Contracting Party shall:

(a) report all catches of sharks, including available historical data, in accordance with the data reporting procedures set out in Article 28.

(b) prohibit the removal of shark fins on-board vessels.

(c) prohibit the retention on-board, transshipment and landing of shark fins fully detached from a carcass.

(d) prohibit fishing vessels flying its flag from conducting a directed fishery for Greenland shark (*Somniosus microcephalus*) in the Regulatory Area.

(d bis) Notwithstanding the provisions in paragraph (d), Contracting Parties with applicable domestic law that requires a general discard ban or that dead fish be landed may, in accordance with their national law and provided that the fish is dead, retain on board and land incidental bycatch of Greenland sharks. Fishermen are prohibited from drawing any commercial value from such fish.

(e) require every vessel entitled to fly its flag to undertake all reasonable efforts to minimize incidental catch and mortality, and where alive, release Greenland sharks in a manner that causes the least possible harm.

#### *General Provisions*

2. Without prejudice to paragraph 1, in order to facilitate on-board storage, shark fins may be partially sliced through and folded against the carcass.

3. No fishing vessel shall retain on board, tranship or land any fins harvested in contravention of these provisions.

4. In fisheries that are not directed at sharks, each Contracting Party shall encourage every vessel entitled to fly its flag to release sharks alive, and especially juveniles, that are not intended for use as food or subsistence.

#### *Research*

5. Contracting Parties shall, where possible:

(a) undertake research to identify ways to make fishing gear more selective for the protection of sharks.

(b) conduct research on key biological and ecological parameters, life-history, behavioural traits and migration patterns, as well as on the identification of potential mapping, pupping and nursery grounds of key shark species.

6. Contracting Parties shall provide the results of such research to the Executive Secretary.

### **Article 13 - Gear Requirements**

#### ***Mesh Sizes***

2(c) 280 mm in the codend and 220 mm in all other parts of the trawl for skate (SKA);

#### ***Use of Attachments***

7. Vessels fishing for shrimp in Divisions 3L or 3M shall use sorting grids or grates with a maximum bar spacing of 22 mm. Vessels fishing for shrimp in Division 3L shall also be

equipped with toggle chains with a minimum length of 72 cm as measured in accordance with Annex III.B.

## Article 28 – Monitoring of Catch

### Catch Reporting

6 Every fishing vessel shall transmit electronically to its FMC the following reports in accordance with the format and the content prescribed for each type of report in Annex II.D and Annex II.F:

(c) catch report (CAT): quantity of catch retained and quantity discarded by species for the day preceding the report, by Division, including nil catch returns, sent daily before 12:00 UTC unless otherwise submitted in a COX report. Nil catch retained and nil discards of all species shall be reported using the 3 alpha code MZZ (marine species not specified) and quantity as “0” as the following examples demonstrate (//CA/MZZ 0// and //RJ/MZZ 0//);  
(g) catch shall be reported at the species level under their corresponding 3-alpha code presented in Annex I.C or if not contained in Annex I.C the FAO ASFIS List of Species for Fishery Statistics. The estimated weight of sharks caught per haul or set shall also be recorded.

[Note: “Catch” seems to refer to both retained and discarded and is qualified when referring to one or other. Discards are subject to mandatory reporting under code “RJ”]

Annex I.C “List of species” lists 8 large pelagic sharks, 3 dogfish, 8 skates and Greenland shark. These are all “more-or-less” commercial species.

### Article 30 - Observer Program

14(j) for all observed hauls/sets that contain Greenland shark, record the number, estimated weight, length (estimated if measured length is not possible), sex, and catch disposition (alive, dead, unknown) of each individual Greenland shark per haul or set.

### Annex I.A

Thorny skate is a directed fishery that has an annual TAC.

