ANP ASSOCIAÇÃO NATUREZA PORTUGAL | WWF

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SUMMARY REPORT

APRIL 2021

SHARKS AND RAYS
GUARDIANS OF THE OCEAN IN CRISIS

Why are the guardians of the ocean in crisis?

Sharks, rays and chimaeras have inhabited the oceans for over 420 million years, and have survived five mass extinctions, including the one that wiped out dinosaurs. Over 1200 known species play a key role in the balance of marine ecosystems, the health of the ocean, and of the people who depend on it. Despite the lack of knowledge about the chimeras, it is known that sharks and rays, belonging to the Elasmobranchs Class, have been targeted for fishing by hundreds of years. Nowadays, an estimated 100 million sharks and rays are killed by fishing and bycatch worldwide each year. As a result, 36% of the world's species are currently threatened and this number keeps growing, specially for those species who are increasingly targeted by the fisheries. Unsurprisingly, populations of 31 pelagic species (living in open water) have declined by 71% since 1970, as fishing effort has doubled and the number of catches by vessels with surface lines and hooks has tripled. At the European level, the situation is even worse, specially in the Mediterranean Sea, which is considered a hotspot with a high risk of extinction for sharks and rays. The situation in Portugal is also worrying, with 43% of the species threatened.

Most countries do little to protect their sharks and rays: few have defined catch limits or fishery-independent stock assessments that could demonstrate whether catches are from sustainable fisheries. Poor monitoring, especially in the artisanal fleet, lack of fishery-independent data, few measures to minimise bycatch, and the fact that catches occur in waters under both national and international jurisdiction hinder adequate protection and management of these species on a scientific basis. Furthermore, classification as bycatch underestimates the impact that some fisheries have on species such as the blue shark (*Prionace glauca*) and shortfin mako shark (*Isurus oxyrinchus)*, which are caught with surface lines and hooks.

