GREENPEACE
PROTECT
THE OCEANS

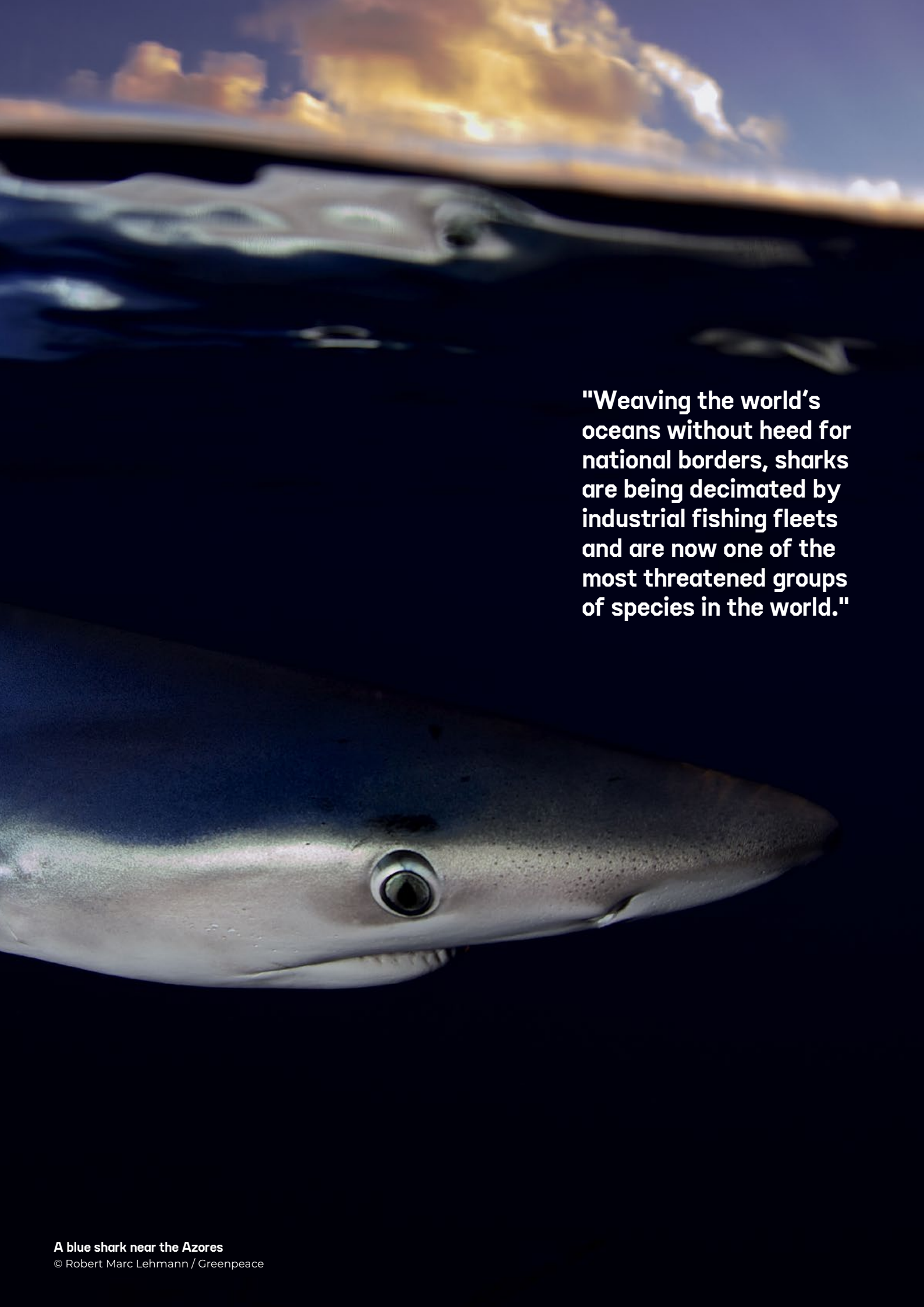
HOOKED ON SHARKS:

The EU fishing fleets fuelling the global shark trade

A longliner fishing vessel off the Spanish Coast
© Kajsa Sjölander / Greenpeace

A report by Greenpeace Spain
and Greenpeace UK

CONTENTS



"Weaving the world's oceans without heed for national borders, sharks are being decimated by industrial fishing fleets and are now one of the most threatened groups of species in the world."

A blue shark near the Azores

FOREWORD

In recent years, protecting the oceans has received unprecedented attention. Five million people have joined the campaign for a strong Global Ocean Treaty and world leaders have vowed to restore ocean health, with well over 100 countries pledging to protect at least 30% of the world's oceans by 2030.

This is a historic commitment to ocean protection and, according to scientific advice, our best chance to undo some of the damage we have wrought on our planet whilst boosting marine resilience to threats like climate change.

Why then, in every forum where we could realise this level of ocean protection, do governments continue to not only lag behind scientific advice and their own commitments but in many cases, actively resist it? The reason is clear: time and again, commercial interests are overriding conservation needs.

The demise of sharks is a prime example of this. Weaving the world's oceans without heed for national borders, these crucial predators are being decimated by industrial fishing fleets and are now one of the most threatened groups of species in the world.

In this report, we highlight the plight of the shortfin mako in the North Atlantic, the ocean's fastest shark, and examine the outright refusal by the European Union (EU) and the International Commission for the Conservation of Atlantic Tunas (ICCAT) to reverse its endangered status.

Despite its claims to be a world leader in ocean protection,[1] the EU is heavily influenced by fishing nations like Spain and Portugal, making it one of the primary culprits. For too long, its approach to international ocean governance and fisheries has been dominated by commercial interests, with the very companies responsible for overfishing actively dictating the positions that politicians adopt.

This is reflected in the way that Regional Fisheries Management Organisations (RFMOs) ignore their own scientific committees' advice – refusing to cut catches or address ecosystem damage inflicted by fishing fleets in their domain – to recent efforts to resist some of the more progressive proposals for a strong Global Ocean Treaty (chiefly: whether the treaty will create ocean sanctuaries free from human activities in international waters).

Whilst the EU and its allies are happy to point fingers at other countries' destructive activities, this report exposes the extent to which the EU is equally culpable – not only for overfishing sharks and ocean destruction, but for hindering crucial progress when it matters most.

In August 2022, the fifth round of negotiations for a Global Ocean Treaty will take place at the United Nations. This offers a pivotal opportunity for the EU to act like the ocean champion it claims to be. By advocating for the creation of an institution that puts ocean protection at the heart of ocean governance – one that is capable of establishing a network of fully and highly protected ocean sanctuaries – shark populations can recover, ocean health will improve and the future of our blue planet will be secured.

"Creating an institution that puts ocean protection at the heart of ocean governance – one that is capable of establishing a network of fully and highly protected ocean sanctuaries – will help shark populations recover and improve ocean health."

Blue shark aboard a Spanish longliner
© Paul Hilton / Greenpeace

EXECUTIVE SUMMARY

In this report we chart the evolution of the North Atlantic shark fishery, tracking the distressing downward trajectory of shark populations and the consequent impacts on ocean health.

We reveal the failure of policy makers to act responsibly, exposing their unwillingness to prioritise ocean health and the communities who depend on it, whilst disclosing the extent to which industry dominates decision-making in pursuit of profit.

We examine the industry's ever-more efficient and destructive approach to fishing, including the targeting of juvenile sharks and the increasing efficiency of fishing gear.

We propose recommendations that will turn the tide, focusing on the responsibility of the EU to adopt more progressive policy positions in relevant multilateral fora and leading the way in ocean protection.

KEY FINDINGS

- Despite the widely documented transition of the North Atlantic fishery from swordfish to shark, regulations have failed to keep pace, putting sharks, a keystone species, at risk.
- The market for shark products has rapidly expanded, outpacing government attempts to regulate this fishery and placing ocean health at risk.
- Governments involved in this fishery, including Spain and Portugal, are heavily influenced by the industrial fishing sector and as a result, have continually resisted any attempt to improve management in the fishery.
- RFMOs, and shark catching nations in particular, are responsible for plummeting shark populations, including shortfin mako sharks in the North Atlantic, and have ignored clear scientific advice to benefit their national industries. The EU and the US have resisted the adoption of measures to recover North Atlantic makos and opposed strong conservation measures.
- RFMOs can significantly benefit from collaboration with other conventions and agreements, particularly when it comes to the conservation of vulnerable species. A clear parallel can be established with the new Ocean Treaty, whose implementation could significantly benefit the conservation of highly migratory and straddling fish species and improve the performance of RFMOs.
- Governments have consistently and deliberately ignored scientific advice regarding the fishing of shortfin mako in the North Atlantic, instead listening to commercial interests benefitting from the status quo.
- Juvenile sharks are being indiscriminately targeted by Spanish and Portuguese fishing fleets.
- Longlines are becoming increasingly destructive, with our investigations revealing a typical fishing day in the North Atlantic has over 1200kms of longline and an estimated 15,500-28,000 hooks in the water.
- A Global Ocean Treaty is a golden opportunity for governments to transform ocean protection, providing the mechanisms to implement fully and highly protected Marine Protected Areas (MPAs).
- RFMO members have an urgent responsibility to ensure that ocean health and the livelihoods of coastal communities are no longer endangered by overfishing.

Shark fishing in the North Atlantic
© Kajsa Sjölander / Greenpeace

HOOKED ON SHARKS

HISTORY OF THE FISHERY

The North Atlantic has been fished for swordfish since at least the early 1800s, when harpoons were the primary fishing method.

However, since the introduction of longline gear in the 1960s[2] and the establishment of the ICCAT, the fishery has evolved from a high value, relatively low volume and often recreational fishery, into one dominated by heavy industry – with Spain responsible for the vast majority of the catch.

The fishery saw a rapid expansion in the 1990s and issues of compliance and overfishing have dogged it ever since. A 1997 study revealed that more than 75% of Spain's swordfish catch in the North Atlantic was under the regulation size and it frequently exceeded its total allowable catch in the preceding years.[3]

Although the population is now undergoing a slow recovery, with ICCAT taking limited measures to reduce the total allowable catch,[4] an expanding longline fleet has found insufficient swordfish to satisfy commercial interests. Indeed, as early as 1996, the ICCAT Scientific Committee (the SCRS)[5] was aware that certain fleets targeting swordfish had "opportunistically" changed their activities to target sharks, catching mainly blue and shortfin mako sharks to take advantage of "market conditions" and higher catch rates.[6] This was exacerbated by the EU's introduction of a 'fins naturally attached' policy nearly ten years ago, which requires the full body of sharks to be landed in order to end highly wasteful shark-finning practices.

