A large, dark blue, glossy object, possibly a shark or ray, lying on a light surface. The object has a curved, elongated shape with a prominent, rounded head and a long, thin tail. The surface is highly reflective, showing a clear reflection of the surrounding environment, including a forest scene. The object is positioned diagonally across the frame, from the top right towards the bottom left.

ENHANCING THE CONSERVATION OF ENDANGERED SHARKS AND RAYS IN THE MEDITERRANEAN

CASE STUDY ON THE BYCATCH AND TRADE OF PROTECTED SPECIES

INTRODUCTION

Plagued by decades of overfishing, the Mediterranean Sea is the region of highest risk for sharks and rays worldwide, with 40% of the species considered threatened compared to 17% globally.¹

Sharks and rays grow slowly, mature late, and have low reproductive potential. As a result, they are highly vulnerable to overfishing and habitat loss, and populations are slow to recover from depletion. Some threatened Mediterranean sharks and rays have undergone serious declines in abundance, biomass and/or area of distribution. Overfishing, whether through target fisheries or unintentional catch (bycatch), has the greatest impact and continues to threaten these vulnerable species, leading to a decline of sharks by more than 97 percent over time.²

The latest IUCN assessments show that over half of the sharks, rays and chimaeras native to the Mediterranean are still at risk of extinction. Over the past half-century, 13 species have become locally extinct, mainly in the Western Mediterranean and the Adriatic Sea. This alarming decrease in species is linked to the high level of fishing effort and bycatch.

Sharks and rays constitute a significant part of the bycatch in most artisanal and industrial fisheries. They are essentially caught by pelagic longline and gillnet fisheries (i.e mako, porbeagle and blue sharks), and by the demersal trawl fisheries (i.e white skate, Maltese skate, common smooth-hound). Habitat loss and degradation are additional threats. The level of threat may even be worse as uncertainty about the conservation status of many species in the Mediterranean remains moderately high. Of the 73 assessed species in the region, 13 remain data deficient.³

Despite the existence of an advanced set of conservation measures, landing and sale of strictly protected species still occurs at an alarming rate, indicating gaps in enforcement, whereas national reporting has been substantially poor, with only occasional bycatch data submitted to the General Fisheries Commission for the Mediterranean (GFCM).

Understanding the gaps in implementation, data collection and reporting, is an essential step toward enhancing the conservation of protected vulnerable shark and ray species in the Mediterranean.

To this end, MedReAct conducted two surveys in 2018 and 2020, through questionnaires and interviews addressed to the Italian control authorities and fish markets, on the bycatch and trade of protected sharks and rays in the Adriatic, Tyrrhenian and Ionian regions. The surveys further assessed the levels of stakeholders' awareness of these protected species, documented cases of non-compliance, and data collection gaps.

1. Malak, D.A. (2011). Overview of the Conservation Status of the Marine Fishes of the Mediterranean Sea. Gland, Switzerland and Malaga, Spain: IUCN, 61pp.
2. Bradai M.N., Saidi B. and Enajjar S. (2012). Elasmobranchs of the Mediterranean and Black Sea: status, ecology and biology. Bibliographic analysis. Studies and Reviews. General Fisheries Commission for the Mediterranean. No. 91. Rome, FAO. 2012. 103 pp.
3. IUCN (2016). The Conservation Status of Sharks, Rays and Chimaeras in the Mediterranean Sea.

PROTECTED SHARKS AND RAYS IN THE MEDITERRANEAN

The Protocol on Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) of the Barcelona Convention strictly protects shark and ray species listed in its Annex II, and regulates the exploitation of species listed in its Annex III (Table 1).

In 2012, the GFCM adopted similar measures for shark and ray species.⁴ In particular, it banned the retention on board, landing and sale of sharks and rays listed in Annex II of the SPA/BD Protocol, with the additional requirement that these species must be released unharmed and alive to the extent possible and be reported to the national authorities. Furthermore, it requested that information on the landing of species listed in Annex III of the SPA/BD Protocol be recorded in the logbook and reported to the national authorities for the annual notification to the GFCM. The GFCM obligations were later transposed into EU legislation.⁵

4. Recommendation GFCM/36/2012/3 on fisheries management measures for conservation of sharks and rays in the GFCM area, amended by Recommendation GFCM/42/2018/2.
5. Regulations EU 2015/2102 amending Regulation (EU) No 1343/2011 on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement area.