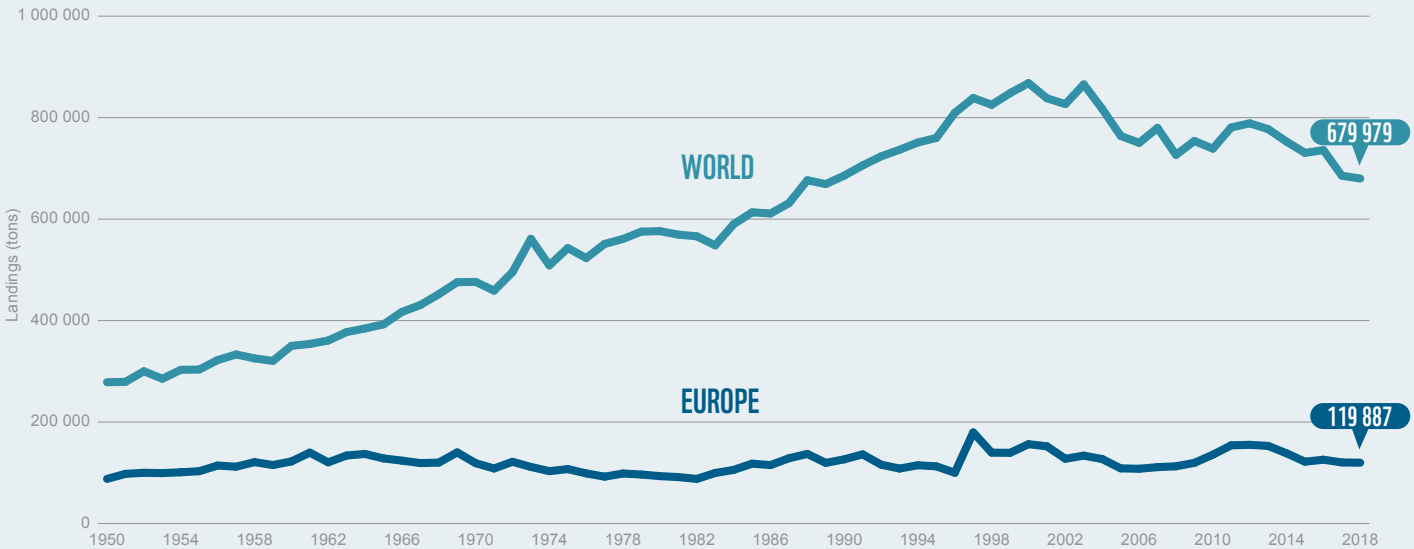
100 MILLION

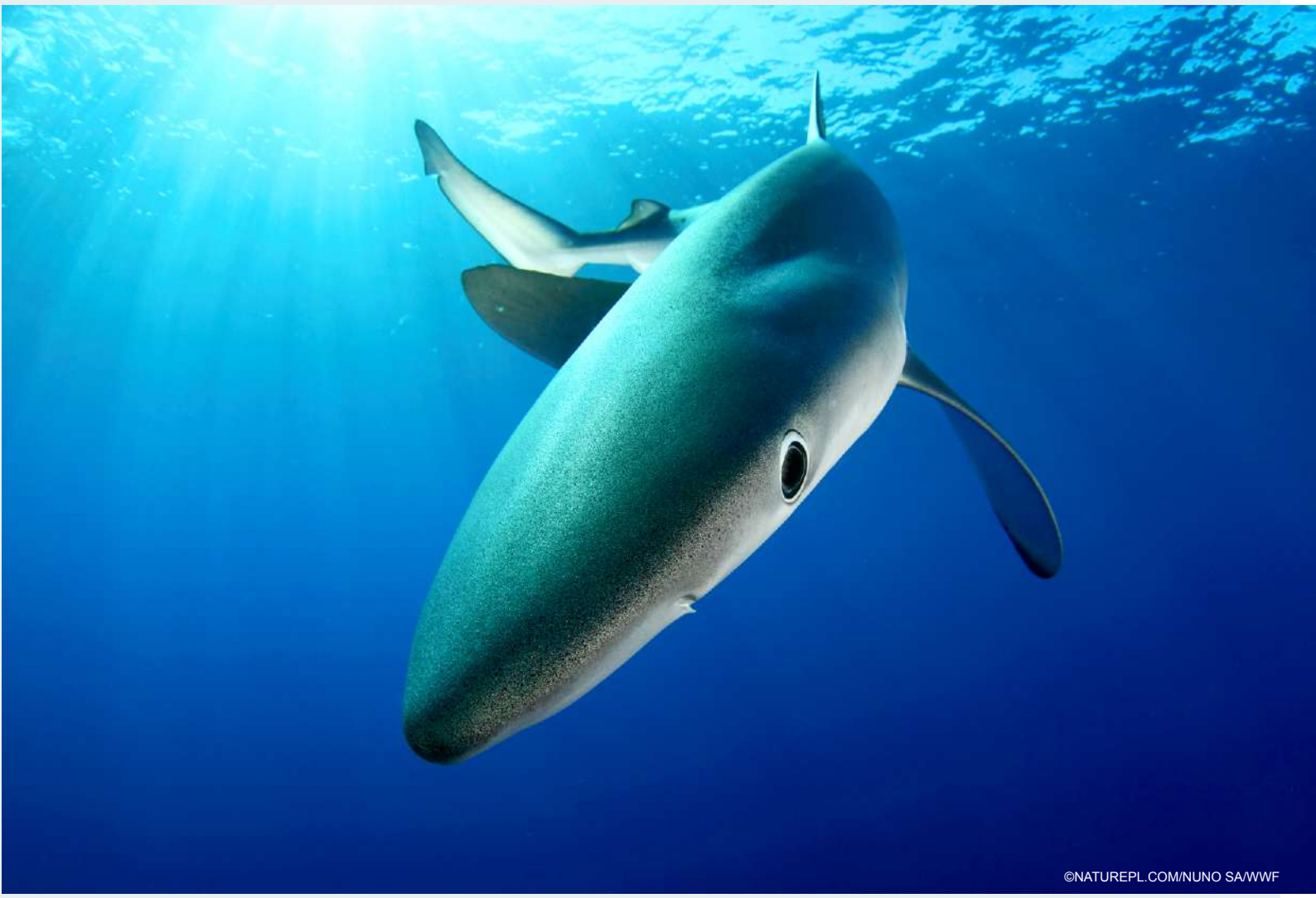
SHARKS AND RAYS ARE ESTIMATED TO BE KILLED BY FISHERIES EACH YEAR

43%

OF SHARKS, RAYS AND CHIMERAS SPECIES IN PORTUGAL ARE THREATENED

World catches of sharks, rays and chimeras (in tons) in the world and in Europe between 1950 and 2018. Source: FAO Global Capture Statistics 1950-2018.