In 2005, the SCRS disclosed that around 70% of 'bycatch' landed by the Spanish surface longline fleet in the Atlantic Ocean (which was supposedly targeting swordfish) was large pelagic sharks. The three most prevalent species in the catch, Swordfish (*Xiphias gladius)*, blue shark, (*Prionace glauca)* and mako shark (*Isurus oxyrhinchus)*, represented on average about 93% of the total landings in weight. *Prionace glauca* and *Isurus oxyrhinchus* are the most prevalent species within the group of large pelagic sharks, representing 86.3% and 10.5% respectively – similar to levels observed in other oceans.[7]

"The fishery saw a rapid expansion in the 1990s and issues of compliance and overfishing have dogged it ever since."

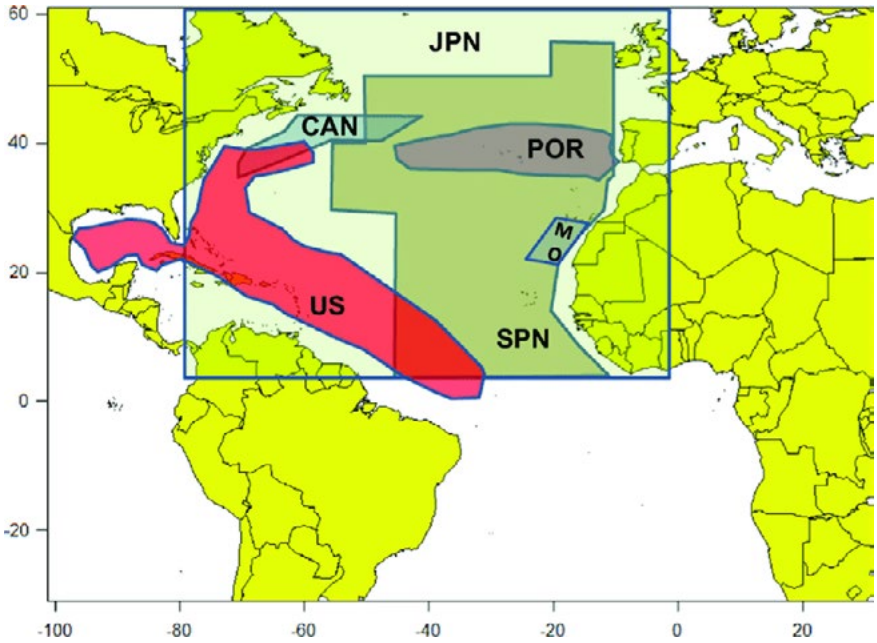


FIGURE 1: Approximate areas that each ICCAT fleet fishes for swordfish with longline gear, 1960-2011; Japan (JPN), Canada (CAN), Portugal (POR), United States (US), Morocco (MO) and Spain (SPN).[8]

Then, in 2014, the evolution of this fishery was confirmed in an application by Spanish companies for Marine Stewardship Council (MSC) certification to catch both swordfish and blue sharks. By 2017, the North Atlantic swordfish fishery's primary catch had shifted to sharks at an estimated ratio of 4:1 (by weight).[9] A few years later, a 2019 Greenpeace investigation observed Spanish longerliners north of the Azores (see photos on pages 2 and 6) hauling in eight times as many sharks as swordfish.

However, this shift of the fishery from swordfish to sharks has not been matched in the policy arena, where regulations to manage shark fishing have long lagged behind the industry's exploitation of the species. It was only in 2019 that a quota for blue sharks was finally set for the Northern and Southern Atlantic Ocean – the first of its kind set in this ocean by an RFMO. Despite the relative lack of regulation compared to tuna or swordfish, and the high potential for lack of compliance with what little regulation exists, the demand for shark products has never been higher. As such, we face a rapidly escalating situation that the relevant management bodies are doing little to address.

The question that arises is why? Why, in the face of a relatively long yet insufficient story of cooperation with other instruments and agreements, are some States continuing to argue against a progressive Global Oceans Treaty[10] that could restore the marine environment and vital populations of sharks?

THE CONSERVATION STATUS OF SHARKS

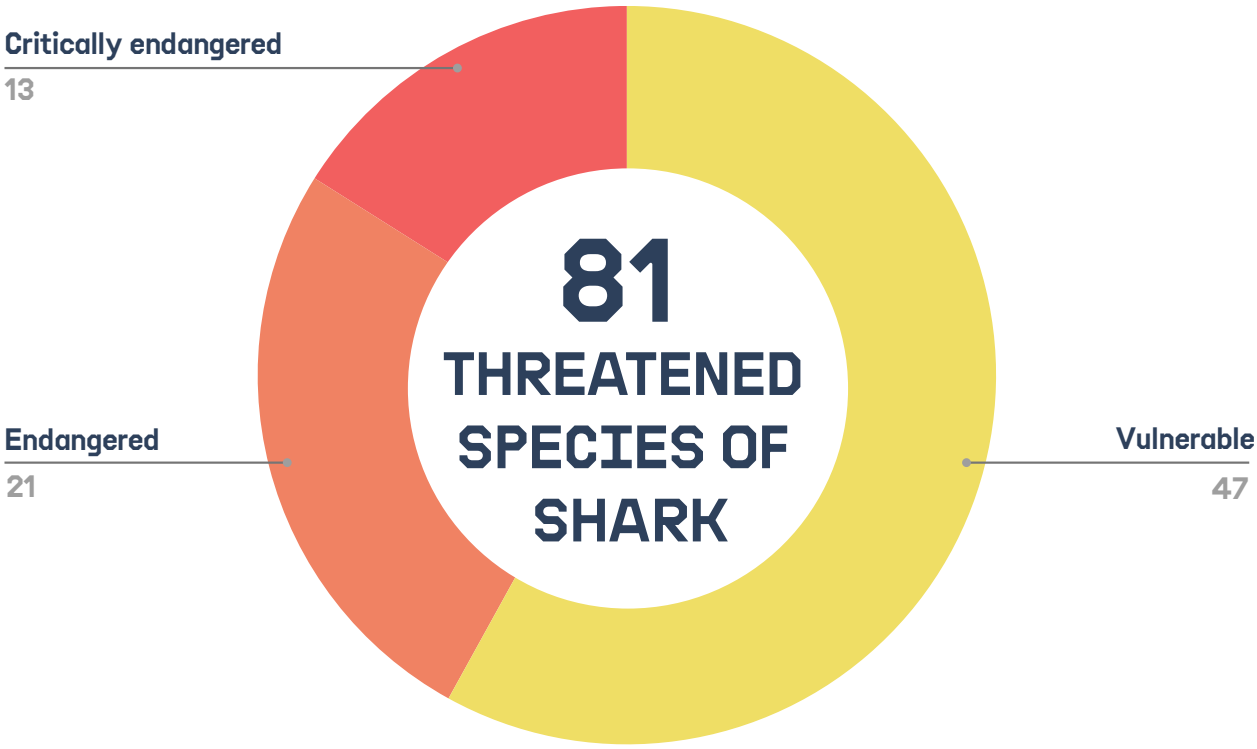
Today, oceanic sharks are one of the most threatened groups of species in the world,[11] with the RFMOs primarily responsible for managing these fisheries seemingly incapable of prioritising the long term conservation of marine ecosystems.

Sharks are especially vulnerable to overfishing due to their biological characteristics. Their important role in marine ecosystems is well established, as are some legal obligations to ensure their protection. In the 1990s, growing concerns about the impacts of an increasingly powerful global fishing fleet on marine ecosystems – not just their target species – led to a number of international negotiations and the adoption of instruments, both voluntary and legally binding, which contain provisions for the protection of vulnerable species and marine ecosystems.

Examples of such instruments are the Food and Agricultural Organization of the UN (FAO) Code of Conduct for Responsible Fisheries,[12] the UN Fish Stocks Agreement[13] and the International Plan of Action on Sharks.[14] In addition, and following the continuous decline of many shark populations, a number of other conventions, such as the Convention on Migratory Species (CMS), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Biological Diversity (CBD), have also played a role in attempts to protect marine ecosystems or, more specifically, to avoid the depletion of shark populations (see page 23 'The RFMO turf war must end').

Blue shark
© Alessandro De Maddalena / iStock

"Sharks are especially vulnerable to overfishing due to their biological characteristics. Their important role in marine ecosystems is well established, as are some legal obligations to ensure their protection."



The International Union for Conservation of Nature (IUCN) Red List of Threatened Species[15] assesses and classifies species according to nine categories, among which critically endangered, endangered and vulnerable species are considered to be threatened with extinction.

A total of 81 shark species are considered as threatened on the IUCN Red List, accounting for 31% of those shark species for which data are available, while nearly half of all shark species are data deficient. Among these 81 species, 47 are listed as vulnerable, 21 as endangered and 13 as critically endangered. A 2014 global review of the status of 1,041 chondrichthyan fishes – sharks, rays and chimaeras – estimated that only one third of these species are considered safe. This is the lowest fraction of safe species among all vertebrate groups studied to date. The report found that 46.8% of all examined species are data deficient. The situation has not improved much since then. In May 2019, the IUCN released updated Red List Assessments for 58 species of sharks and rays, one third of which (17) were classified as threatened with extinction.[16]

As underscored in Resolution 11.20 of the Convention on Migratory Species (CMS), "overfishing is the main driver behind significant declines in shark and ray species worldwide, threatening many populations, the stability of marine ecosystems, sustainable fisheries, shark-and ray-based eco-tourism and food security." Following the review of the implementation of the International Plan of Action for Conservation and Management of Sharks (IPOA) in 2012, the FAO concluded that: "The main problems hindering a successful implementation of the IPOA Sharks are linked to problems with fisheries management in general, such as institutional weaknesses, lack of trained personnel, and deficits in fisheries research and MCS [monitoring, control and surveillance]."[17] This conclusion was reiterated in the 2014 State of World Fisheries and Aquaculture (SOFIA) report, in its extensive section entitled: "Continuing challenges for the conservation and management of sharks".[18]

"In May 2019, the IUCN released updated Red List Assessments for 58 species of sharks and rays, one third of which (17) were classified as threatened with extinction."

AN OCEAN WITHOUT SHARKS

In popular culture, sharks have been characterised as man-eating monsters, but this unfair representation overlooks their essential contribution to the health of our oceans.

Whilst it is difficult to establish the benefits of sharks in general terms given their wide variety of species and habitats, ecosystem models suggest that sharks play key roles in determining ecosystem dynamics.

Sharks play a vital role in oceanic ecosystems and have done so for an estimated 450 million years. Whilst they display a great diversity of species, their role as a large predator is especially important in maintaining healthy marine life communities. In instances where large sharks have been overfished, often unexpected trophic changes have occurred, leading to further imbalanced ecosystems with lesser predators unchecked. Examples of this include the increase in cow-nosed rays in seas off the East Coast of North America, overpredating scallops, the decline of great white sharks leading to growing sea lion populations, and the changing distribution of migrating fish. For pelagic sharks in the North Pacific, for example, the reduction of shark populations could be substituted by other large teleosts that occupy similar trophic levels. The impact could be reduced if billfishes and tunas fill the gap[19], but this is unlikely given that overfishing could also be affecting these species.