Species	IUCN Red List of Threatened Species	Conservation status in the Mediterranean	Threats
Angelshark (<i>Squatina squatina</i>)	■ Critically Endangered	Once common, now almost completely disappeared	Overfishing (bycatch, especially in trawls) Habitat degradation
Sawback angelshark (<i>Squatina aculeata</i>)	■ Critically Endangered	Once common, now almost completely disappeared	Overfishing (bycatch, especially in trawls) Habitat degradation
Smoothback angelshark (<i>Squatina oculata</i>)	■ Critically Endangered	Once common, now almost completely disappeared	Overfishing (bycatch, especially in trawls) Habitat degradation
Angular rough shark (<i>Oxynotus centrina</i>)	■ Vulnerable	Absent or rare, the population has very low densities and its presence is rather occasional in many areas	Overfishing (bycatch, especially in trawls)
Basking shark (<i>Cetorhinus maximus</i>)	■ Endangered	No data available to define the conservation status	Overfishing (bycatch by artisanal and pelagic fisheries)
Blackchin guitarfish (<i>Rhinobatos cemiculus</i>)	■ Critically Endangered	Severe declines in abundance and area of occupancy	Overfishing
Common guitarfish (<i>Rhinobatos rhinobatos</i>)	■ Endangered	Once common, now virtually extirpated from northern Mediterranean	Degradation of shallow inshore habitats
Common sawfish (<i>Pristis pristis</i>)	■ Critically Endangered	Absent or rare, its presence in the Mediterranean is accidental	Absent or rare, its presence in the Med is accidental
Smalltooth sawfish (<i>Pristis pectinata</i>)	■ Critically Endangered	Absent or rare, its presence in the Mediterranean is accidental	Absent or rare, its presence in the Med is accidental
Common skate (<i>Dipturus batis</i>)	■ Critically Endangered	No data available to define the conservation status	Overfishing (bycatch especially in trawls and longlines)
Maltese skate (<i>Leucoraja melitensis</i>)	■ Critically Endangered	Absent or rare from areas where once common. Considered under imminent extinction threat	Overfishing (bycatch especially in trawls)
Sandy skate (<i>Leucoraja circularis</i>)	■ Endangered	Substantial reduction in area of occurrence, with local extinctions. Significant population decline over 50 years	Overfishing (bycatch)
White skate (<i>Rostroraja alba</i>)	■ Endangered	Absent or rare from areas where once common	Overfishing (bycatch especially in trawls)
Giant devil ray (<i>Mobula mobular</i>)	■ Endangered	Occurrence in offshore, deep waters and, occasionally, in shallow waters throughout the Mediterranean Sea, currently decreasing population trend	Overfishing (bycatch, especially in trawls, longlines and purse seines)
Great hammerhead (<i>Sphyrna mokarran</i>)	■ Endangered	Severe population decline: > 99.99% over 107-178 years	Overfishing (with high post-capture mortality) and high commercial value of fins
Scalloped hammerhead (<i>Sphyrna lewini</i>)	■ Vulnerable	Rapid declines in catches	Overfishing (with high post-capture mortality) and high commercial value of fins
Smooth hammerhead (<i>Sphyrna zygaena</i>)	■ Vulnerable	Severe population decline: > 99.99% over 107-178 years	Overfishing (with high post-capture mortality)
Great white shark (<i>Carcharodon carcharias</i>)	■ Vulnerable	No data available to define the conservation status	Overfishing and high commercial value of fins

Species strictly protected (Annex II)	Porbeagle (<i>Lamna nasus</i>)	■ Critically Endangered	Now scarce where once common, and virtually disappeared from Mediterranean records. Severe population decline: >99.99% over 106-135 years	Overfishing (any catches are likely unsustainable)
	Shortfin mako (<i>Isurus oxyrinchus</i>)	■ Endangered	Once common, now virtually disappeared from some areas. Severe population decline: >99.99% over 106-135 years	Overfishing (any catches are likely unsustainable)
	Grey nurse shark or Sand tiger shark (<i>Carcharias taurus</i>)	■ Critically Endangered	No data available to define the conservation status	Overfishing (bycatch)
	Smalltooth sand tiger (<i>Odontaspis ferox</i>)	■ Vulnerable	Few records may suggest that the species is quite rare, but the population trend cannot be defined.	Occasionally fished as bycatch from longlines or trawls
	Spiny butterfly ray (<i>Gymnura altavela</i>)	■ Vulnerable	No data available to define the conservation status	Overfishing (bycatch especially in trawls). Habitat degradation
	Tope shark (<i>Galeorhinus galeus</i>)	■ Vulnerable	Once common in coastal waters, now a rare bycatch. Severe population decline: >99.97% over 25 years	Overfishing (bycatch) Habitat degradation