The growing international demand for shark and ray products, particularly for meat and fins, is also putting these species under intense pressure: fins from some species are worth sky-high prices in some markets of Southeast Asian, e.g. Hong Kong, and there is an increasing introduction of shark and ray meat into the trade and distribution chains of countries in Europe and South America. The lack of transparency, traceability and poor identification of shark and ray products is also one of the reasons for the lack of sustainability in international trade, with significant implications for the conservation status of these species. The seriousness of the situation was recognised 20 years ago with the introduction of the United Nations Food and Agriculture Organisation (FAO) International Plan of Action for Sharks and Rays. However, efforts to protect and manage the populations of these species have clearly been insufficient. As most of the main shark and ray fishing countries, including Portugal, are still failing to establish, adopt or adequately implement conservation measures or National Action Plans, and, in conjunction with the extreme life characteristics of these species (they have the slowest growth and reproduction known on the planet), the decline of shark and ray populations continues at an alarming rate.

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YEARS AGO FAO RECOGNIZED THE UNSUSTAINABILITY OF FISHERIES AND INTRODUCED THE FRAMEWORK FOR AN INTERNATIONAL PLAN OF ACTION FOR THE MANAGEMENT AND CONSERVATION OF SHARKS AND RAYS

Portugal in focus

Portugal has a rich shark and ray fauna with 110 species and seven chimeras species, representing about 89% of the species known in European seas and 9% of the world's species.

Fisheries for sharks and rays in Portugal mostly take the form of bycatch, and although there is no recognised fishery that exclusively targets sharks and rays, official landing records show that 58 taxa (corresponding to 62 species), representing about half of the known species, have been and/or are being caught in Portuguese waters over the last 30 years. **Portugal is ranked 12th in the world ranking of countries catching the most sharks and rays and 3rd at European level, after Spain and France**. Our analysis shows that:

- rays are the most important species for commercial fisheries in Portugal in terms of landed weight, and in recent years the thornback ray (*Raja clavata*) and the blonde ray (*Raja brachyura*) accounted on average for 48% of national landings;
- spotted dogfish (*Scyliorhinus canicula*), a demersal species, accounts for 25% of landings;
- pelagic sharks such as the blue shark and shortfin mako shark account for 16% of national landings;
- 92% of shark and ray landings occur in mainland fishing ports;
- the artisanal fleet (<12m) and the multigear (multi-species) fishery contribute most to shark and ray catches in Portugal (68% by weight), as does the trawling fleet (16% by weight);
- bycatch occurs with almost all fishing gears, from lines and hooks (including longlines), to various gillnets, seine nets and trawls, both in artisanal fisheries and by industrial boats operating in the EEZ (Exclusive Economic Zone) and in international waters.

There are important differences between the mainland and the islands in terms of landed species and ecological groups that result from the unique characteristics of the archipelagos of Madeira and the Azores. Understanding these regional differences is important for the establishment of species conservation measures and effective fisheries management that addresses local specificities:

- in the Azores, pelagic sharks are the most important ecological group, such as the tope shark (*Galeorhinus galeus*) and the hammerhead sharks (*Carcharhinus* sp.), and account for 47% of landings in the Azores since 1992;
- in Madeira, deep sea sharks account for 92% of total landings by weight since 1992, mainly the leafscale gulper shark (*Centrophorus squamosus*), a species that is currently threatened at a global level and in Europe.