A typical coral trophic system

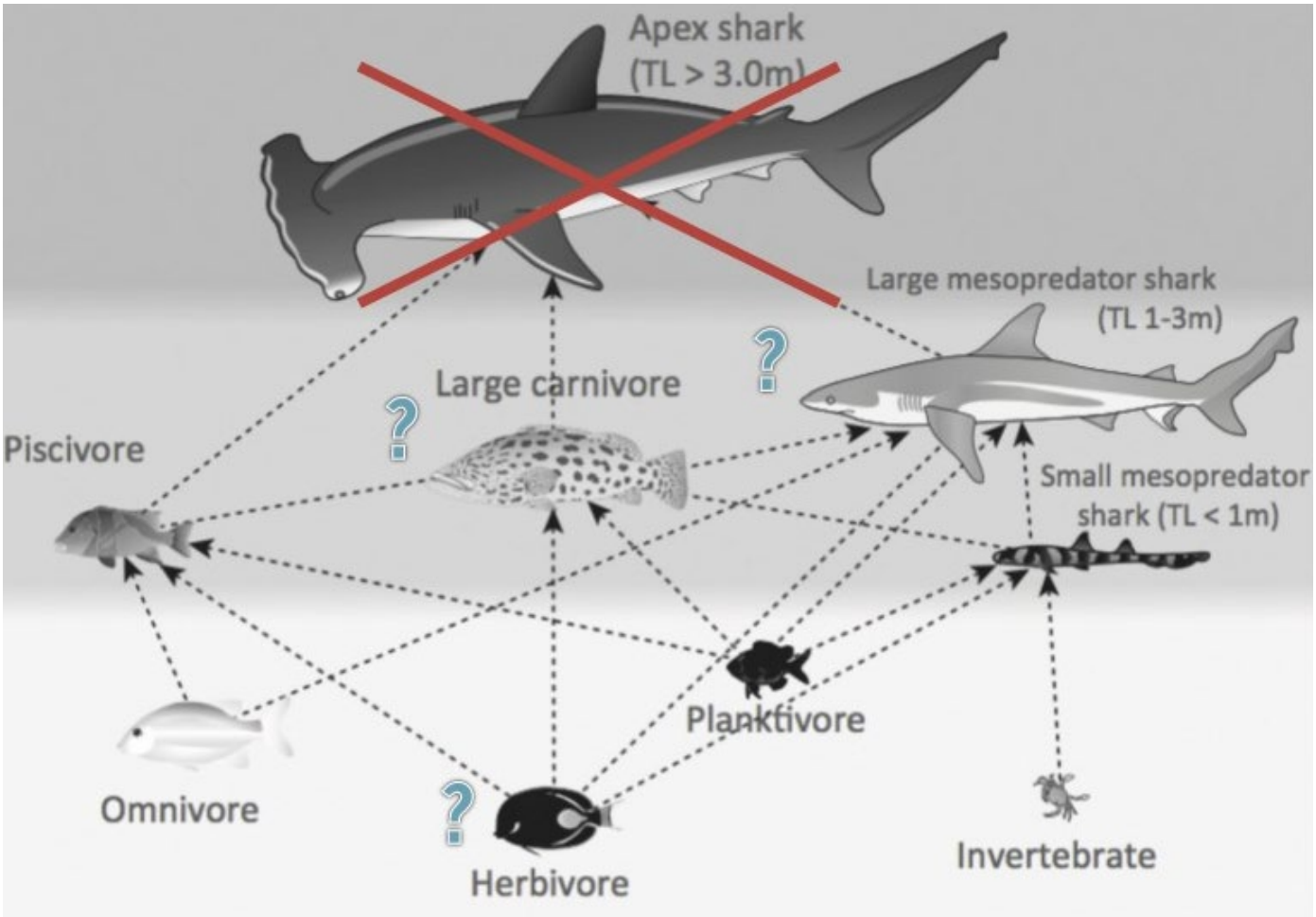


FIGURE 2: A typical coral trophic system displaying predator/prey relationships. Here, the hammerhead shark is a true apex predator without natural predators of its own, and it preys on several mesopredators which themselves have several overlapping prey. In this system, it is difficult to predict what would happen if the apex predator or one of the mesopredators was removed because of overfishing, highlighted by question marks in the figure above.[20] TL: total length.

Contrary to harmful representations in popular culture, a world without sharks is the real threat, yet our oceans are increasingly suffering devastating losses of this crucial species. Indeed, it seems even 450 million years of evolution could not prepare the world's sharks to withstand humanity's relentless drive to fish for profit. But a strong Global Ocean Treaty that puts ocean protection at the heart of ocean governance can.

When sharks disappear, people suffer

Whilst lower-income nations do not participate in or benefit from high seas fishing nearly as much as wealthy nations do, they are still susceptible to its negative impact. The ocean is a highly connected space, where high seas and coastal ecosystems are intertwined. As such, ineffective management of biodiversity in the high seas (and the industrial fishing fleet who fish there) can impact the biodiversity of coastal areas, including the availability of important fish species for coastal communities.

Scientists estimate that 95% of high seas fish biodiversity is not currently assessed by RFMOs,[21] with 97% of high seas fishing undertaken by vessels flagged to higher-income countries.[22] Meanwhile, the list of species being fished on the high seas is short: 39 species (predominantly tunas and mackerels) account for 99.5% of the reported catch.[23] Almost all of those fish go to high-end markets in wealthy countries, rather than provide subsistence or food security for the three billion people, often in developing countries, for whom fish is their main source of protein.[24] However, more effective management of high seas biodiversity can result in more equitable outcomes for small scale fishers and their communities in developing countries and coastal regions.[25] This kind of action is especially pertinent given the realities of climate change, which is already altering ocean ecosystems, shifting the locations of key species and impacting coastal regions. Climate change poses significant challenges for governance because geographic management practices remain relatively static.[26] In benthic and deep sea ecosystems, where temperatures have varied little over millions of years, climate change now threatens to push temperatures beyond the adaptation range of many species, including fish populations that underpin the livelihoods of coastal communities.[27].

> "There have been numerous reports of **poor workers rights** for migrant fishers at sea, including in European fleets."

On top of that, there have been numerous reports[28] of poor workers rights for migrant fishers at sea, including in European fleets.[29] During Greenpeace's monitoring of the Portuguese longliner fleet in Horta, it was observed that in general, the crews were rarely, if ever, Portuguese nationals. There are obvious economic benefits and documented cultural benefits to increased diversity onboard fishing vessels, but the industry tends to deliberately ignore that and instead focus its public communications on national jobs. Portugal and Spain have historically been the highest employers of non-EU labour in their fleets. Whilst some companies operate perfectly above board, as fish populations decline, fuel prices rise and the market for fisheries products expands, the drive to reduce crewing costs can lead to dangerous and unacceptable conditions for those onboard[30] including exploitation, violence, racism and abuse.

FISHERS WANT CHANGE

A series of interviews with fishers in three ports of the Spanish surface longline fleet operating in the Atlantic Ocean[31] revealed that fishers want more fisheries management. In A Guarda port, 83.3% of fishers observed a variation in shortfin mako and blue shark abundance, indicating a recent decline in their common fishing areas. Fishers described the diminishing size of blue sharks in the Sole Bank and spoke positively in support of closing this area to fisheries during the summer months to restore the population.

CLIMATE CHANGE AND SHARKS – A VICIOUS CYCLE

Overfishing sharks not only impacts an ecosystems dynamics, but its ability to mitigate and adapt to climate change.

One study from Australia found that removing tiger sharks from an ecosystem led to dugongs overgrazing seagrass meadows – a plant which accounts for 10% of the ocean's capacity to store carbon.[32,33] The impacts of climate change go both ways and, as a threat multiplier, are likely also felt by sharks.

However, information remains relatively scarce when looking at how this is impacting top predators like sharks. We know that climate change is causing the warming and deoxygenation of coastal areas and ocean acidification, representing an important challenge to the physiological performance of marine organisms. The associated problems can include changes in distribution, effects on swimming performance and metabolic issues. Furthermore, it is becoming increasingly clear that sharks play a crucial role in the ocean's carbon pump, increasing the ocean's ability to absorb and sink carbon which mitigates against the worst impacts of climate change.[34]

A new study conducted by researchers at the University of Mexico evaluated the possible shifts of different carcharhinid sharks' distribution in varying climate change scenarios. It found that by 2050, climate change could reduce suitable areas for most of the carcharhinid species from this area.[35] Another study, conducted in 2019 in Chesapeake Bay, tried to understand how the changes induced by climate change could affect individual species such as sandbar sharks (*Carcharhinus plumbeus*). Sandbar shark is an obligate ram-ventilation apex predator whose juveniles use Chesapeake Bay as a nursery ground up to 10 years of age. In laboratory controlled conditions, the researchers determined that, when exposed to warm and hypoxic (low or depleted oxygen) water, the overall performance of sandbar sharks decreased considerably at 32°C, or when dissolved oxygen concentration was reduced below 3.5 mg l^{-1}.

As the level of warm and hypoxic water is increasing in this area, the researchers expect that the available sandbar shark nursery habitat will be reduced, which may negatively impact the population of sandbar sharks in the West Atlantic and, of course, the overall health of the ecosystem.[36]

Furthermore, a 2021 study carried out by several researchers from Portugal, Spain and the UK[37] concluded that climate change is driving the expansion of ocean hypoxic zones, causing pelagic fish to concentrate in oxygenated surface layers. Multiple factors associated with climate-driven deoxygenation contributed to the shrinking of the blue shark vertical habitat, potentially increasing their vulnerability to surface fisheries where a greater intensity of longline fishing effort occurred.

How expanding hypoxia and fisheries will interact to affect threatened pelagic sharks remains to be seen, although higher shark catches were associated with strong decreasing dissolved oxygen gradients. In a nutshell, pelagic sharks will become more susceptible to capture as a consequence of climate change. Therefore, management measures for threatened pelagic sharks, which specifically act to mitigate the effects of climate change, may be required as oceans continue warming. As scientists advise, large MPAs around oxygen minimum zones on the high seas may be a management option, in addition to more effective existing catch control measures to conserve shark populations. The increased numbers of sharks documented in fully and highly protected areas[38] demonstrate the potential for MPAs to increase the resilience of shark populations to the impacts of a changing climate.

"Climate change is driving the expansion of ocean hypoxic zones, causing pelagic fish to concentrate in oxygenated surface layers where a greater intensity of longline fishing occurs."

SPOTLIGHT ON THE NORTH ATLANTIC

The overfishing of sharks in the North Atlantic mirrors the situation found in many other parts of the world. Blue sharks are the most commonly fished sharks in the North Atlantic, with Spanish and Portuguese fleets responsible for the vast majority of landings.

The uncertainty around blue shark populations is so broad that it encompasses almost the entire range, from a lightly fished population to one that is overfished.