### Annex 1.C Listed species (elasmobranchs only)

Common English Name	Scientific Name	3-Alpha Code
<b>Pelagic sharks</b>		
Porbeagle	<i>Lamna nasus</i>	POR
Sand Tiger shark	<i>Odontaspis taurus</i>	CCT
Shortfin mako shark	<i>Isurus oxyrinchus</i>	SMA
Dusky shark	<i>Carcharhinus obscurus</i>	DUS
Great Blue shark	<i>Prionace glauca</i>	BSH
Large sharks (NS)	<i>Squaliformes</i>	SHX
Atlantic Sharpnose shark	<i>Rhizoprionodon terraenova</i>	RHT
Basking shark	<i>Cetorhinus maximus</i>	BSK
<b>Demersal sharks</b>		
Spiny (=piked) dogfish	<i>Squalus acantias</i>	DGS
Dogfishes (NS)	<i>Squalidae</i>	DGX
Black Dogfish	<i>Centroscyllium fabricii</i>	CFB
Boreal (Greenland) shark	<i>Somniosus microcephalus</i>	GSK
Skates (NS)	<i>Raja</i> sp.	SKA
Little skate	<i>Leucoraja erinacea</i>	RJD
Arctic skate	<i>Amblyraja hyperborea</i>	RJG
Barndoor skate	<i>Dipturus laevis</i>	RJL
Winter skate	<i>Leucoraja ocellata</i>	RJT
Thorny skate (Starry Ray)	<i>Amblyraja radiata</i>	RJR
Smooth skate	<i>Malacoraja senta</i>	RJS
Spinytail skate (Spinetail Ray)	<i>Bathyraja spinicauda</i>	RJQ

## NEAFC

The catches (landings) listed below are from the NEAFC website (NEAFC, 2023a)

Spp (in italics are deepsea spp)	2021	2020	2019
Porbeagle	0	1	not reported
Basking shark	0	0	not reported
<i>Spiny dogfish</i>	0	0	not reported
<i>Iceland catshark</i>			1
<i>Black dogfish*</i>			3
<i>Rabbit fish (ratfish)</i>	185	239	467
<i>Large- Eyed Rabbit Fish (Ratfish)</i>			
<i>Portuguese Dogfish*</i>	1		7
<i>Longnose Velvet Dogfish*</i>			1
<i>Birdbeak Dogfish*</i>			4
<i>Great Lanternshark*</i>			7
<i>Velvet Belly Lanternshark*</i>	117	171	173
<i>Mouse Catshark</i>			
<i>Small-eye catshark*</i>			
<i>Pale catshark*</i>			
<i>Greenland Shark</i>	70	56	
<i>Gulper Shark</i>		1	1
<i>Leafscale Gulper Shark*</i>		1	12
<i>Frilled Shark</i>			
<i>Norwegian Skate</i>			1
<i>Sailfin Roughshark (Sharpback Shark)</i>			
<i>Arctic Skate</i>	13	9	2
<i>Round Skate</i>			
<i>Blond(blunt?)nose Six-Gilled Shark*</i>			
<i>Kitefin Shark*</i>			
<i>Lantern sharks</i>			
<i>Blackmouth Dogfish*</i>	86	74	75
<i>Knifetooth Dogfish*</i>			1

In italics are from the whole NEAFC area. ABNJ catches (XNE) not provided

\* Reported in the ICES study from surveys (see end of this section). Also includes mitigation options. Most of these deep-water sharks are only present in depths greater than 500 m.

The measures listed below are from NEAFC website (NEAFC, 2023b)

### **Recommendation 05 : 2023 Recommendation on Conservation and Management Measures for Spurdog (*Squalus acanthias*) in ICES Subareas 1–10, 12 and 14 for 2023 and 2024**

Total catches of spurdog (*Squalus acanthias*) in ICES Subareas 1–10, 12, and 14 shall be no more than 17 353 tonnes in 2023 and no more than 17 855 tonnes in 2024.

Consistent with Recommendation 7:2018 on Deep-Sea Fisheries within the NEAFC Regulatory Area, Contracting Parties shall on the basis of the precautionary approach effectively manage fishing for spurdog by vessels flying their flag, including by ensuring that such fisheries only expand gradually with significant caution, bearing in mind that until 2022 all targeted fishing was prohibited, and by ensuring that the reopened fishery provides relevant data facilitating assessment of sustainability, based on best available scientific information.

The Secretary shall present to PECMAS at the end of 2023 and at the end of 2024 an overview of catches of spurdog.

Based on that overview PECMAS should consider formulating proposals for additional conservation and management measures for spurdog.

Only vessels entitled to fly the flag of a NEAFC Contracting Party, having been authorised by its flag State to fish for spurdog in the NEAFC Regulatory Area, may take part in the fishery

**Recommendation 10 : 2023 Recommendation for the banning of discards in the NEAFC Regulatory Area**

No ban on discarding any elasmobranch spp.