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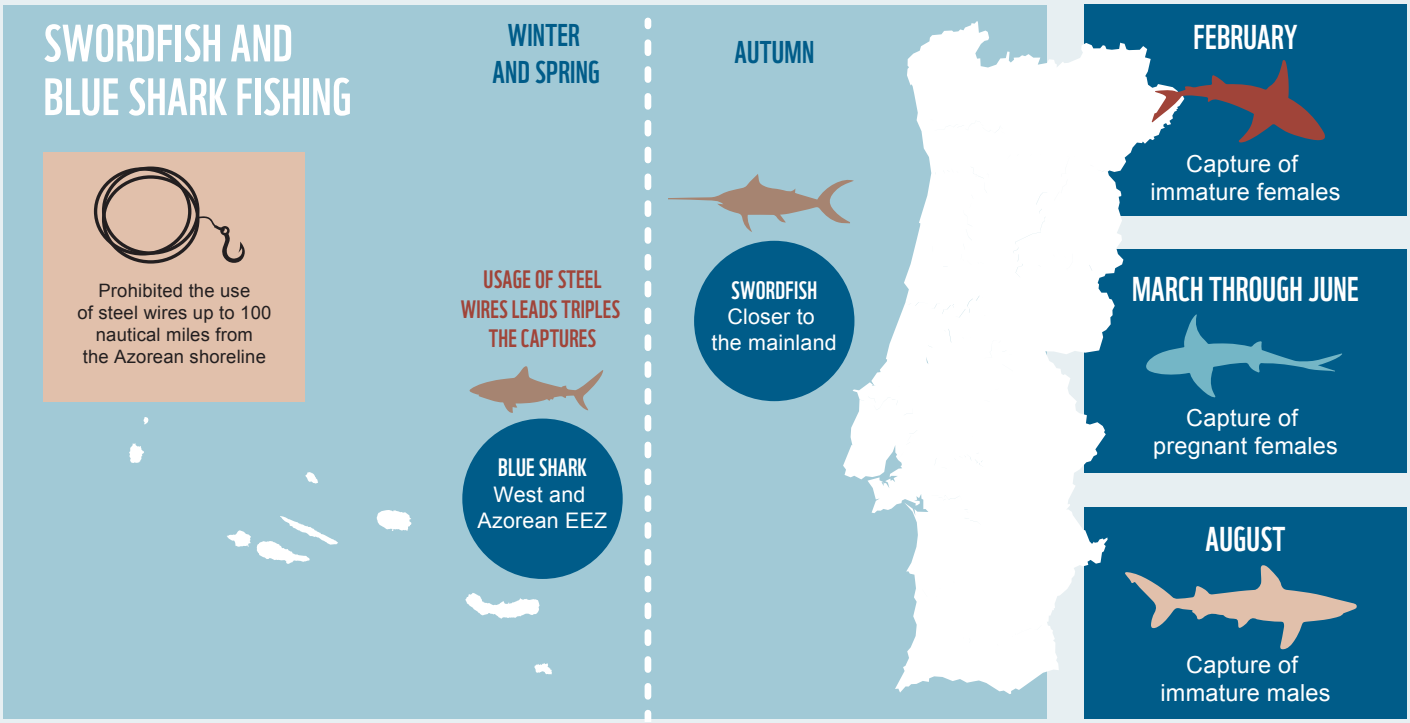
110
SHARK AND RAYS SPECIES IN PORTUGUESE WATERS

62
SPECIES ARE OR HAVE BEEN FISHED IN THE LAST 30 YEARS

3RD
PLACE FOR PORTUGAL ON THE TOP EUROPEAN COUNTRIES THAT CATCH SHARKS AND RAYS

48%
OF SHARKS AND RAYS PORTUGUESE LANDINGS IN RECENT YEARS ARE THORNBACK RAY AND BLONDE RAY

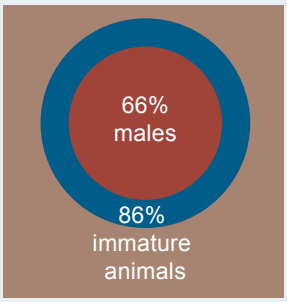
68%
OF SHARKS AND RAYS TOTAL LANDINGS ARE FROM THE ARTISANAL FLEET

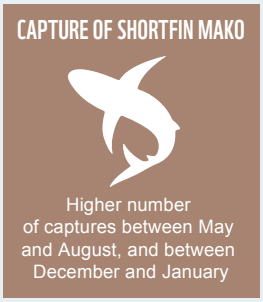


Pelagic sharks, prized for both their meat and fins, are increasingly targeted by surface longline fisheries for swordfish and tuna:

- in the Azores area, the swordfish fishery bycatch exceeds the target species catch and, according to observers data since 2015, pelagic sharks, mainly blue shark and shortfin mako correspond respectively to 73,5% and 1,4% of the total catch, the vast majority of which are immature;
- this fishery is characterised by strong seasonality, both in terms of species and catches, with different fishing grounds being exploited throughout the year and different proportions of shark catches that seem related with swordfish quotas;
- endangered species such as thresher shark (*Alopias* sp.), porbeagle shark (*Lamna nasus)* and hammerhead shark (*Sphyrna zygaena*) are caught accidentally and therefore discarded at sea, with particularly low survival rates.

The fishery for **deep sea sharks** is very ancient and was originally for liver extraction and then for scabbardfish capture. From deep sea sharks livers, liver oil and squalene are extracted:





79%
OF THE SURFACE LONGLINERS CATCH ARE PELAGIC SHARKS

1/4
OF TOTAL CATCH LANDED BY TRAWL FEET IN PORTUGAL MAINLAND IS DEEP SEA SHARKS

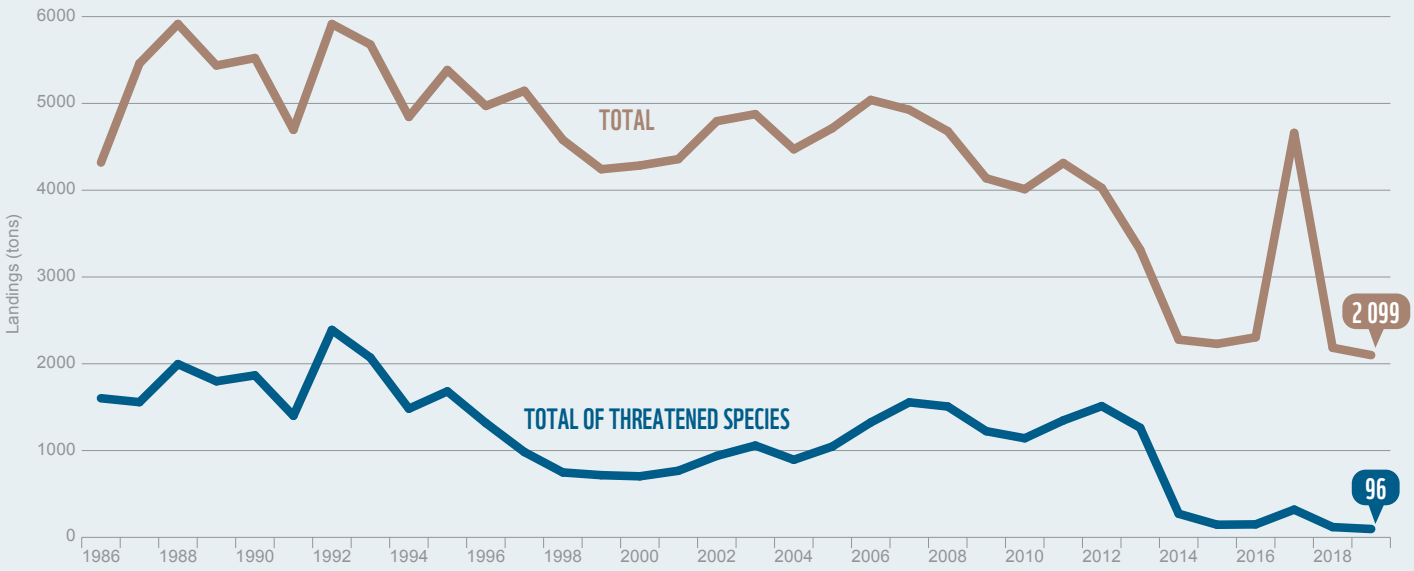
- in the Azores and Madeira fishing is mainly done by the inshore fleet with lines and hooks set on the sea bed targeting black scabbardfish;
- in the Azores, an estimated 16% of the catch (about 135 tonnes, annual average) is deep sea sharks of 10 different species, caught incidentally and mostly thrown overboard;
- there are no additional measures to reduce bycatch and survival rates are particularly low for this ecological group, which generally lives below 500-1000 metres depth and does not survive the high pressure differences when caught;
- in the mainland's waters, the presence of underwater canyons near the shore also provides fisheries with easy access to deep sea species, and although there are few dedicated studies, catches of deep sea sharks can reach ¼ of the total weight landed by the trawling fleet.