According to the last stock assessment for North Atlantic blue shark made in 2015 by SCRS, the status of the North Atlantic population is unlikely to be overfished nor subject to overfishing. However, due to the level of uncertainty, it was not possible to reach a consensus on a specific management recommendation. While a more precautionary approach to not increase fishing mortality was recommended, other approaches stated that this was not necessary,[39] – predominantly because blue sharks are considered one of the most productive species of elasmobranchs. Nevertheless, blue sharks reproduce at roughly the same rate as other elasmobranchs , implying that there will be no rapid improvements to stock status once depleted. Indeed, recovery times from even modest overfishing can be expected to take decades for many elasmobranch species. Right now, it is impossible to rule out the possibility that the stocks are being overfished and this should be concerning for all governments and companies involved in the fishery.

As for North Atlantic shortfin mako, the last assessment was made in 2019 and confirmed the stock depletion noted in 2017. The stock has a 90% probability of being overfished. Modelling projections indicated that zero catches could allow the stock to rebuild by 2045, with a 53% probability. However, regardless of the total allowable catches (including zero tonnes), the stock will continue to decline until 2035 before any biomass increases can occur.[40]

For both species, the population assessment uncertainty is not the fault of the scientists who conducted the ICCAT assessments, as the underlying data are so incomplete. A large portion of the data gaps can be attributed to some of the ICCAT member nations, who provide wildly varying data accuracies for all of their fisheries. In addition, there are several major

Top: Short-fin mako shark
© Carlos Negrete / iStock
Bottom: Blue shark
© Velvetfish / iStock

"Shark population recovery times for even modest overfishing can be expected to take decades."

fishing nations fishing the North Atlantic who are not party to ICCAT and do not provide any shark catch data whatsoever.[41] Thus, there are obvious challenges in trying to assess shark stock status. Nevertheless, the very different standards applied by ICCAT to sharks compared with tunas, swordfish, and billfish highlights the conclusion that sharks are viewed as an afterthought.

This case in the ICCAT Convention Area is unfortunately representative of what happens under the purview of practically every single RFMO. It is clear these organisations are not fit for purpose, and when it comes to the monumental task of restoring ocean health, both their reform and a strong Global Ocean Treaty is required.

Baby sharks – an unfair target

A combination of overfishing and climate change is driving the demise of sharks, but their 'K-selected' reproductive strategy compounds the problem. Most shark species are characterised as having low productivity associated with low fecundity, a slow growth rate and a late-age sexual maturation. This makes them particularly susceptible to fishing pressure and gives them very limited capacity to recover from depletions.

Shortfin makos are ovoviviparous. They have a gestation period of 15-18 months, a spawning cycle every three years and a litter of 4-16 pups. Blue sharks are viviparous with a gestation period of 9-12 months, a litter of 4-135 pups (usually 15-30) and breed annually or on alternate years.

In May 2022, a Greenpeace investigation documented the landings of this so-called swordfish fishery at two ports – Horta (Azores, Portugal) and Vigo (Galicia, Spain) – where we verified the capture of immature and juvenile blue sharks.

Galicia, Spain, May 2022. One of the fresh shark landings investigated by Greenpeace in Vigo. These sharks are estimated to be between 50-70 centimetres, making them juvenile. An adult male blue shark is 180cm and an adult female is 200-220cm. © Greenpeace.

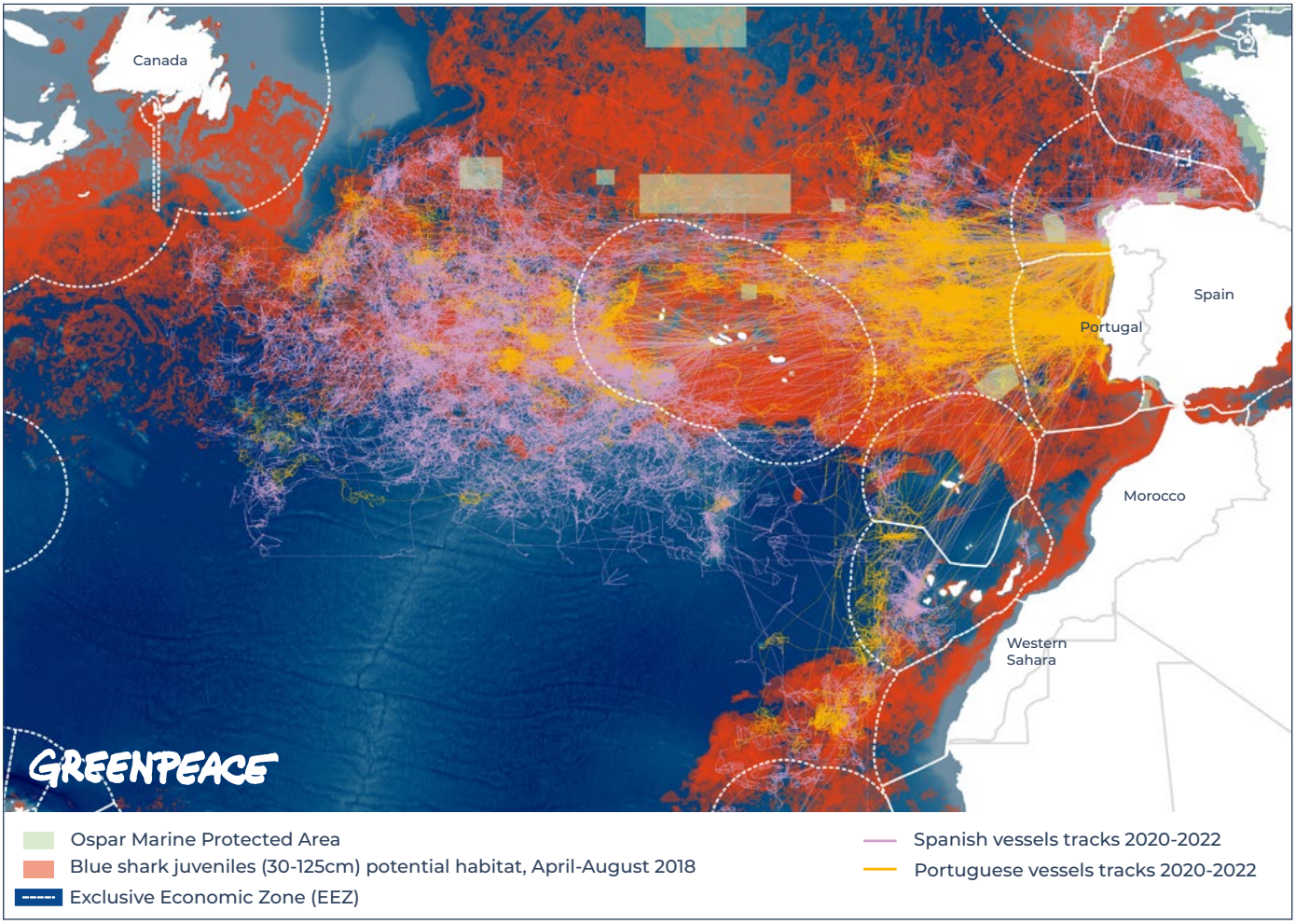


FIGURE 3: Mapping of the potential feeding habitat of blue shark juveniles (under 135 cm total length) using satellite observation data (source: JRC- Joint Research Center of the European Commission). The juveniles distribution is mapped together with the fishing footprint of the European longliners and MPAs declared by OSPAR.

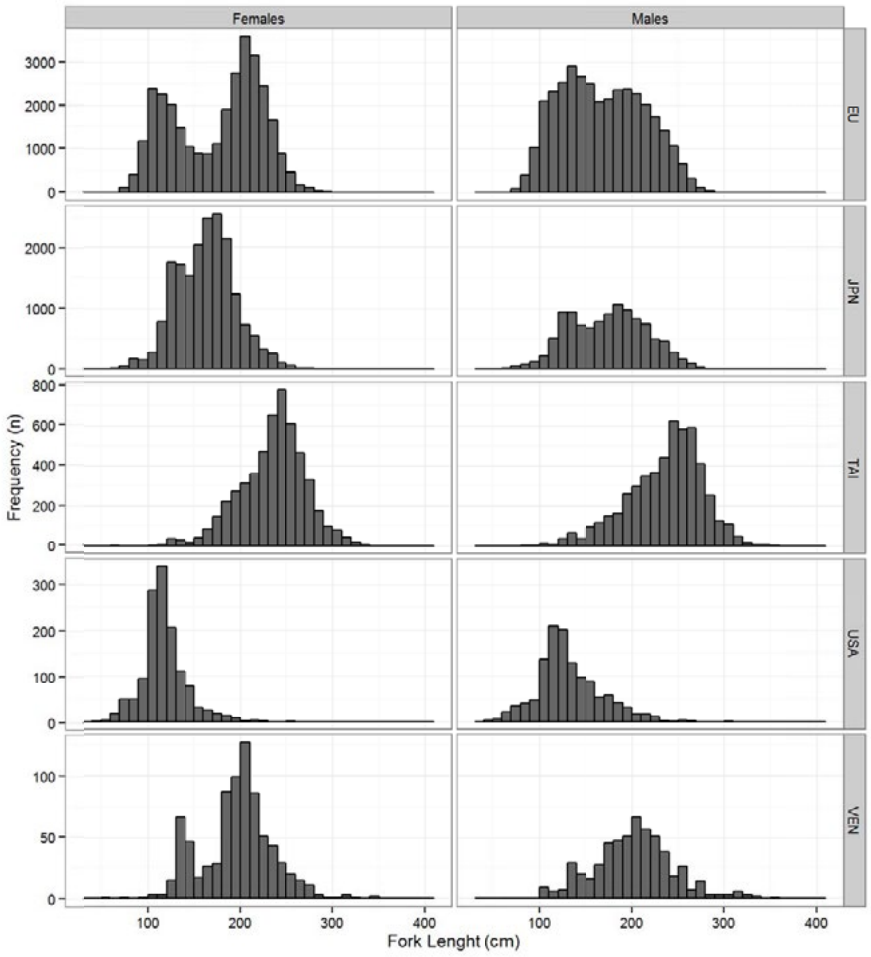


FIGURE 4:
2015 ICCAT stock assessment of the size distribution of captures by fleet: EU (EU-Portugal + EU-Spain), Japan, Taiwan, USA and Venezuela.

"Catching shark pups could be having rapid and wide-reaching impacts on the species and the ecosystem as a whole."

The 2015 ICCAT stock assessment for blue sharks reflected the size distribution of captures. The total length for blue sharks at first maturity ranged from 200-220cm for females and 180cm for males. As seen in figure 3 (overleaf), there is a clear portion of catches that are below the size of sexual maturation for European and other fleets.

This high seas fishery is poorly regulated so there is no established minimum size, unlike the swordfish fishery. The risks of catching shark pups before they reach sexual maturity and can reproduce are obvious. This practice could be having rapid and wide-reaching impacts on the species and the ecosystem as a whole.