**Recommendation 9 : 2020: Recommendation on Conservation and Management Measures for Deep Sea Sharks in the NEAFC Regulatory Area from 2020 to 2023**

The Commission hereby adopts the following Recommendation pursuant to Article 5 of the NEAFC Convention:

1. Each Contracting Party shall prohibit vessels flying its flag in the Regulatory Area from directed fishing for deep sea sharks.
2. Contracting Parties shall submit all data on deep sea sharks available to ICES for further evaluation of the state of the stocks.
3. Contracting Parties are encouraged to take conservation measures with equal effect within waters under their national jurisdiction.
4. For the purposes of this Recommendation, 'deep sea sharks' means the following list of species:

Gulper shark, Leafscale gulper shark, Black dogfish, Portuguese dogfish, Longnose velvet dogfish, Kitefin shark, Greater lanternshark, Iceland catshark, Frilled shark, Birdbeak dogfish, Blackmouth dogfish, Mouse catshark, Bluntnose six-gilled shark, Velvet belly, Sailfin roughshark (Sharpback shark), Knifetooth dogfish, Greenland shark.

This measure shall be in force from 1 January 2020 to 31 December 2023.

**Recommendation 7 : 2020 Recommendation on Conservation and Management Measures for Porbeagle (Lamna Nasus) in the NEAFC Regulatory Area from 2020 to 2023**

1. Each Contracting Party shall, for the period 2020 to 2023, prohibit all directed fishing of porbeagle (Lamna nasus) in the Regulatory Area by vessels flying its flag.
2. 2. – 5. etc

**Recommendation 8 : 2020 Recommendation on Conservation and Management Measures for Basking Shark (*Cetorhinus Maximus*) in the NEAFC Regulatory Area from 2020 to 2023**

1. Each Contracting Party shall, for the period 2020 to 2023, prohibit all directed fishing of basking shark (*Cetorhinus maximus*) in the Regulatory Area by vessels flying its flag.

2. 2. – 5. etc

**Recommendation 10 : 2020 Recommendation on Conservation and Management Measures for Deep Sea Rays (Rajiformes) in the NEAFC Regulatory Area from 2020 to 2023**

As above for: Round Skate, Arctic Skate, Norwegian Skate.

**Recommendation 11: 2020 Recommendation on Conservation and Management Measure for Deep Sea Chimaeras in the NEAFC Regulatory Area from 2020 to 2023**

As above for: Rabbit fish, Large-eyed rabbit fish (Ratfish), Straightnose rabbitfish

**Recommendation 10:2015 Recommendation on Conservation of Sharks Caught in Association with Fisheries Managed by the North-East Atlantic Fisheries Commission (Shark fins)**

The Commission hereby adopts the following Recommendation pursuant to Article 5 of the Convention:

1. Contracting Parties shall report data for catches of sharks on an annual basis, in accordance with NEAFC data reporting procedures, estimates of discards (dead and alive) and size frequencies.
2. Contracting Parties shall take the necessary measures to require that the entire catches of sharks are landed. This means retention of all parts of the shark excepting head, guts and skins, to the point of first landing.
3. Contracting Parties shall prohibit the removal of shark fins at sea and the retention on board, transshipment and landing of shark fins.
4. Without prejudice to paragraph 3 of this Recommendation, in order to facilitate on-board storage, shark fins may be partially sliced through and folded against the carcass, but shall not be removed from the carcass before the first landing.
5. In fisheries that are not directed at sharks, Contracting Parties shall encourage the release of live sharks to the extent possible, that are caught incidentally and are not used for food and/or subsistence.
6. Contracting Parties shall, where possible, undertake research to identify ways to make fishing gears more selective with the aim to reducing by-catches of sharks.
7. Contracting Parties shall, where possible, conduct research to on key biological/ ecological parameters, life history and behavioural traits, migration patterns, as well as on the identification of potential mating, pupping and nursery grounds of key sharks species.

## Recommendation 11:2015 Recommendation on Shrimp Fisheries in the NEAFC Regulatory Area – Sorting Grids

The Commission hereby adopts the following recommendation pursuant to Articles 5 and 7 of the Convention: Each Contracting Party shall ensure that its vessels use sorting grids when fishing for shrimp with trawl in ICES sub-areas I and II of the Regulatory Area. The spacing between the bars of the sorting grid shall not exceed 22 mm.

See ICES advice in response to NEAFC-OSPAR request (ICES, 2020).