Evidence collected for Portugal shows that sharks and rays are fished unsustainably:

- 30 species fished are threatened according to IUCN: 25 shark species (14 pelagic and 11 deep sea) and 5 ray species;
- ¼ of the total weight of landings by the Portuguese fleet are threatened species, mainly deep sea species of the genus *Centrophorus* sp. such as gulper shark, leafscale gulper shark and lowfin gulper shark;
- 3/4 of the fished populations are declining;
- seven historically fished species are "Critically endangered" such as the oceanic whitetip shark (*Carcharhinus longimanus*), tope shark common eagle ray (*Myliobatis aquila*), two species of hammerhead sharks (*Sphyrna lewini* e *Sphyrna mokarran*) and another two species of angel sharks (*Squatina aculeata* e *Squatina squatina*).

In addition to its relevant role in the catching of sharks and rays, **Portugal has increased its contribution to the international trade in shark meat and is currently among the top 10 countries worldwide in terms of exports and imports**:

- in terms of traded weight, it now ranks 6th in exports and 8th in imports;
- according to INE data (Portugal's National Statistics Office), which only distinguishes a few species, the blue shark is the most traded species in recent years and accounted for 51% of total exports of sharks and rays, by weight of fresh meat, exclusively to EU countries in 2019;
- the porbeagle, a "Critically Endangered" species at European level, recorded important exports in fresh form (on average 35% of the total weight of exports since 2012), although landings decreased by 66% between 2012 and 2019;
- portuguese exports of fresh shark meat exceed imports, suggesting catches largely exceeds the domestic consumption;
- in recent years, imports of fresh rays have exceeded exports, suggesting that domestic production is insufficient to meet domestic demand and that consumption is increasing;



Evolution of landings from the national fleet in weight (tons) of sharks and rays and corresponding number of currently threatened species that have been landed in the last 30 years.

51%
OF PORTUGAL TOTAL WEIGHT OF SHARKS AND RAYS EXPORTS IN 2019 CORRESPOND TO BLUE SHARK

100%
OF PORTUGUESE SHARKS AND RAYS FRESH MEAT EXPORTS AND IMPORTS IS WITH SPAIN

40%
INCREASE OF FIRST SALE PRICE PER KILO IN RAYS SPECIES

- imports of frozen blue shark have increased significantly in recent years, with imports from the EU tripling and those from outside the EU doubling;
- trade in shark fins is virtually exclusively through export to EU countries and has occurred both in frozen and fresh form for the past three years;
- it is not possible to identify which species are traded for their fins as they are all labeled as shark fins, which is a major obstacle to proper control of endangered species.

Portugal and Spain are a real European hub in the shark trade and record important exchange relations:

- ¾ of Portuguese frozen shark meat exports and all fresh meat go to Spain and 35% of frozen meat and all fresh meat imports come from Spain;
- since 2012, shark meat exports to Spain have increased by 73% and imports have doubled in the frozen segment;
- there is evidence of direct landings from Portuguese longliners in Spanish ports, especially in Vigo, mainly of pelagic species. These landings are not recorded in national statistics, which complicates the trade analysis and shows that national landings are highly underestimated.

The analysis of consumption of these species at the national level is particularly difficult due to the paucity of studies addressing this issue, the lack of detailed data in current trade registration mechanisms, and the poor identification or grouping of species into generic groups:

- for the rays of the genus *Raja* sp., it is estimated that the consumption of rays in Portugal has increased (in terms of weight and value), corresponding to an annual average of 122 g of rays *per capita*, meaning that at an average weight of 13 kg per ray, 1 specimen of ray is consumed per 100 inhabitants;
- since 1986, despite a 58% decrease in ray landings, the first sale price per kilo has increased by about 40%, reaching €2.74/kg in 2019, which is 26% higher than the average price of all shark and ray species sold that year showing an increased commercial interest in these species;
- there has been an increase in ray imports since 2014, as catches by the Portuguese fleet no longer cover national consumption levels.