Species the exploitation of which is regulated (Annex III)	Species	IUCN Red List of Threatened Species	Conservation status in the Mediterranean	Threats
	Blackspotted smooth-hound (<i>Mustelus punctulatus</i>)	■ Data deficient	Common. According to demographic models, the population is expected to be reduced by 50% in the next 20 years	Overfishing and bycatch, especially in trawls
	Common smooth-hound (<i>Mustelus mustelus</i>)	■ Vulnerable	Common. According to demographic models, the population is expected to be reduced by 50% in the next 20 years	Overfishing and bycatch, especially in trawls
	Starry smooth-hound (<i>Mustelus asterias</i>)	■ Least concern	Common. According to demographic models, the population is expected to be reduced by 50% in the next 20 years	Overfishing and bycatch, especially in trawls
	Blue shark (<i>Prionace glauca</i>)	■ Near Threatened	Once very common. Currently, severe population decline: 75% in the last 30 years	Overfishing and bycatch
	Sandbar shark (<i>Carcharhinus plumbeus</i>)	■ Vulnerable	No data available to define the conservation status	Overfishing (especially in the past)
	Common thresher shark (<i>Alopias vulpinus</i>)	■ Vulnerable	Once very common. Severe population decline: > 80% in the last 15 years	Overfishing and bycatch especially in longlines
	Gulper shark (<i>Centrophorus granulosus</i>)	■ Data deficient	Absent or rare. No data available to define the conservation status	Occasionally, bycatch especially in trawls and longlines
	Sharpnose sevengill shark (<i>Heptranchias perlo</i>)	■ Near Threatened	Absent or rare. No data available to define the conservation status	Occasionally, bycatch especially in trawls and longlines
Spiny dogfish (<i>Squalus acanthias</i>)	■ Vulnerable	Common. Considered under threat	Overfishing and bycatch especially in trawls and longlines	

Table 1. List of shark and ray species of Annex II and III of the SPA/BD Protocol of the Barcelona Convention

BYCATCH AND SALE OF PROTECTED SHARKS AND RAYS

Occurrences of bycatch and sale of protected shark and ray species were revealed in replies to two surveys conducted by MedReAct in Italian fishing ports and fish markets along the Adriatic coast from July to October 2018, and along the Tyrrhenian and Ionian coasts in February and March 2020.

Data on the bycatch of sharks and rays listed in Annexes II and III of the SPA/BD Protocol were collected through questionnaires and interviews with the control authorities and fish markets. Meetings with local fishermen were organized in several ports to increase stakeholders' awareness of existing conservation measures and to share a guide to the identification of protected species.

The questionnaires and interviews included queries on: the bycatch and sale of protected species during the period 2015-2017 for the Adriatic region and during 2016-2018 for the Tyrrhenian and Ionian regions;⁶ the level of knowledge of the EU and GFCM regulations; the monitoring, control and surveillance measures in place, including training of inspectors and fish markets operators; recorded violations and sanctions imposed for the lack of compliance with the conservation measures.



Figure 1. Map of fishing ports involved in the Adriatic, Tyrrhenian and Ionian Seas surveys

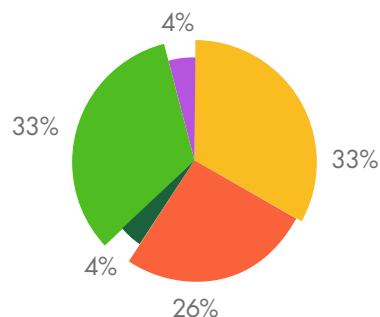
6. With the addition of data on bycatch of mako shark, reported in 2020 by the control authorities of Catania (Sicily).



The Adriatic survey

In the Adriatic, MedReAct's survey was carried out by means of a questionnaire addressed to the control authorities (Coast Guard) of Ancona, Bari, Pescara, Ortona, Termoli, Giulianova, Vasto, San Benedetto del Tronto, Trieste and Venezia. The feedback received from all the control authorities contacted indicated that:

- Controls on the protected species were mostly concentrated on landings and fish markets.
- Training sessions on the identification of protected species had been organized with fishermen in Termoli and Trieste, and with fish markets operators in Trieste (Figure 2).
- Bycatch of protected sharks and rays was reported only in one case; landings of Annex II species - the common skate and the white skate - along with landings of blue shark, common smooth-hound and spiny dogfish, all listed in Annex III (Figure 3), were also reported. No infringement was registered for the landing of Annex II skate species.