Blue shark pups
© Damocean / iStock

Short-fin mako
© Ryan Cake / iStock

MAKO SHARKS – A TRAGIC HISTORY

ICCAT AND MAKOS: CHRONOLOGY OF AN UPHILL BATTLE FOR SHARKS CONSERVATION

Examining the plight of shortfin mako sharks in the North Atlantic exposes the unwillingness of RFMOs to restrict fishing on vulnerable yet lucrative species.[42] Unless the rules are transformed, management of shark fisheries (or the lack thereof) will continue to be dominated by economic interest and a weak institutional set up.

Two decades of unrestricted fishing for vulnerable Atlantic mako sharks

The history of overfishing shortfin mako sharks in the Atlantic Ocean is one of inadequacy, neglect and needless delay. It is a clear example of how poor data, lack of reporting and commercial interests hinder conservation efforts and result in overfishing, in spite of ample scientific advice demanding actions to prevent population decline. These dynamics can be found in many other fisheries today.

START

Since the fishery began targeting sharks in the mid 90s, statistics on catches have been poor – an issue that fishing nations have not resolved since. These poor data have consistently made it hard for scientists to determine the impact of fisheries on shark populations. Because of this, sharks received increasing attention from other Conventions and in November **1994**, the 19th Conference of the Parties to CITES adopted Resolution Conf 9.17 on the Status of International Trade in shark species.[43] The resolution requested that the FAO and other international fisheries organisations, such as ICCAT, collect and assemble the necessary biological and trade data on shark species and instructed the CITES Animals Committee to review such information.[44] As we will see, ICCAT parties' response to this and other requests for improved management of fisheries targeting sharks was anything but swift.

1994

In **2000**, the SCRS recommended stock assessments for Atlantic blue, porbeagle, and mako sharks in response to concerns about the increasing exploitation of sharks in ICCAT fisheries. To this end, it emphasised that scientists needed countries to report the total catches and landings (including estimates of dead discarded catch) of these species. Given the lack of data, the SCRS reminded fishing nations: "It is the responsibility of the nations fishing sharks to collect adequate data and urged these countries to carry out good scientific observer programs."[45]

2000

In **2001**, ICCAT adopted Resolution 01-11[46] on Atlantic sharks, calling its parties to submit data on shark catches, "encouraging" the release of live sharks and "voluntarily" avoiding increasing fishing effort on porbeagle, shortfin mako and blue sharks.[47] The call from the SCRS to improve data on sharks remains to this day, with scientists highlighting the "low level of compliance" with data reporting obligations, signalling that they cannot provide advice "with sufficient precision" or that that these deficiencies "hamper, when not completely impede" the assessment of shark populations.[48, 49, 50, 51, 52, 53, 54]

2001

It's not surprising that when, in **2004**, the SCRS tried to assess the status of the Atlantic populations of shortfin mako, scientists had to guess real catch figures, as reported catches couldn't be trusted.[55, 56] Amidst high uncertainties on the status of these populations,[57] they found that North Atlantic shortfin makos may be overfished and that South Atlantic makos were likely to be fully exploited.[58, 59]

2004

That year, ICCAT adopted Recommendation 04-10, making it mandatory to submit data on shark catches and calling on the SCRS to review the assessment of the mako population and to recommend management options by 2005, as well as reassess mako and blue sharks "no later than 2007".[60] Meanwhile, hundreds of thousands of vulnerable sharks continued to be caught and traded, despite the population uncertainties, the unquantified impacts of fishing or the fact that fleets were not complying with minimum reporting requirements.

2005

When, in **2005**, the SCRS aimed to review the 2004 assessment of shortfin makos, it could only note that "measures to reduce fishing mortality should be taken" and that "knowledge of overall catch levels is inadequate" and therefore "there is no basis for recommending catch limits for this stock."[61] Other potential measures, such as protected areas, were out of the question due to the lack of data.[62, 63]

In the following years, not much would change despite the calls of international NGOs working on shark conservation. In meeting after meeting, ICCAT neglected to implement any measures to protect makos.

2006

A new Recommendation was adopted at the **2006** ICCAT annual meeting postponing the new assessment of shortfin mako and blue sharks to 2008.[64] In **2007** scientists noted, yet again, that more than two years after the adoption of Recommendation 04-10, most countries were not reporting data adequately.[65] Thereafter, ICCAT adopted another Recommendation establishing that States had to report catch data, as well as reduce fishing mortality of North Atlantic makos.[66] As the SCRS noted: "The absence of reliable information on the impact of ICCAT fisheries on shark stocks **could result in high, but unmonitored, levels of overfishing** in contravention of the Convention objectives. As a consequence of these data deficiencies, **increasingly conservative management measures might be needed to be implemented by the Commission, in order to limit the risk of collapse for some shark populations**" [emphasis added].[67]

2007

Unfortunately, there was no trace of such conservative management measures in the following years, and any such measures would only be adopted over a decade later.

2008

As mandated by ICCAT Recommendation 06-10, an updated assessment of the stocks of blue shark and shortfin mako was conducted in **2008**, as well as Ecological Risk Assessments for nine additional priority species of pelagic sharks and rays, for which available data were very limited.[68] The assessment was considered highly uncertain and more research and data collection was called for.[69] The outcome was that the North Atlantic mako population could be both overfished and subject to overfishing. The Committee couldn't draw conclusions for the South Atlantic population. The Ecological Risk Assessment confirmed that most Atlantic pelagic sharks have exceptionally limited biological productivity and, as such, can be overfished even at very low levels of fishing mortality.

Bigeye threshers (*Alopias superciliosus*), longfin makos (*Isurus paucus*), and shortfin makos (*Isurus oxyrinchus*) were found to have the highest vulnerability (and lowest biological productivity) of the 11 priority shark species examined. The SCRS demanded precautionary management measures to be considered for populations which were considered vulnerable and for which there were data limitations.[70] Despite this, **no new measures were adopted to protect shortfin makos and a new assessment of the population status of shortfin makos would not be scheduled until 2012**.

In 2008, ICCAT conducted its first Independent Performance Review.[71] The review highlighted the lack of progress in the provision of shark statistics[72] and stated that it couldn't determine if the objectives of the Commission were met in respect of shark populations, although it considered it unlikely.[73, 74]

The advice from the ICCAT scientists was crystal clear: "if the Commission wishes to stop overfishing immediately and achieve rebuilding by 2040 with over a 50% probability, the most effective immediate measure is a complete prohibition of retention."

In the face of the blatant inaction of an RFMO, other Conventions more focused on conservation started to emerge. In 2008, both mako sharks were included in Appendix II[75] of the Convention on Migratory Species.[76]

2010

In 2010, a new measure adopted at the ICCAT annual meeting tried, again, to address the lack of data reporting. This regulation would prohibit the retention of mako sharks for those countries not reporting catch data, but its provisions would only come into effect in 2013.[77]

2011

In 2011, a data preparatory meeting was held to prepare for a new assessment and an expanded Ecological Risk Assessment in 2012. The Scientific Committee noted, again, that although there had been some improvements: "Global statistics are still insufficient to permit the Committee to provide quantitative advice on stock status with sufficient precision."[78] That same year, the SCRS recommended that for species of sharks such as makos, the Commission should prohibit their retention and landing.[79] When highlighting this omission of legal obligations (failing to report fishing related data), it is important to bear in mind that sharks are not a minor catch. **In 2010, shark catches amounted to more than 15% of all reported catches by weight in ICCAT fisheries.**[80]

2012

The work conducted in 2012 by the SCRS on shortfin makos brought considerable uncertainty to the management of fisheries targeting this species. On one hand, the assessment of the status of North and South Atlantic shortfin mako populations downplayed the probability of overfishing, although it noted inconsistencies, contradictory trends and difficulties in estimating the current status of stocks. On the other hand, the enhanced Ecological Risk Assessment confirmed the high vulnerability of mako sharks, which ranked third most vulnerable among 16 species of sharks.[81]

The SCRS evaluations of makos had been focused on the Atlantic. But Mediterranean makos were also under pressure from fishing and received no attention by ICCAT. Once again, another Convention came into play. In 2012, the Barcelona Convention listed 10 elasmobranch species, including shortfin mako sharks, under its Annex II of endangered or threatened species (under the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean).[82] Subsequently, the General Fisheries Commission for the Mediterranean adopted a recommendation in 2012 prohibiting the retention, transhipment, landing or sale of the shark species in the Annex II of the Barcelona Convention.[83]

2017

A new assessment of the status of shortfin mako populations would have to wait until 2017. Over a five year period, catches of North Atlantic shortfin makos oscillated, from 4,431t in 2012 to 3,116t in 2017.[84] In the meantime, ICCAT adopted three new Recommendations, including provisions on mako sharks, aiming, again, at improving data provided for these populations.[85]

If ICCAT's lack of action in the face of uncertainties and widespread lack of compliance with data collection is shocking, their work in 2017 provides a much clearer example of the dynamics at play. The SCRS conducted a new assessment which, it clearly stated, represented: "A significant improvement in our understanding of current stock status, for North Atlantic shortfin mako in

particular."[86] All models assessing the North Atlantic shortfin mako population indicated that the stock was overfished[87] and overfishing was occurring.[88] For the South Atlantic population, the Committee considered the results highly uncertain.

The prospects were appalling for the North Atlantic shortfin mako population and catch levels (estimated to be between 3,600t and 4,750t), would cause continued population decline. In order to stop overfishing and start rebuilding the population, "the constant annual catch should be reduced to 500t or less. This will achieve the goal of stopping overfishing in 2018 with a 75% probability, but it only has a 35% probability of rebuilding the stock by 2040. **Only a 0t annual catch will rebuild the stock by 2040 with a 54% probability**."[89] The advice from the ICCAT scientists was crystal clear: "if the Commission wishes to stop overfishing immediately and achieve rebuilding by 2040 with over a 50% probability, the most effective immediate measure is a complete prohibition of retention."[90, 91]

The fishing industry fighting tooth and nail against shark conservation

Given the stark warning from its own scientific committee, it would be safe to assume that ICCAT parties would act decisively and protect North Atlantic makos populations.

But they did not.