Regarding human consumption, some shark species, such as the blue shark, contain persistent organic substances and heavy metals, such as mercury, beyond the EU's recommended level for consumption. Therefore, **regular consumption of some species can have an impact on human health and should be discouraged**.

Although EU Member States have the second highest share of recorded shark and ray catches in the world (around 18% of global catches in 2018), the protection of endangered species and the international and national management of Elasmobranch fisheries have only recently been formalised and are not yet a priority for European and national authorities:

- CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an important tool for regulating international trade in marine species and has recently banned shortfin mako shark's trade by the European fleet caught in international waters;
- most existing management measures relate to retention bans for some species, resulting in animals being thrown overboard, often without any record in official databases;
- for most stocks considered in shark and ray fisheries, there aren't bycatch mitigation measures in place, there are few catch limits and are not set based on scientific data or precautionary management often resulting in weak management measures and overfishing of stocks.

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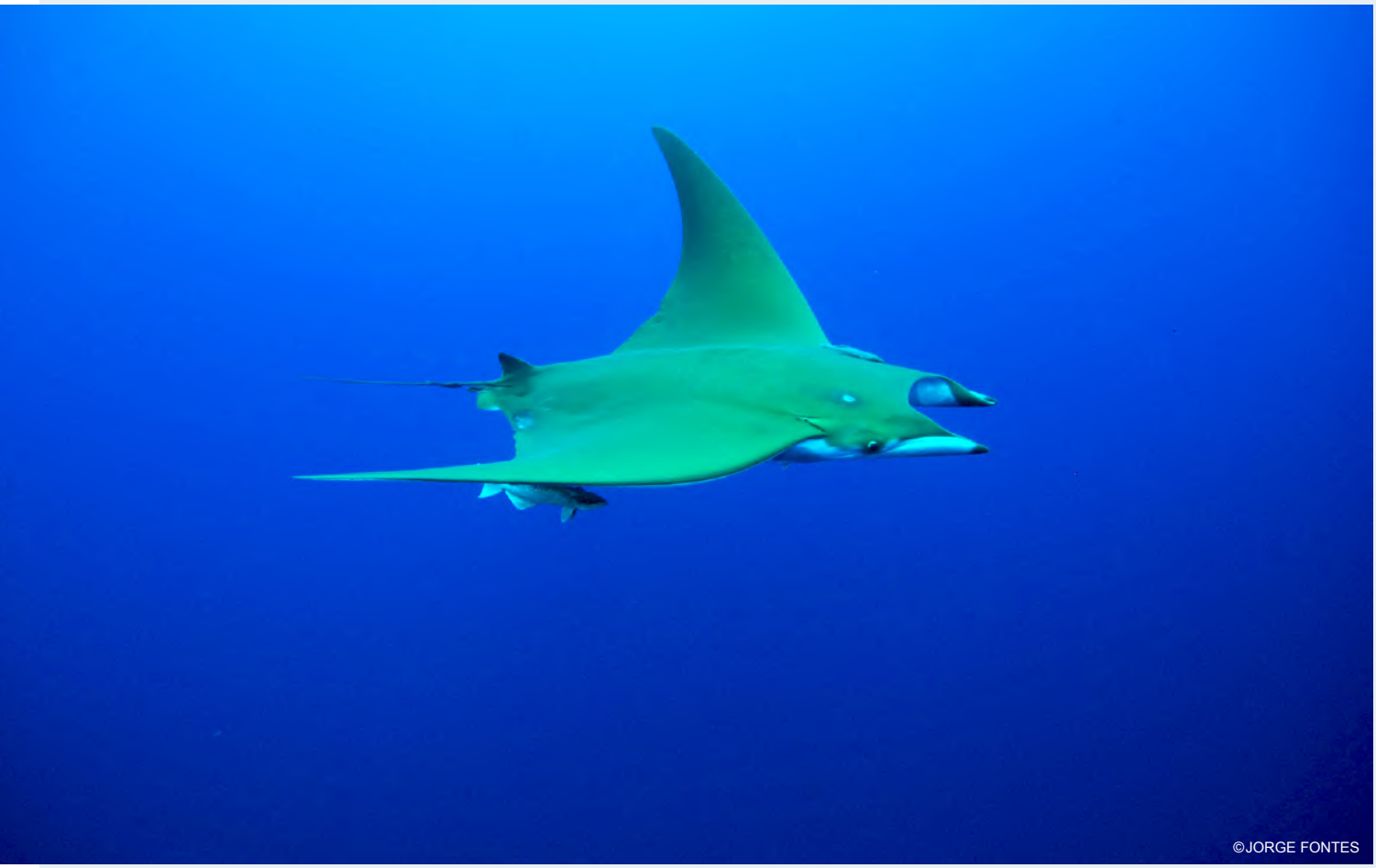
SHARK AND RAY SPECIES HAVE RESTRICTIONS IN COMMERCE AND TRADE