- control on landings
- control at sea
- training to fishermen and fish market operators
- control in fish markets
- other

Figure 2. Control activities by the Coast Guard in the Adriatic

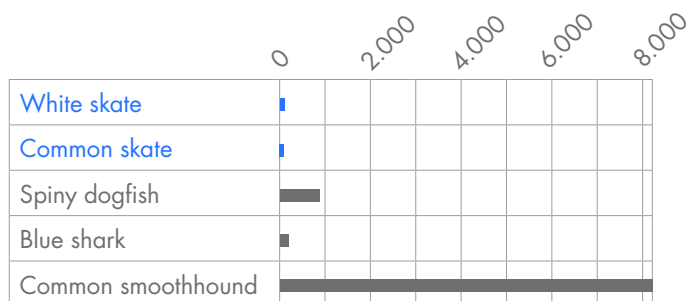


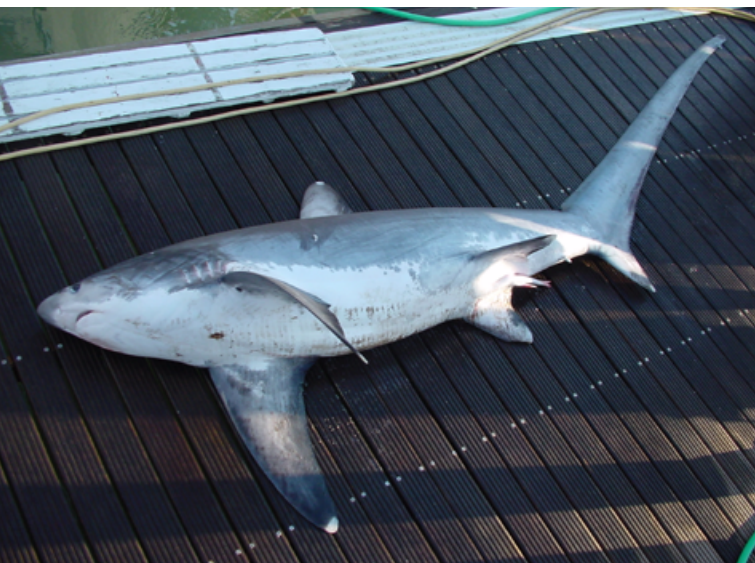
Figure 3. Landings by Annex II (in blue) and Annex III (in grey) species in San Benedetto del Tronto



In parallel, questionnaires were sent to ten fish markets (Ancona, Brindisi, Chioggia, Pescara, San Benedetto del Tronto, Cesenatico, Trieste, Vasto and Palermo) with six of them providing feedback.

Fish markets of Ancona, Brindisi, Chioggia, Molfetta, Pescara and San Benedetto del Tronto did not organize training courses on the identification of protected shark and ray species and just half of them (Ancona, San Benedetto del Tronto and Pescara) were aware of the EU and GFCM regulations on protected sharks and rays. Furthermore, the survey indicated that between 2015-2017:

- The fish market in Brindisi recorded sales of Annex II species: angular rough shark, common skate, giant devil ray, white skate and porbeagle (Figure 4), despite the fact that the sale of shark species listed in Annex II is prohibited.⁷
- Fish markets in Ancona and Chioggia traded large quantities of species listed in Annex III. For example, 11.454 kg of common smooth-hound and 1.186 kg of blue shark (Figure 5).



	San Benedetto del Tronto	Pescara	Molfetta	Chioggia	Brindisi	Ancona
Porbeagle					●	
Starry smooth-hound				●		
Common smooth-hound	●		●	●	●	●
Blackspotted smooth-hound				●		
Blue shark				●	●	●
Spiny dogfish	●	●		●	●	●
Angular rough shark					●	
Common thresher shark					●	
Common skate					●	
Giant devil ray					●	
White skate					●	

Figure 4. Annex II (in blue) and Annex III (in grey) species traded and reported by fish markets (2015-2017)

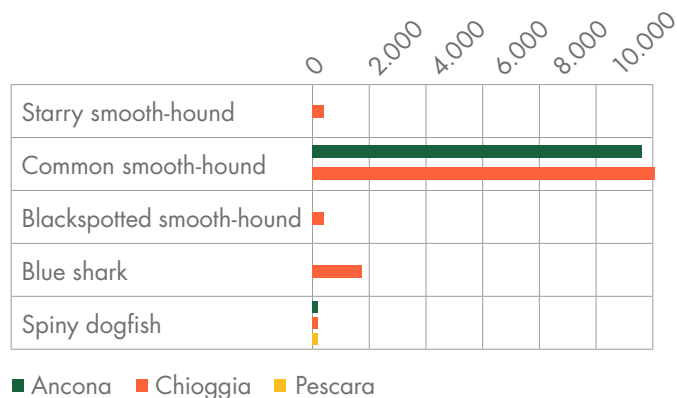


Figure 5. Quantity (kg) of traded Annex III species reported by fish markets (2015-2017). The quantity of species of Chioggia's fish market has been estimated based on the number of specimens reported and the average weight of one single individual.