In countries responsible for the largest catches of Atlantic mako sharks,[92] the fishing industry lobbied intensively against the SCRS recommendations in a bid to undermine scientific advice. As a Spanish newspaper put it at the time: "Spain will attempt to stop the zero quota that scientists demand for mako sharks." Quoting the President of the CEPESCA, Spain's main industry association, the article calls the work of scientists "nonsense, as it ignores catch data from Spain based on over 30,000 fishing trips in the North and South Atlantic."[93]

Far from following the advice of their own scientists, the Recommendation, negotiated by governments attending the 2017 ICCAT Annual Meeting, did the opposite.[94] It focused on the live release of sharks and provided exemptions so numerous as to make it impossible to achieve the recovery of the population in any reasonable timeframe.[95]

Instead of giving mako sharks a much needed break to recover, the fishing industry's influence on ICCAT was evident. NGOs strongly denounced this new failure, with Shark League stating that ICCAT had "**fallen so short of the clearest scientific advice to date for shortfin mako sharks, and are thereby leaving this exceptionally vulnerable species at risk for population collapse.**"[96] Pew called the new measures "flawed and likely[...]ineffective at ending overfishing or encouraging stock rebuilding."[97]

On the other hand, Spanish fishing industry associations called the Recommendation "favourable",[98] noting that despite the fact mako shark fishing could continue, the conditions would "require a significant effort to the sector".[99] According to the largest European fishing industry association, ICCAT had adopted "strong measures to ensure the sustainability of this fishery" which "allowed for a positive recovery forecast of this fish population."[100] This is a perplexing interpretation of the Recommendations, given the SCRS forecast that the stock would have just a 54% probability of recovering by 2040 with **zero annual catches.**

2018

In **2018**, the SCRS repeated again that "if the Commission wishes to stop overfishing immediately and achieve rebuilding by 2040 with over a 50% probability, the most effective immediate measure is a complete prohibition of retention." That year, the only decision agreed by ICCAT parties was a new Recommendation aiming at increasing compliance with adopted measures on sharks.[101]

2019

In 2019, the IUCN listed both shortfin and longfin makos as endangered.[102] Given the ineffectiveness of RFMOs in preventing the depletion of shark populations, CITES had been including species of sharks in its appendices since 2003.[103] Mexico, which is a party to ICCAT, proposed the listing of both mako shark species in Appendix II[104] of CITES[105] at the 18th Conference of the Parties in August 2019.

One of the expected benefits of a CITES listing is precisely improving data on trade, which is closely correlated with catches – something that ICCAT had failed to do for over two decades. However, the proposal by Mexico and, even more so, the announcement by the European Commission that it would co-sponsor it, triggered a fierce industry campaign in both lobbies and media against the inclusion of mako sharks in a CITES Appendix. Spanish and European industry representatives from CEPESCA had numerous meetings in Brussels to try to get the EU to vote against the proposal at the CITES Conference of the Parties.[106]

In a press release, the main European fishing industry association, Europêche, rejected "the EU initiative to co-sign a Mexican proposal for this purpose", arguing "the species is sufficiently protected and regulated" in light of the "strong regulatory framework within the context of RFMOs and other Regional Agreements". As Europêche's President Javier Garat put it: "RFMOs such as ICCAT, and not CITES, are better suited in this case to closely monitor the state and progress of mako shark stocks and to regulate the species accordingly."[107]

On World Wildlife Day in 2019, Europêche's President Garat gave a revealing speech at the Palais des Nations in Geneva, saying he "regrets that the parties involved in CITES decision-making are usually the ministries of environment that are often distant from on-the-ground realities faced by fisheries authorities."[108] CEPESCA added to these statements, saying: "it's OK for [CITES] to decide about elephants but not about marine commercial species", calling it "absurd that they put makos and rhinos or linxs, which are not food, on the same level". Another Spanish producers association concluded that "the EU is scared of environmental organisations."[109]

Strong words indeed, and strange too, given that other shark species had already been included in CITES appendices[110] and, in relation to the regulation of makos at ICCAT, retention bans adopted for other shark species too.[111] Tellingly, **these had never been for species with as high a commercial value as mako sharks.**[112]

Amidst this industry campaign against the inclusion of mako sharks in CITES, our ship MY Esperanza set sail to the North Atlantic to document the shark fishery as part of our campaign for a strong Global Ocean Treaty,[113] an activity which was inexplicably branded 'harassment' in Galician media.[114]

Then, in August 2019, CITES parties voted in favour of including mako sharks in CITES appendix II.[115] When the SCRS met that year, it noted that catches in 2018 had decreased. However, as the Recommendation adopted in 2017 did not come into force until 2019, ICCAT scientists concluded that it wasn't clear whether the decrease could be attributed to the existing management measures, or to a further decline of the mako population.[116]

What's more, the SCRS agreed that the exemptions contained in Recommendation 17-08 "will not permit the recovery by year 2070."[117] Consistent with that, the SCRS recommended "that the Commission adopt a non-retention policy without exception in the North Atlantic as it has already done with other shark species caught as bycatch in ICCAT fisheries." The data available to ICCAT scientists continued to be insufficient to propose protected areas to help makos recover.[118, 119]

Despite the protection granted to makos at CITES in August, ICCAT adopted a new Recommendation that essentially repeated the same derogations of 2017.[120]

2020

Conservationists slammed the opposition of the EU and the US to a proposal for a North Atlantic retention ban, which had been endorsed by 16 countries – including Japan and China.[121]

At the 2020 ICCAT annual meeting, three proposals for new regulations on mako sharks were tabled. A statement signed by more than 40 NGOs and retailers was presented, demanding an immediate retention ban on shortfin makos without exemptions. However, no consensus could be reached, given proposals by both the EU and the US establishing catch limits which would neither end overfishing nor allow stock rebuilding by 2070.[122] Any decision was postponed until 2021.[123]

2021

Finally, in 2021, over two decades after stock assessments were first recommended by scientists, fishing for North Atlantic mako sharks was prohibited.

At its annual meeting, ICCAT parties adopted Recommendation 21-09[124] with no explanation as to why this decision couldn't have been made sooner.[125] However, the ban is only temporary, with the possibility of mako fishing resuming in 2024. As SharkProject International stated, this "falls short of the precautionary approach needed for a stock that will continue to decline at least until 2035 even at a fishing mortality of zero." As such, the fate of mako sharks remains to be seen and their long-term protection continues to hang in the balance.

"Finally, in 2021, over two decades after stock assessments were first recommended by scientists, fishing for North Atlantic mako sharks was prohibited – albeit temporarily."

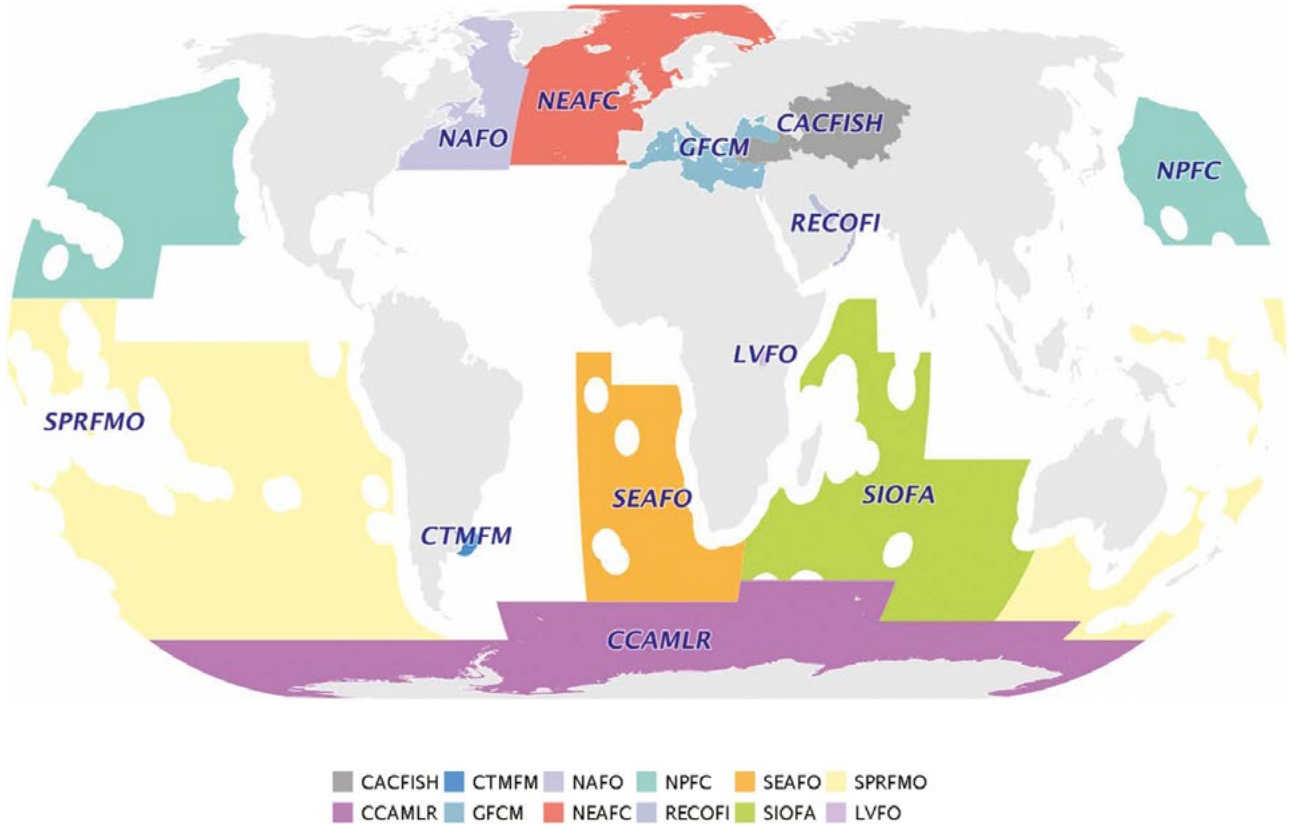


FIGURE 5: Area of competence for each RFMO. © FAO, 2020[126]

The RFMO turf war must end

One of the most prominent examples of the failure of RFMOs is the depletion of shark populations caused by fishery activities under their purview. In such a context, it's hard to understand why many States resist collaboration between RFMOs and other existing global and regional conventions and bodies.

CITES is a good example and one very relevant to shark conservation. The long-term conservation of sharks requires RFMOs and CITES to work closely together, particularly since global trade is driving their depletion. Whilst the cooperation between the FAO and CITES is not without its hurdles, such cooperation is now widely supported and the role of CITES acknowledged. International organisations such as CITES, the IUCN[127] and the CMS[128] have conducted assessments that show a continuous decline in the abundance of shark species impacted by tuna fisheries. Where relevant, these organisations have followed this up with legally-binding conservation measures under their own remit.

But this has only happened after many years of resistance by some States and national fishing industries, something Greenpeace campaigners have witnessed whilst attending RFMO meetings. Makos at ICCAT are one prominent example. With time, resistance is giving way to an increased recognition of the role of other conventions.

In 2010, the Sub-Committee on Fish Trade of the FAO "highlighted the important role of RFMOs in the management of fisheries under their mandates". It also "recognized the role of CITES as a global instrument for the regulation of international trade of species listed in its appendices."[129] In 2014, the Sub-Committee wrote: "Many Members noted that good collaboration and consultation between CITES and RFMOs and range states was considered to be essential for the conservation of commercially exploited aquatic species."[130, 131] The 2015 FAO technical paper 'State of the Global Market for Shark Products', suggests that "Intergovernmental organisations such as CITES, Convention on the Conservation of Migratory Species of Wild Animals (CMS) and regional fisheries management organisations should consider establishing formal liaison and data-sharing protocols on species of shared interest." Furthermore, the UN General Assembly, in its 2019 Resolution on Sustainable fisheries[132] encouraged States to better cooperate with the CMS[133] and CITES, thereby acknowledging that measures adopted by these intergovernmental organisations support and complement RFMO work, shark-related conservation and management measures adopted over the years.