## GFCM

GFCM appears to have addressed shark issues with the exception of the recommendations below. Like most other RFMOs, and with the exception of targeted fishing bans on overfished commercial species, the RFMOs everywhere have very few measures that actually reduce shark mortality. The 23<sup>rd</sup> GFCM SAC in 2022 stated “31. Acknowledging the existence of fisheries targeting elasmobranchs in the central Mediterranean and recognizing that many sharks and rays had been and were currently impacted as incidental catch in a variety of fishing activities, the Committee agreed on the need to investigate the possible existence of shark nursery areas in the subregion. Activities should concentrate on the bluntnose sixgill shark (*Hexanchus griseus*) and the great white shark (*Carcharodon carcharias*), but also on other vulnerable shark and ray species in order to promote adequate management measures, in line with Recommendation GFCM/44/2021/16.”. Later in the same report in para. 34, SAC acknowledged the bycatch of shark in the deep-water red shrimp fishery and suggested that grids may help reduce the catch of vulnerable species like sharks. According to FishStatJ, Italy catches almost all the deep-water (Giant) red shrimp in the Mediterranean at around 2500t per year; the fishery is unregulated and started in 2015. FishStatJ (2023) lists some 30 groups (several at higher taxonomic levels) of shark caught in the Mediterranean. The Average annual catches of shark species (excluding rays) in the Mediterranean from 2010-2020 by country and species. Countries with catches of >10 t annually and species >0.2 t are not shown.

Country (Name)	Catch (t)
Libya	4391
Egypt	1792
Tunisia	1311
Spain	401
Algeria	345
Italy	197
Greece	95
Croatia	62
Syrian Arab Republic	45
France	36
Morocco	33
Russian Federation	30
Israel	26
Malta	17
Albania	16

ASFIS species (Name)	Average annual catch
Dogfish sharks nei	4588
Sharks, rays, skates, etc. nei	2075
Blackmouth catshark	1197
Catsharks, nursehounds nei	387
Blue shark	209
Small-spotted catshark	193
Angelshark	122
Tope shark	18
Angelsharks, sand devils nei	17
Gulper shark	6.4
Bluntnose sixgill shark	4.4
Sharpnose sevengill shark	1.3
Sandbar shark	1.1
Houndsharks, smoothhounds nei	0.3
Requiem sharks nei	0.2



Total	8821		8821
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**Recommendation GFCM/44/2021/16 on additional mitigation measures for the conservation of elasmobranchs in the Mediterranean Sea**

This is a request to CPCs to reduce mortality on elasmobranchs and report catches.

**Recommendation GFCM/42/2018/2 on fisheries management measures for the conservation of sharks and rays in the GFCM area of application, amending Recommendation GFCM/36/2012/3**

*Fisheries management measures*

4. CPCs shall ensure that: a) it is prohibited to remove shark fins onboard vessels and to retain, trans-ship or land shark fins; b) in order to facilitate onboard storage, shark fins may be partially sliced through and folded against the carcass, but they shall not be removed from the carcass before landing; c) beheading and skinning of specimens onboard and before landing are prohibited, and beheaded and skinned sharks shall not be marketed at first sale after landing; and d) it is prohibited to purchase, offer for sale or sell shark fins which have been removed, retained onboard, transhipped or landed in contravention of this recommendation.

5. In relation to the reduction of trawl fishing in coastal areas to enhance the protection of coastal sharks: a) CPCs shall ensure that fishing activities carried out with trawl nets are prohibited within 3 nautical miles off the coast, provided that the 50 metre isobath is not reached, or within the 50 metre isobath where that depth is reached at a shorter distance from the coast. b) Specific and spatially limited derogations may be granted etc...

*Elasmobranchs species under Annex II (list of endangered or threatened species) and Annex III (list of species whose exploitation is regulated) of the SPA/BD Protocol to the Barcelona Convention*

6. CPCs shall ensure a high protection from fishing activities for elasmobranch species listed in Annex II of the SPA/BD Protocol of the Barcelona Convention, which must be released unharmed and alive, to the extent possible. 7. Specimens of shark species listed in Annex II of the SPA/BD Protocol shall not be retained on board, transhipped, landed, transferred, stored, sold or displayed or offered for sale. 8. CPCs shall ensure that tope shark (*Galeorhinus galeus*) specimens caught with bottom-set gillnets, longlines and tuna traps be promptly released unharmed and alive, to the extent possible.

*Monitoring, data collection and research*

9. CPCs shall ensure that: a) information on fishing activities, catch data, incidental catches, release and/or discarding of sharks species listed either in Annex II or Annex III of the SPA/BD Protocol, is recorded by the shipowner in the logbook or in an equivalent document, in line with the requirements of Recommendation GFCM/35/2011/1; b) such information is reported to the national authorities for notification to the GFCM Secretariat within their annual national reporting to the SAC and in accordance with the data reporting requirements of relevant GFCM recommendations, in line with the GFCM Data Collection Reference Framework (DCRF); and c) any other additional measure is taken to improve data collection in view of the scientific monitoring of species.