0
SHARK AND RAYS FISHING STOCKS HAVE COMPLETE SCIENTIFIC DATA

91%
OF SHARK AND RAYS FISHERIES WORLDWIDE ARE UNSUSTAINABLE

What can we do?

The conservation and recovery of shark and ray populations requires an integrated and holistic approach to the various threats they face, and the implementation of conservation and management measures at different levels, both national and international. To drastically reduce shark and ray mortality we need to minimize bycatch - specially in longliners, by implementing a ban on wire leaders -, also establish marine protected zones, as well as temporal and spatial restrictions for fisheries - to ensure safe zones safeguarding essential habitats and minimize immature and females catches -, and finally, largely increase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control and monitoring of shark and rays fisheries - through better coverage of on-board observers in risky fisheries and remote electronic monitoring, specially in the artisanal and polyvalent fleet. Sharks and rays play a central role in the ocean but many species are in the brink of extinction due to overfishing, since but 91% of shark and ray catches are currently unsustainable and the trade and consumption are increasing. To ensure a good conservation status for sharks and rays and stocks recovery a number of measures are recommended:

- The development, adoption and implementation of a National Plan of Action for the management and conservation of Sharks and Rays
- Promote the effective protection and recovery of stocks of threatened target and non-target species from fishing (bycatch), either through CITES and/or through national legislation that includes the establishment of conservation and management measures based on the best available knowledge and the precautionary principle
- Take measures to minimise bycatch and discards and implement good on-board practices that improve the survival of individuals released into the sea
- Improve the quality of scientific data on fisheries and other Elasmobranch species in Portuguese waters
- Ban the capture, trade and consumption of endangered species and introduce stricter regulation of shark and ray products for all species intended for trade
- Improve control and monitoring of Elasmobranch fisheries, including artisanal and multigear fisheries
- Define protected zones with full fishing bans that take into account essential species and habitats for sharks and rays

Since responsibilities and capacities of various stakeholders are different, we propose the following differentiated priorities for the various stakeholders:

THE CONSERVATION AND RECOVERY OF SHARKS AND RAYS POPULATIONS DEMANDS AN INTEGRATED APPROACH AND HOLISTIC COMPREHENSION OF THE VARIOUS THREATHS THEY FACE AS WELL AS THE IMPLEMENTATION OF MANAGEMENT MEASURES AT DIFFERENT SCALES

- **Authorities**: produce and initiate implementation of the National Plan of Action for the management and conservation of Sharks and Rays by 31 March 2022.
- **Research centres and universities**: improve knowledge of shark and ray species to providing data on population trends and sustainability indicators for improve fisheries management.
- **Professional and recreational fishermen**: provide information on all catches (bycatch, discards) of sharks and rays, locations and fishing gear used.
- **Traders (including HORECA)**: ensure that shark and ray products for sale are correctly identified and are sourced form proven sustainable fisheries.
- **Consumers**: avoid consumption of shark and ray products and subscribe to ANP|WWF's commitment.

ANP works in association with WWF, the largest global independent organization for nature conservation. The Portuguese NGO is focused on nature conservation and the protection of the planet, namely of fauna and flora, ecosystems, landscapes, water, soil, clean air, ecological processes and support systems, services provided ecosystems and natural resources. We stand for the fair and sustainable use of these resources and our work contributes to the well-being of current and future generations, as well as for a future in which people live in harmony with nature. To know more about ANP|WWF, please visit: www.natureza-portugal.org

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