"States party to RFMOs must embrace the opportunity to cooperate and develop a comprehensive instrument that is capable of protecting the oceans."

However, many tuna RFMOs members, as well as national industries,[134] continue to be defensive towards a perceived invasion by other intergovernmental organisations of their supposedly exclusive area of competence.[135, 136] This attitude is inhibiting the negotiations for a Global Ocean Treaty, where some States argue, yet again, that only RFMOs should be responsible for measures impacting fisheries and that fishing should be exempt from its scope. But as we have seen, as well as having a relatively narrow remit – both in substance and membership – for RFMOs to fulfil their obligations and stated objectives, they must adopt a more open and collaborative approach. The Treaty can complement and strengthen the work of the of RFMOs to ensure comprehensive ecosystem health, address the cumulative impacts of multiple sectors and improve cooperation and coordination among bodies responsible for the regulation of different high seas activities, thus reducing conflicts and fragmentation.

Rather than inciting a turf war, States party to RFMOs must embrace the opportunity to cooperate and develop a comprehensive instrument that is capable of protecting the oceans, including through the establishment and management of fully and highly protected areas.

"In a 24 hour period, an estimated 1,280 kilometres of longline were in the North Atlantic, enough to stretch from Paris to Madrid, with anywhere between 15,500 and 28,000 hooks."

Longline fishing vessel
© Kajsa Sjölander / Greenpeace

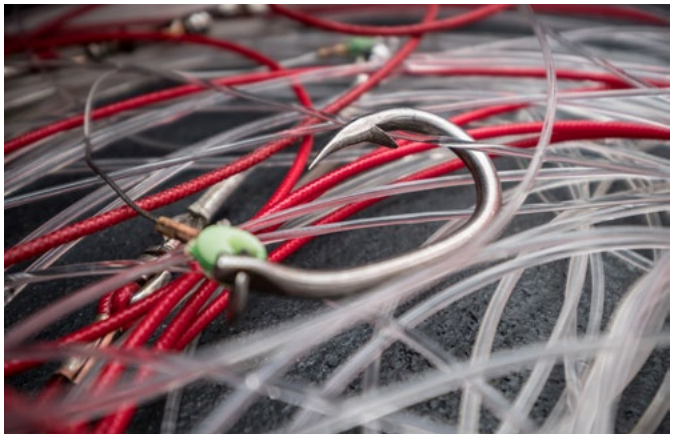
THE INCREASING EFFICIENCY OF THE SHARK FISHING FLEET

Since 1970, the global abundance of oceanic sharks and rays has declined by a staggering 71%,[137] with an 18-fold increase in relative fishing pressure.

Although sustainable shark fisheries are theoretically possible, industrial fisheries targeting elasmobranchs can be characterised by a "boom and bust" trajectory that has decimated crucial species.[138]

Sharks are now the main target of the EU surface longline fleet (mostly Spanish and Portuguese), with a fishing capacity of more than 200 vessels, each over 24 metres long. This fishing effort is taking place in all of the world's oceans: on the high seas and even in the exclusive economic zones (EEZs) of some of the poorest countries, under so-called bilateral fisheries agreements with third countries.[139]

More than 96% of the reported blue shark catches in the North Atlantic are caught by pelagic longlines. These surface longliners carry a line often measuring more than 100 kilometres, targeting just sharks, or sharks and swordfish (though tuna usually accounts for a minor portion of catches). Vessels longer than 24 metres that want to fish for tuna or swordfish in the Atlantic, Pacific or Indian Oceans must register in these RFMOs[140] and in ICCAT fisheries, vessels over 20 metres must register.



A hook from a longline, fitted with a wire trace
© Tommy Trenchard / Greenpeace

"There are currently **no regulations** limiting longline size or hook usage in the Atlantic."

What is longline fishing?

A drifting longline consists of a main-line or "mother-line" kept near the surface (surface longline) that targets large pelagic fish like swordfish or sharks. Using regularly spaced floats and relatively long snoods (branches) with baited hooks, the gear is suspended about 60-100 metres below the surface. Surface longlines can be huge, from 20 kilometres long to more than 100.

In 2022, a Greenpeace investigation revealed that in a 24 hour period, an estimated 1,280 kilometres of longline were in the North Atlantic (see Figure 6), enough to stretch from Paris to Madrid. We estimate that a longline of this length would have anywhere between 15,500 and 28,000 hooks.

There are currently no regulations limiting longline size or hook usage in the Atlantic because it depends on the target species and the RFMO that manages the area. For example, in Spain, the longline regulation by ICCAT is given by Order AAA/658/2014 of April 22,[141] which regulates fishing with surface longline gear for the capture of highly migratory species. The Order regulates the size of the main-line and the number of hooks that can be used, but these measures are only applicable through ICCAT in the Mediterranean. With a maximum main-line length of 30 nautical miles (about 55 kilometres), the number of hooks and their minimum size is determined by the target species. For example, swordfish: 2,500 hooks, albacore tuna: 5,000 hooks, bluefin tuna: 2,000 hooks. However, in the Atlantic, there is no limitation whatsoever on line length or hook usage.

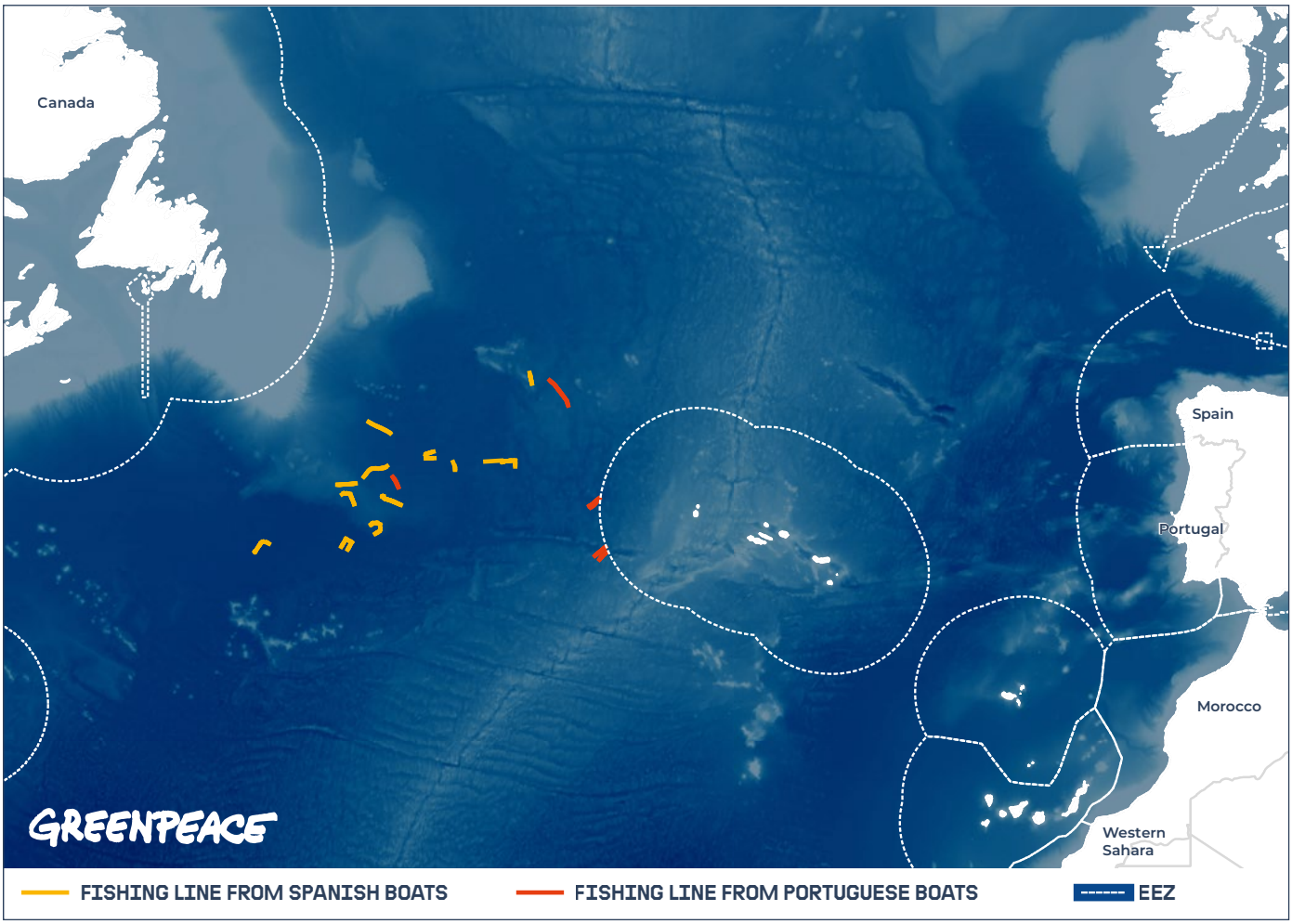


FIGURE 6: In 2022, a Greenpeace investigation revealed that in a 24 hour period, an estimated 1,280 kilometres of longline were in the North Atlantic, enough to stretch from Paris to Madrid.

Improvement of fishing technology

Historically, efforts to tackle overfishing are often restricted exclusively to reducing fishing effort – both in terms of the number of vessels out at sea and the time spent actively fishing – but fail to account for technological efficiency, which historically improves faster than any reduction of fishing capacity.[142] In recent years, the overcapacity of fishing fleets has chiefly been caused by the rapid growth of technology, creating a more efficient fleet. This is one of the main causes of the decline of commercial fish populations today.

These improvements include both new technology aboard a vessel (e.g. sonar, gear sensors, new navigation systems), and gradual improvements to existing tech or gear (e.g. netting materials, hook and longline designs, deck equipment, freezer storage and its arrangement). These kinds of gradual improvements make it easier and faster (i.e. more efficient) to locate fish and increase catchability whilst reducing non-fishing time at sea and increasing length of fishing trips.[143] Studies show that technological efficiency is growing at a cumulative annual rate of around 4.4-5%, meaning the efficiency of vessels has doubled every 15-16 years. Other authors state that the catchability increases an average of around 3.2% each year.[144]

"The rapid growth of technology is one of the main causes of the decline of commercial fish populations today."

Lack of proper surveillance

In 2014, the long-line fisheries of the North Atlantic applied for MSC certification to categorise the Spanish swordfish fishery as "sustainable". Greenpeace has long campaigned for improvements in such certification processes,[145] but on this occasion, the assessment itself[146] detected two main weaknesses: the candidate fishery lacked an explicit limit reference point that defines the beginning of the "danger zone" for a stock, and the incidental catches of endangered, threatened and protected species lacked reliable quantitative data because of low observer coverage (see table 1).