10. As appropriate, the GFCM and its CPCs shall, individually and collectively, engage in capacity-building efforts and other research cooperative activities to improve knowledge on sharks and shark fisheries and to support the effective implementation of this recommendation, including entering into cooperative arrangements with other relevant international bodies. 11. The provisions referred to in paragraphs 4, 5, 6, 7, 8 and 9 are without prejudice to stricter rules implemented by CPCs.

## SEAFO

Average annual catch (2010-2020) of sharks and rays in the ABNJ of SE Atlantic (FishStatJ, 2023)

State	Av. annual catch (t)	ASFIS species	Av. annual catch (t)
Spain	3981	Blue shark	5729
Taiwan Province of China	976	Sharks, rays, skates, etc. nei	3.0
Portugal	772	Bluntnose sixgill shark	0.4
France	2	Rays, stingrays, mantas nei	0.1
Grand Total	5732	Grand Total	5732

### System of Observation, Inspection, Compliance and Enforcement (2019) - Appendix D – Provisional SEAFO Species List

Includes: Leafscale gulper shark, Smalleyed rabbitfish, Black dogfish, Blurred smooth lantern shark, Shorttail lanternshark, Great lanternshark, Smooth lanternshark, Bluntnose sixgill shark, Kerguelen sandpaper skate, Ghost catshark, Greenland shark, Little sleeper shark, Spiny Dogfish

### Conservation Measure 04/06 on the Conservation of Sharks Caught in Association with Fisheries Managed by SEAFO

1. Each Contracting Party shall annually report data for catches of sharks, in accordance with SEAFO data reporting procedures, including available historical data.
2. Each Contracting Party shall take the necessary measures to require that their fishermen fully utilise their entire catches of sharks. Full utilisation is defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing.
3. Each Contracting Party shall require their vessels to not have onboard fins that total more than 5 % of the weight of sharks onboard, up to the first point of landing. Contracting Parties that currently do not require fins and carcasses to be off-loaded together at the point of first landing shall take the necessary measures to ensure compliance with the 5 % ratio through certification, monitoring by an observer, or other appropriate measures.
4. The ratio of fin-to-body weight of sharks described in paragraph 3 shall be reviewed by the Scientific Committee and report back to the Commission in 2008 for revision, if necessary.
5. Fishing vessels are prohibited from retaining on board, transshipping or landing any fins harvested in contravention of this conservation measure.

6. In fisheries that are not directed at sharks, Contracting Parties shall encourage the release of live sharks, especially juveniles, to the extent possible, that are caught incidentally and are not used for food and/or subsistence.

7. Each Contracting Party shall, where possible, undertake research to identify ways to make fishing gears more selective (such as the implications of avoiding the use of wire traces). 1  
Approved 04/10/2006

8. Each Contracting Party shall, where possible, conduct research to identify shark nursery areas.

9. The Commission shall consider appropriate assistance to Developing States, Parties to the Convention, for the collection of data on their shark catches.

10. This resolution applies only to sharks caught in association with fisheries for species covered by the SEAFO Convention.

### **Recommendation 1/2008 Banning of deep-water shark catches**

The Commission in accordance with the International Plan of action for sharks recommended to ban deep-water shark directed fisheries in the SEAFO Convention Area until additional information becomes available to identify sustainable harvesting levels

### **Recommendation 2/2009 on Banning of gillnets**

The Commission in accordance with Article 3 (a & e) and Article 19 of the Convention on General Principles and Compatibility of Conservation Measures and Management Measures at it's Annual meeting in October 2009 recommended that gillnets be banned in the SEAFO Convention Area until such time that more information became available.

### **NPFC**

There is no specific information publicly available on elasmobranch catches in the north Pacific ABNJ. However, there is catch reported from the NW Pacific including EEZs, showing that elasmobranchs are in demand in this region (FishStatJ, 2023).

State	Av. annual catch (2010-2020)
Taiwan Province of China	16712
Japan	9176
China, Hong Kong SAR	294
Korea, Republic of	279
China	2
Russian Federation	1
Total	26464

Row Labels	Av. annual catch (2010-2020)
Sharks, rays, skates, etc. nei	26364
Japanese topeshark	98
Blue shark	2
Total	26464

### **CMM 2019-05 (Entered into force 29 November 2019) Conservation and Management Measure for Bottom Fisheries and Protection of Vulnerable Marine Ecosystems in the Northwestern Pacific Ocean**

4.I. Ensure that the distance between the footrope of the gill net and sea floor is greater than 70 cm.