7. Recommendation GFCM/36/2012/3 on fisheries management measures for conservation of sharks and rays in the GFCM area, amended by Recommendation GFCM/42/2018/2.

The Tyrrhenian and Ionian survey

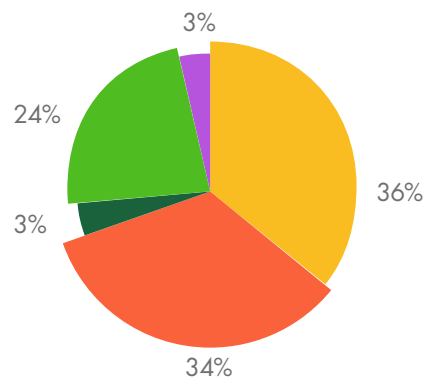
In 2020, thanks to the collaboration of the Italian Coast Guard General Comand, the survey was expanded to include interviews with the control authorities of Cagliari, Castellammare di Stabia, Catania, Civitavecchia, Corigliano Calabro, Gaeta, Genova, Imperia, Livorno, Messina, Olbia, Oristano, Palermo, Portoferraio, Reggio Calabria, Fiumicino, Salerno, Savona, La Spezia, Taranto, Trapani, Viareggio and Vibo Valentia.

The feedback received from all control authorities showed that:

- The main control activities were conducted on landings and at sea (Figure 6), rather than on landings and in fish market as in the Adriatic.
- Landings of porbeagle, basking shark and shortfin mako (Annex II) and landings of blue shark, common smooth-hound and spiny dogfish (Annex III) were detected by the control authorities of Imperia, Catania (in 2020), Portoferraio, Reggio Calabria and Savona (Figure 7).
- In one case, the landing of shortfin mako (Catania, 2020) was subject to sanctions.

During the survey, MedReAct was informed by control authorities that the protection status of shortfin mako was unclear, as this species is not listed among those for which fishing is prohibited under the EU annual fishing opportunities regulation.

Therefore, not all shortfin mako landings were recorded and subject to sanctions.



- control on landings
- control at sea
- training to fishermen and fish market operators
- control in fish markets
- other

Figure 6. Control activities by the Coast Guard in the Tyrrhenian and Ionian regions



Figure 7. Number of detections of Annex II (in blue) and Annex III (in grey) species by control authorities (2016-2018)

While ten fish markets were contacted (Cagliari, Imperia, Viareggio, Oristano, Corigliano, Cabras, Savona, Genoa, Reggio Calabria and Livorno), feedback was received only from those of Corigliano, Cabras, Savona, Genoa and Livorno which reported that:

- Fish market operators are aware of the existing EU and GFCM regulations on protected shark and rays but have never attended training courses on the identification of these species.
- Between 2016 and 2018, a large amount of Annex II white skate (3.787 kg) was sold in Corigliano. Common smooth-hound and spiny dogfish (Annex III) were sold in Livorno. Blue shark was sold in Savona (Figure 8).

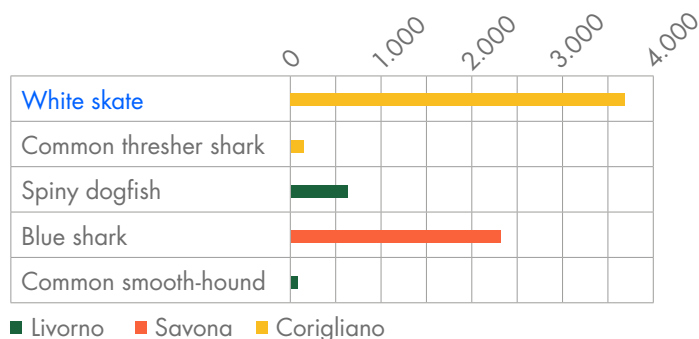


Figure 8. Quantity (kg) of Annex II (in blue) and Annex III (in grey) traded by fish markets (2016-2018)

Interviews with fishermen from the Tyrrhenian fishing ports of Castellabate, Oristano, Cagliari, Viareggio, Livorno and Imperia revealed that they had difficulty identifying the protected species of sharks and rays and correctly reporting catches of Annex II and III species in the logbooks, for example using the FAO species code. Fishermen were generally unaware of the protection status of certain species and of the prohibition to catch, retain on board, land and sell Annex II species, as was observed for shortfin mako. Fishermen recognized having captured and landed species listed in Annex II, such as shortfin mako, angular rough shark and giant devil ray, in the past. Once caught, these species were usually discarded due to their low economic value. Fishermen also recognized frequently catching and landing common smooth-hound, spiny dogfish and blue shark, all Annex III species.