## SPRFMO

The public domain database on the SPRFMO website lists the annual chondrichthyan catch in the SPRFMO area (i.e. ABNJ) from 1975-2018, with most records from 2010 (SPRFMO, 2023). These are a mix of pelagic and demersal species and most have been identified to species level. The catches are generally quite low with the exception of some “countries” and years. The European Union fished in 2010 and 2014 and caught, respectively, 292 and 144 tonnes in those years. New Zealand’s annual catch has also fluctuated with high catches in 2010 and 2014 of 305 and 158 t, respectively. These would represent landed catches. A PSA and SAFE analysis using Australian observer data has been conducted on chondrichthyans in the SPRFMO area by Georgeson *et al.* (2019).

Species	Av annual catch (tonnes)	State	Av annual catch (tonnes)
Kitefin shark	55	European Union	48
Birdbeak dogfish	3	New Zealand	20
Various sharks nei	2	Australia	1
Total	70	Grand Total	70

### **CMM 08-2019 Conservation and Management Measure for Gillnets in the SPRFMO Convention Area**

Ban on deepwater gillnets.

### **CMM 14a-2022 Conservation and Management Measure for Exploratory Fishing for Toothfish by New Zealand-Flagged Vessels in the SPRFMO Convention Area**

18. If 250kg or more of deepwater sharks (all species in class Chondrichthyes combined on all sets within the cluster) are caught in a cluster of sets, then no further clusters will be set within 10 nm of the location of that cluster until the information from that voyage has been reviewed by the Scientific Committee.

### **CMM 14d-2020 Conservation and Management Measure for Exploratory Fishing for Toothfish by Chilean-Flagged Vessels in the SPRFMO Convention Area**

Management measures 18. If 250 kg or more of deep-water sharks (all species in class Chondrichthyes combined on a line) are caught, then no further lines will be set within 10 nautical miles of the location of that line until the information from that voyage has been reviewed by the Scientific Committee.

### **CMM 14e-2021 Conservation and Management Measure for Exploratory Fishing for Toothfish by the European Union in the SPRFMO Convention Area**

20 Marine mammals, seabirds, and other species of concern

i) Shark, skate, and macrourid bycatch mitigation measures: i) If more than 4 individuals of any of the following families Somniosidae [ sleeper sharks – large pelagic and benthic]\*, Lamnidae [white sharks – pelagic], Cetorhinidae [basking sharks - pelagic], Alopiidae [thresher sharks - pelagic] are caught or if more than 2 individuals of any one of these families of sharks are caught in one haul or set, the vessel shall move on for the duration of the trip, and a next line shall not be set closer than 5 nm from the centre of the preceding line;

j) If the retained skate by-catch exceeds 5% of the toothfish catch or reaches a maximum of 100 kg in any one haul or set, the vessel will move-on to another location at least 5 nm distant;

\* [added text in square brackets]

## SIOFA

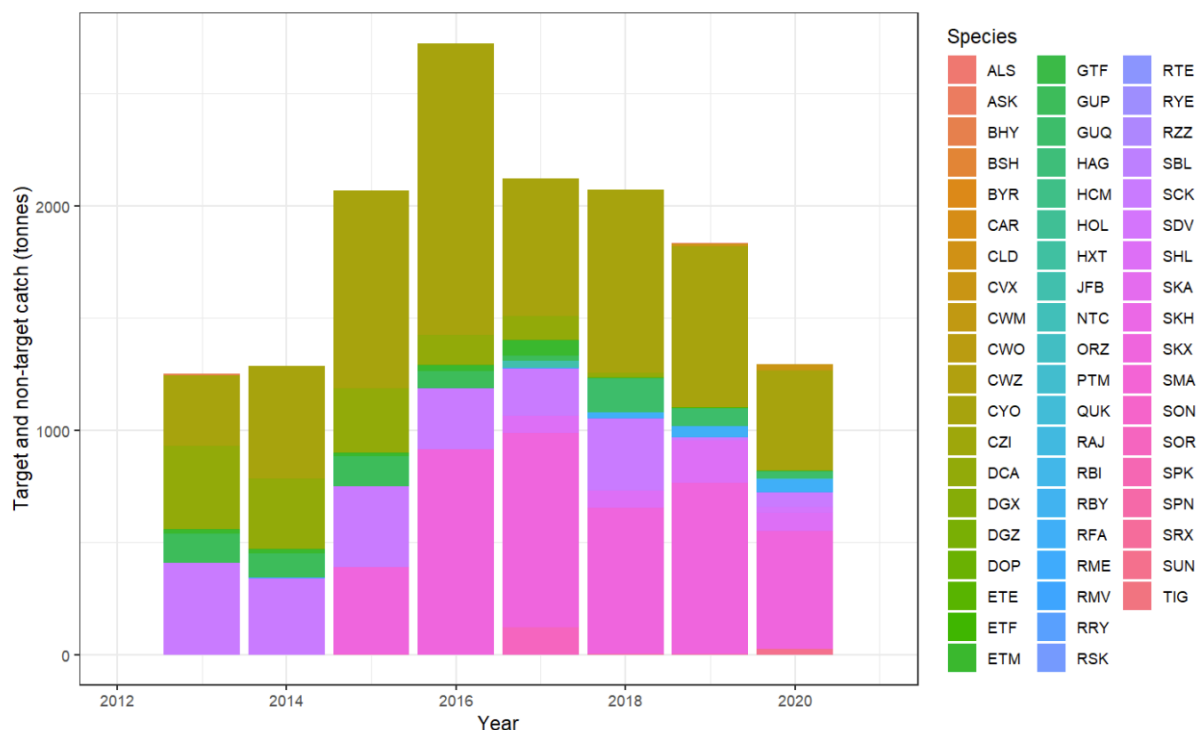


Figure 3. Yearly shark target and non-target catch by species in the SIOFA area (SIOFA Secretariat, 2022).

The top five landed sharks in recent years from the SIOFA area are Portuguese dogfish (CYO), birdbeak dogfish (DCA), gulper shark (GUP), kitefin shark (SCK) and the group “elasmobranchs” (SKX). Total catches peaked at around 2800 t in 2016 but have been declining since and catches for 2019-2021 have been in the 1000-1500 t range (Figure 3).

### **CMM 2022/12 Conservation and Management Measure for Sharks [Chondrichthyans] (Sharks)**

1. This CMM applies to all fishing vessels of Contracting Parties, cooperating non-Contracting Parties (CNCs) and participating fishing entities (PFEs) to the Agreement (collectively CCPs), engaged in fishing operations in the SIOFA Area of Application (the Agreement Area).
2. CCPs shall ensure that fishing vessels flying their flag do not target any deep-sea shark species listed in Annex 1 within the Agreement Area, until the Scientific Committee defines and the Meeting of the Parties agrees on possible appropriate fishing mortality and harvest levels for any of these species.
3. CCPs shall ensure that fishing vessels flying their flag record and submit all reporting requirements as per CMM 2022/02 (Data Standards) for all deep-sea sharks to the lowest taxonomical level possible when engaged in fishing for fishery resources.
4. By 2020 the Scientific Committee shall advise the Meeting of the Parties on the need to adopt any appropriate by-catch limits for relevant SIOFA deep sea shark species and fleets,

including on scientific and data needs for underpinning the elaboration of such advice. 1 CMM 2022/12 (Sharks) supersedes CMM 2019/12 (Sharks). 2 The term “sharks” refers to Chondrichthyes for the purposes of this CMM, as defined by the Food and Agriculture Organisation (FAO)

5. CCPs shall, where possible, undertake research to identify ways to make all relevant fishing gears more selective to minimise deep sea shark by-catch and shall provide relevant information to the Scientific Committee.

6. CCPs shall, where possible, conduct research to identify shark nursery areas in the Agreement Area and provide relevant information to the Scientific Committee.

7. This CMM shall be reviewed every second year by the Scientific Committee and the Compliance Committee, unless the Meeting of the Parties decides otherwise.

ANNEX 1: List of “high risk” and “of concern” deep sea shark species for the purpose of this CMM.