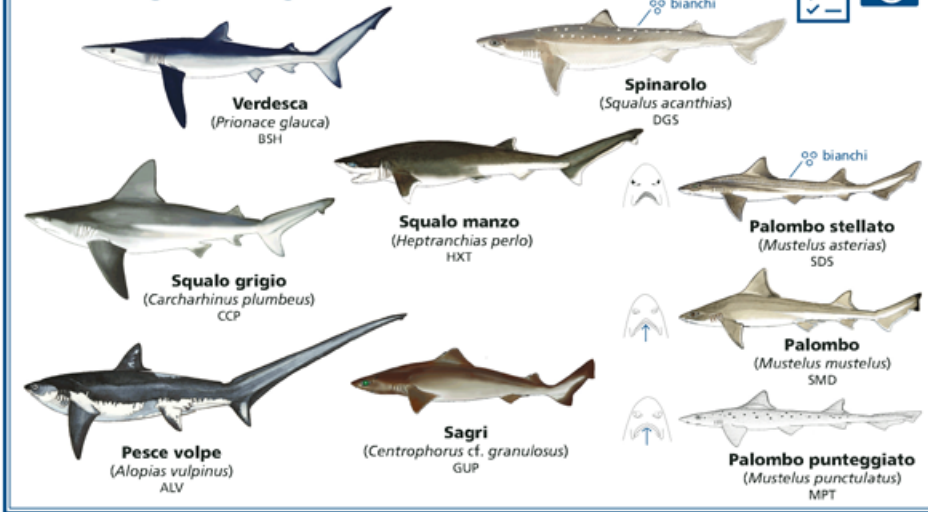
A [guide](#) to the identification of protected species of sharks and rays in the Mediterranean, developed in 2020 by the Italian Society of Marine Biology (SIBM), Padua University, the Italian researchers group on elasmobranchs (GRIS), MedReAct and WWF, was distributed to fishermen, fish market operators, control authorities and to the national administration, during the course of the Tyrrhenian and Ionian survey.



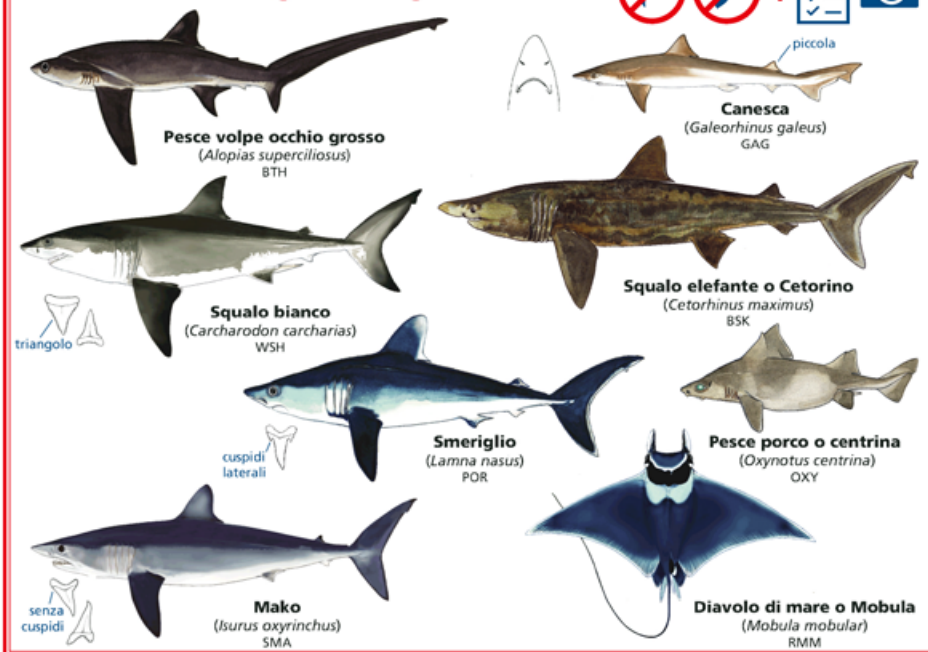
CATTURE DI SQUALI E RAZZE COSA PREVEDE LA LEGGE



Vanno registrate sul giornale di bordo



Vanno rilasciate e registrate sul giornale di bordo





Vanno rilasciate e registrate sul giornale di bordo



Squalo seta
(*Carcharhinus falciformis*)
FAL



Squalo martello smerlato
(*Sphyrna lewini*)
SPL



Squalo toro
(*Carcharias taurus*)
CCT



Squalo martello maggiore
(*Sphyrna mokarran*)
SPK



Cagnaccio
(*Odontaspis ferox*)
LOO



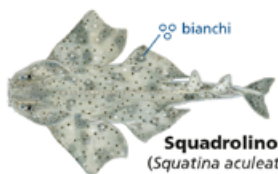
Pesce martello
(*Sphyrna zygaena*)
SPZ



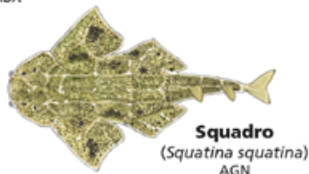
Pesce violino
(*Rhinobatos rhinobatos*)
RBX



Pesce chitarra
(*Glaucostegus cemiculus*)
RBC



Squadrolino
(*Squatina aculeata*)
SUA



Squadro
(*Squatina squatina*)
AGN



Squadro pelle rossa
(*Squatina oculata*)
SUT



Razza di Malta
(*Leucoraja melitensis*)
JAM



Razza rotonda
(*Leucoraja circularis*)
RJI



Altavela
(*Gymnura altavela*)
RGL



Razza bianca
(*Rostoraja alba*)
RJA

Queste specie forse non ci sono più nei nostri mari



Razza bavosa
(*Dipturus cf. batis*)
RJB



Pesce sega
(*Pristis pectinata*)
RPP



Pesce sega
(*Pristis pristis*)
RPR

Autori: M. Barone, C. Mazzoldi, F. Serena

medlemcontact@gmail.com

Riferimenti normativi:
CGPM: Raccomandazione GFCM/42/2018/2.
ICCAT: Raccomandazioni 09-07; 11-08.
UE: Regolamento 2015/2102; Regolamento annuale
che stabilisce le opportunità di pesca.
IT: Decreto Legislativo 9 gennaio 2012, n. 4 e ss.mm.ii.



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DI PADOVA



Misreporting of shark and ray bycatch

According to regional requirements, information on bycatch of protected sharks and rays must be reported to the national authorities for subsequent notification to the GFCM.⁸ In general, the level of reporting by the GFCM Contracting Parties is poor, and this has been justified by the lack of information that national administrations receive from the fishing sector. However, by sourcing data from fish markets and control authorities, MedReAct's surveys showed that national administrations can improve reporting by tapping into these additional sources of data.

In the case of Italy, bycatch of protected sharks and rays reported to the GFCM⁹ has been compared with the data collected through MedReAct's surveys (Table 2), showing several data gaps.

8. Recommendation GFCM/36/2012/3 on fisheries management measures for conservation of sharks and rays in the GFCM area, amended by Recommendation GFCM/42/2018/2.
9. Reports of the GFCM Scientific Advisory Committee on Fisheries (SAC) - 18th, 19th, 20th and 21st sessions.

Species	MedReAct	GFCM
Strictly protected species (Annex II)		
Porbeagle	●	
Basking shark	●	
Angular rough shark	●	
Common skate	●	
Giant devil ray	●	
White skate	●	
Species the exploitation of which is regulated (Annex III)		
Starry smooth-hound	●	
Common smooth-hound	●	●
Blackspotted smooth-hound	●	●
Blue shark	●	●
Spiny dogfish	●	●
Common thresher shark	●	

Table 2. Comparison of information on bycatch recorded by MedReAct's surveys and that reported by Italy to the GFCM between 2015-2018



While bycatch and trade of porbeagle, basking shark, angular rough shark, common skate, giant devil ray and white skate (Annex II) were recorded by MedReAct's surveys, none of these catches was reported by the national authorities to the GFCM. A similar observation is made for starry smooth-hound and common thresher shark (Annex III).

In addition, data on shark and ray catches submitted by Italy to the GFCM have been compared with the quantities of landings and sales obtained through MedReAct's surveys (Table 3).

The comparison shows that bycatch of protected sharks and rays goes largely unreported to the GFCM. For example, in the period 2015-2018 Italy reported to the GFCM 1.650 kg of smooth-hound catches, while the quantity recorded by fish markets is nearly seven times higher. The same pattern is observed with blue shark. Italy reported catches of 360 kg to the GFCM, while fish markets declared sales for an amount ten times higher.