Scientific name	French common name	English common name	FAO code
<i>Centroscyrnus coelolepis</i>	Pailona commun	Portugese dogfish	CYO
<i>Deania calcea</i>	Squale savate	Birdbeak dogfish	DCA
<i>Centrophorus granulosus</i>	Requin chagrin	Gulper shark	GUP
<i>Dalatias licha</i>	Squale liche	Kitefin shark	SCK
<i>Bythaelurus bachi</i>	Requin chat de Bach	Bach's catshark	BZO
<i>Chimaera buccanigella</i>	Chimère bouche-foncée	Dark-mouth chimaera	ZZC
<i>Chimaera didierae</i>	Chimère de Didier	The Falkor chimaera	ZZD
<i>Chimaera willwatchi</i>	Chimère du marin	Seafarer's ghostshark	ZZE
<i>Centroscyrnus crepidater</i>	Pailona à long nez	Longnose Velvet Dogfish	CYP
<i>Centroscyrnus plunketi</i>	Pailona austral	Plunket shark	CYU
<i>Zameus squamulosus</i>	Squale-grogneur à queue échanquée	Velvet dogfish	SSQ
<i>Etmopterus alphas</i>	Requin lanterne à joues blanches	Whitecheek lanternshark	EZU
<i>Apristurus indicus</i>	Holbiche artouca	Smallbelly catshark	APD
<i>Harriotta raleighana</i>	Chimère à nez rigide	Bentnose rabbitfish	HCR
<i>Bythaelurus tenuicephalus</i>	Requin chat à tête étroite	Narrowhead catshark	BZL
<i>Chlamydoselachus anguineus</i>	Requin lézard	Frilled shark	HXC
<i>Hexanchus nakamurai</i>	Requin gris	Bigeyed six-gill shark	HXN
<i>Etmopterus pusillus</i>	Sagre nain	Smooth lanternshark	ETP
<i>Somniosus antarcticus</i>	Requin dormeur antarctique	Southern sleeper shark	SON
<i>Mitsukurina owstoni</i>	Requin lutin	Goblin shark	LMO

### **CMM 2016/05 Conservation and Management Measure regarding the use of large-scale pelagic driftnets and deepwater gillnets in the Southern Indian Ocean Fisheries Agreement Area (Pelagic Driftnets and Deepwater Gillnets)**

2. Contracting Parties, CNCPs and PFEs recommend that deepwater gillnets not be used in the Agreement Area by any vessel flying the flag of a Contracting Party, CNCP or PFE until such time as the Meeting of the Parties has received a recommendation from the Scientific Committee.

## CCAMLR

Average annual catches of sharks, skates and rays in the Antarctic for 2010-2021 as reported in the CCAMLR catch and effort database (CCAMLR, 2022). Catches >1 t are excluded.

Species/Taxa	Catch (t)	Country	Catch (t)
Rays and skates nei	132	France	186
Whiteleg skate	33	Australia	46
Rays, stingrays, mantas nei	31	New Zealand	4
Eaton's skate	23	Korea	3
Kerguelen sandpaper skate	18	South Africa	3
Pacific sleeper shark	3	UK	2
Antarctic starry skate	2		
Bathyrāja rays nei	2		
Grand Total	246	Grand Total	246

### Conservation Measure 32-18 (2006) Conservation of sharks

All areas, seasons and gears

1. Directed fishing on shark species in the Convention Area, for purposes other than scientific research, is prohibited. This prohibition shall apply until such time as the Scientific Committee has investigated and reported on the potential impacts of this fishing activity and the Commission has agreed on the basis of advice from the Scientific Committee that such fishing may occur in the Convention Area.

2. Any by-catch of shark, especially juveniles and gravid females, taken accidentally in other fisheries, shall, as far as possible, be released alive.

### Conservation Measure 22-04 (2010) Interim prohibition of deep-sea gillnetting

Ban on gillnets in Convention Area

### Conservation Measure 33-03 (2020) Limitation of by-catch in new and exploratory fisheries in the 2020/21 season

Various areas

2. The catch limits for all by-catch are set out in Annex 33-03/A. Within these catch limits, the total catch of by-catch, excluding individuals released alive in any small-scale research unit (SSRU), group of SSRUs or research block for which a specific catch limit (including a zero catch limit) is in place as defined in relevant conservation measures, shall not exceed the following limits:

- skates and rays: 5% of the catch limit of *Dissostichus* spp.
- Macrourus* spp.: 16% of the catch limit for *Dissostichus* spp.
- all other species 16% of the catch limit for *Dissostichus* spp.

5. If the by-catch of any one species is equal to, or greater than, 1 tonne in any one haul or set, then the fishing vessel shall move to another location at least 5 nmiles distant. The fishing vessel shall not return to any point within 5n miles of the location where the by-catch exceeded 1 tonne for a period of at least five days. The location where the by-catch exceeded 1 tonne is defined as the path followed by the fishing vessel.

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