The snapshot made on just few selected species shows that there is a serious gap in data reporting. Data grouping, usually under families or groups, is common practice when generating databases or when reporting national catch data to databases with different formats, and may result in a slight loss of information. The level of discordance between data reported to the GFCM and data recorded by fish markets and the control authorities is, however, indicative of a larger problem in data collection and transmission.



Strictly protected species (Annex II)	Reported to the GFCM	Sold by fish markets (kg)	Detected by control authorities (kg)
Common skate	unreported	reported but information in Kg or in Nb of specimens is not available	5
White skate	unreported	3.787	53
Porbeagle	unreported	reported but information in Kg or in Nb of specimens is not available	130
Basking shark	unreported	unreported	4.000
Angular rough shark	unreported	reported but information in Kg or in Nb of specimens is not available	unreported
Giant devil ray	unreported	reported but information in Kg or in Nb of specimens is not available	unreported
Strictly protected species (Annex III)	Reported to the GFCM	Sold by fish markets (kg)	Detected by control authorities (kg)
Smooth-hounds	1.650	11.545	8.293
Blue shark	360	3.427	1.119
Dogfish sharks	369	725	894
Common thresher shark	unreported	97	unreported

Table 3. Comparison of shark and ray bycatch (in kg) reported by Italy to the GFCM for the period 2015-2018 and MedReAct's findings. For GFCM data, the weight of the bycatch of each species has been estimated based on the number of specimens and the average weight of one single individual

MAIN FINDINGS AND RECOMMENDATIONS

Strictly protected species of sharks and rays listed in Annex II continue to be detected by the Italian Coast Guard in fishermen's landings and commercialized in fish markets. Bycatch of porbeagle, basking shark common skate, and white skate, recorded by the control authorities, was not reported to the GFCM. In addition, the reporting of bycatches of shark and ray species listed in Annex III to the GFCM is significantly underestimated (e.g. smooth-hounds and blue shark).

MedReAct's surveys also revealed a lack of awareness by fishermen and fish markets about the protection status of shark and ray species. Fishermen were generally unaware of the conservation measures for shark and ray species and pointed out difficulties in identifying these species and correctly reporting them in the logbooks, for example with the FAO species code.

Fish market operators do not participate in training courses on the identification of sharks and rays which can contribute to species misclassification or sales of protected species. Fish markets of Brindisi, Chioggia and Molfetta were not aware of the GFCM and EU regulations on the protection of shark and ray species.

The fact that fishing of shortfin mako (Annex II) is not prohibited by the EU annual regulation on fishing opportunities creates a certain degree of ambiguity for the control authorities.

The Coast Guard regularly organizes training courses for fisheries inspectors on the protection measures for sharks and rays. There are, however, no training courses addressed to fishermen to promote compliance with these measures. Bycatch data of protected sharks and rays, reported to the GFCM, highlight a significant discrepancy between data recorded at local level and those reported by the national authorities to the GFCM.

These shortcomings may be indicative of a broader awareness and enforcement problem across the Mediterranean. For example, reporting of bycatch of protected sharks and rays is generally poor by most of the GFCM Contracting Parties, despite the existing obligation to report information on fishing activities, catch data, incidental takes, release and/or discard of shark species listed either in Annex II or III of the SPA/BD Protocol.¹⁰

10. Recommendation GFCM/36/2012/3 on fisheries management measures for conservation of sharks and rays in the GFCM area, amended by Recommendation GFCM/42/2018/2.



Therefore, MedReAct recommends the following measures be promoted to enhance the effective management and conservation of protected sharks and rays in the Mediterranean.

- Educate fishermen and fish market personnel in the identification of protected species and the relevant conservation measures.
- Develop and implement clear requirements for the fishing sector on the reporting of protected sharks and rays bycatch by species, area and fishing gear. Ensure that bycatch data is accurately reported to the GFCM.
- Implement measures to minimize bycatch of protected sharks and rays, develop training courses for fishermen to improve their ability to identify species and report bycatch and to increase their awareness of existing conservation measures including the requirement to release Annex II species alive and unharmed at sea to the extent possible.
- Impose dissuasive sanctions on any catch, retention onboard vessels, landing and sale of shark and ray species listed in Annex II of the SPA/BD Protocol.
- Promote the inclusion of shortfin mako in the EU annual regulation on fishing opportunities as a protected species on which fishing in the Mediterranean is prohibited, as well as the application of specific measures (i.e. gear selectivity) to reduce the bycatch of vulnerable sharks and rays in existing EU and GFCM multiannual management plans.





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