Despite the documented decline of sharks over the last 50 years, management actions to help reduce catch rates for some species have only been introduced within the last decade. These days, skippers and officers on board must record their daily fishing activity in their logbooks, reporting the number and weight of each species caught, the number of animals retained or discarded (alive or dead), the setting positions, the technical characteristics of fishing gear and the soaking times. Additionally the EU Data Collection Framework (DCF) requires relevant fishery-independent data from the longline fleet. The main objective of this onboard programme is to collect data and biological samples for scientific purposes – data that are not usually accessible during the landings of long distance freezer vessels due to onboard processing. However, this kind of data collection by fisheries observers only takes place on about 1% of fishing days in the North Atlantic.[147]

"Between 2013 and 2014, only 235 inspections were carried out on the 58,476 landings of sharks by Spanish ships – less than 0.5%"

Catches are offloaded in third countries before being transported to Vigo (Spain) in reefers and containers. At Vigo, the landing port, the industry states that controls and inspection procedures are sufficient to guarantee traceability. But, between 2013 and 2014, only 235 inspections were carried out on the 58,476 landings of sharks by Spanish ships – less than 0.5%.[148]

SPECIES	ENGLISH	% DISCARD	COMMENTS
Xiphias gladius	Swordfish	0.166	Regulated
Prionace glauca	Blue shark	0.193	Regulated
Isurus oxyrinchus	Shortfin mako shark	0.016	Regulated
Istiophoridae	Bill Fishes	0.016	Regulated
Carcharhinus spp.	Sharks	0.043	Regulated
Alopias spp.	Thresher sharks	0.267	Protected
Sphyrna spp.	Hammerhead sharks	0.61	Protected
Lamna nasus	Porbeagle	0.492	Regulated
Pteroplatytrygon violacea	Pelagic stingray	1.969	Non commercial
Gempylus serpens	Snake mackerel		Non commercial
Pseudocarcharias kamoharai	Crocodile Shark		Non commercial
Coryphaena spp.	Dolphinfish	0.487	Low value
Lampris guttatus	Opah		Low value
Lepidocybium flavobrunneum	Escolar		Low value
Alepisaurus ferox	Long Snouted Lancetfish		Low value

TABLE 1: Data on discarded individuals of each species compared to the total individuals caught by the Vigo Shipowners Cooperative for any reason (spoiled/damaged individuals, subject to regulations, or non-commercial value), and a rough estimation of the percentage of discarded individuals, compared to the total number of individuals caught by the fleet. Based on data collected in recent years by the observers on board ARVI Vessels (dated on November 2015).

This means, for example, that no interactions have been recorded with sea turtles or with Endangered, Threatened and Protected Species (ETP) of sharks in the logbooks of any vessel for the period 2010-2014. Therefore, the official data for these sharks likely under-represents actual interactions. For example, in 2018 alone, contracting parties reported to ICCAT just <20 tons of discarded (alive and dead) oceanic whitetip, bigeye thresher and smooth.[149] Despite ICCAT prohibitions on retention of these species being in place for many years, reporting of shark bycatch data by contracting parties is not enforced or penalised, nor are fishers compensated for recording discards.

What's more, some of the gutted and frozen sharks discharged in ports are wrapped in cloth to optimise space in the ship's hold and prevent them sticking together. In May 2022, Greenpeace observed that when catch is covered in this cloth in Spanish and Portuguese ports, it is impossible to visually verify if it is swordfish or sharks, hampering proper surveillance.

As stated, ICCAT parties have failed to ensure proper reporting of shark catch so we do not know exactly how many sharks are killed in the North Atlantic annually. The team assessing MSC certification for the Spanish swordfish fishery highlighted this lack of reporting as a deficiency in the application, stating that the fishery "can not ensure that interactions between sea turtles or protected sharks are properly recorded".[150] In fact, a 2022 publication[151] found that, for a single fleet fishing off West Africa, the estimated discards of three endangered or critically endangered shark species were about 32 times greater than the amounts reported – though likely even higher when all longline fleets fishing in the region were considered. These unrecorded mortalities are a huge problem as they cannot be included in any assessment of population status.

May 2022, Vigo, Spain. Greenpeace documented catch being offloaded in cloth wrapping, making it impossible to identify the species © Greenpeace.

FUEL EMISSIONS ARE A CAUSE FOR CONCERN

A recent report found that in 2018, the Portuguese longline fleet had 56 longliners between 24-40 metres long which consumed over 13 million litres of fuel and emitted 42,000 tons of CO2.

This fleet does not represent a big segment of the Portuguese fishing sector, so the total emissions will be staggering. Indeed, between 2008-2018, it is estimated that this fleet alone used approximately 147 million litres of fuel, emitting over 465,000 tons of CO2 – comparable to the emissions of the entire country of Andorra.[152]

PROTECTING SHARKS – PUTTING AREAS OFF LIMITS TO HUMANS

The science is clear: fully or highly protected MPAs are hugely beneficial for ocean health, resilience and, in turn, shark populations.

Indeed, one study found that in 87 MPAs, those which were effectively managed had a shark biomass fourteen times greater than in unprotected areas.[153] Large-scale frontal regions and oceanic seamounts can be important space-use hotspots for pelagic sharks and species distributions that travel across national boundaries in the open ocean. But these migratory habits put them at greater risk from fishing pressure than possibly any other group of fishes in the North Atlantic. Thus, reducing fisheries interactions through high seas MPAs is an especially useful tool for their protection.

Complex and ecologically important species like blue shark require coordinated efforts to protect breeding grounds and migration routes across vast areas. A strong Global Ocean Treaty that enables the creation and management of fully and highly protected MPAs could provide that coordination. However, more work is needed to provide comprehensive strategies for designing MPA networks for large, migratory pelagic species.

MPAs can be potentially effective if migratory connectivity is fully accounted for and complementary adaptive and dynamic mechanisms are developed for integration across wider seascapes and sectors at large regional and global scales.[154] It is vital to also consider connectivity in relation to MPAs benefiting sharks. One study found grey sharks to be an essential mechanism by which nutrients are transferred from offshore waters to nearshore coral reefs, yet again highlighting the role these apex predators play in the carbon and biological pump of the ocean.[155]

Sharks don't acknowledge national boundaries, with 65% of sharks tagged by research programmes spending time within the EEZs of more than one country. Perhaps more importantly, these species spend a great deal of their lives in the high seas. Between 59% and 74% of the shark tags came off while in international waters and 92% of the sharks strayed outside of the EEZ (Canadian) where they were tagged.[156] Despite this, at present the existing regulatory bodies in the North Atlantic are neither establishing nor managing a network of MPAs. In the absence of a strong Global Ocean Treaty, the legal framework for protecting areas of international waters remains all too weak.

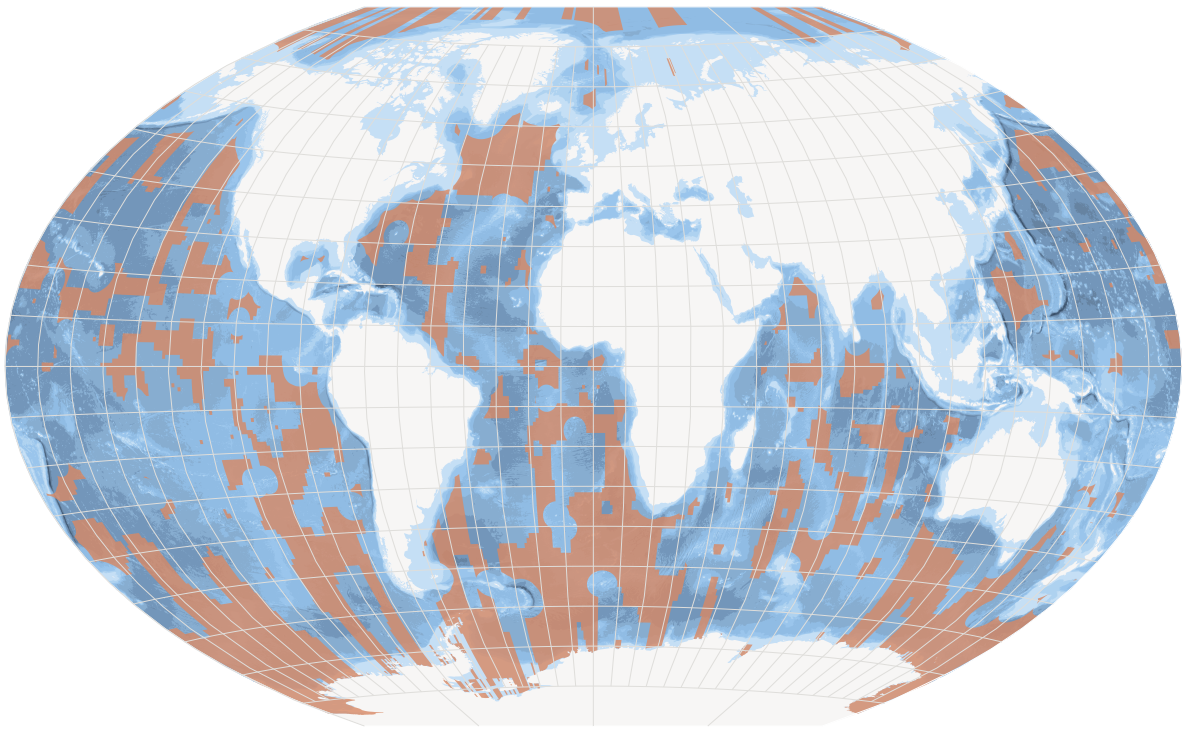


FIGURE 7: The orange areas represent a proposed network of MPAs covering 30% of international waters. Protecting 30% of the world's oceans by 2030 will safeguard key ecosystems, build ocean health and mitigate climate change.

NORTH ATLANTIC PAPER PARKS

The Convention for the Protection of the Marine Environment of the North-East Atlantic, or OSPAR Convention, came into force in 1998, with an overarching objective to conserve marine ecosystems and safeguard human health, as well as restore marine areas that have been negatively affected by human activities. Within the framework of this convention, an attempt at an MPA network has been created in the North Atlantic.

There are several offshore MPAs declared in the area (see figure 4) but that doesn't mean all habitats and its species are protected. Furthermore, not all activities or parts of the water column are properly managed under management plans. For example, the North Atlantic Current and Evlanov Seamount (NACES MPA)[157] is the most recent MPA to be announced in the area and is larger than the landmass of the United Kingdom and Germany combined.

However, under the Ospar Convention, compliance is voluntary and only guides the Contracting Parties in the adoption of measures to protect and conserve seabirds and the waters superjacent to the seabed.

Many of the measures require complex, collaborative management, building upon and encompassing all relevant actors and competent authorities with a mandate in the North Atlantic region – in particular the North East Atlantic Fisheries Commission, ICCAT (fishing activities), IMO (shipping activities) and ISA (exploration and exploitation of deep-seabed mineral resources). These Contracting Parties have very little to mandate them to take action and the wording is typically weak, stating that they *should* consider (not shall) encouraging vessels flying their flags, through any awareness raising and/or through voluntary agreements, to comply with the management framework and meet the conservation objectives for the MPA.

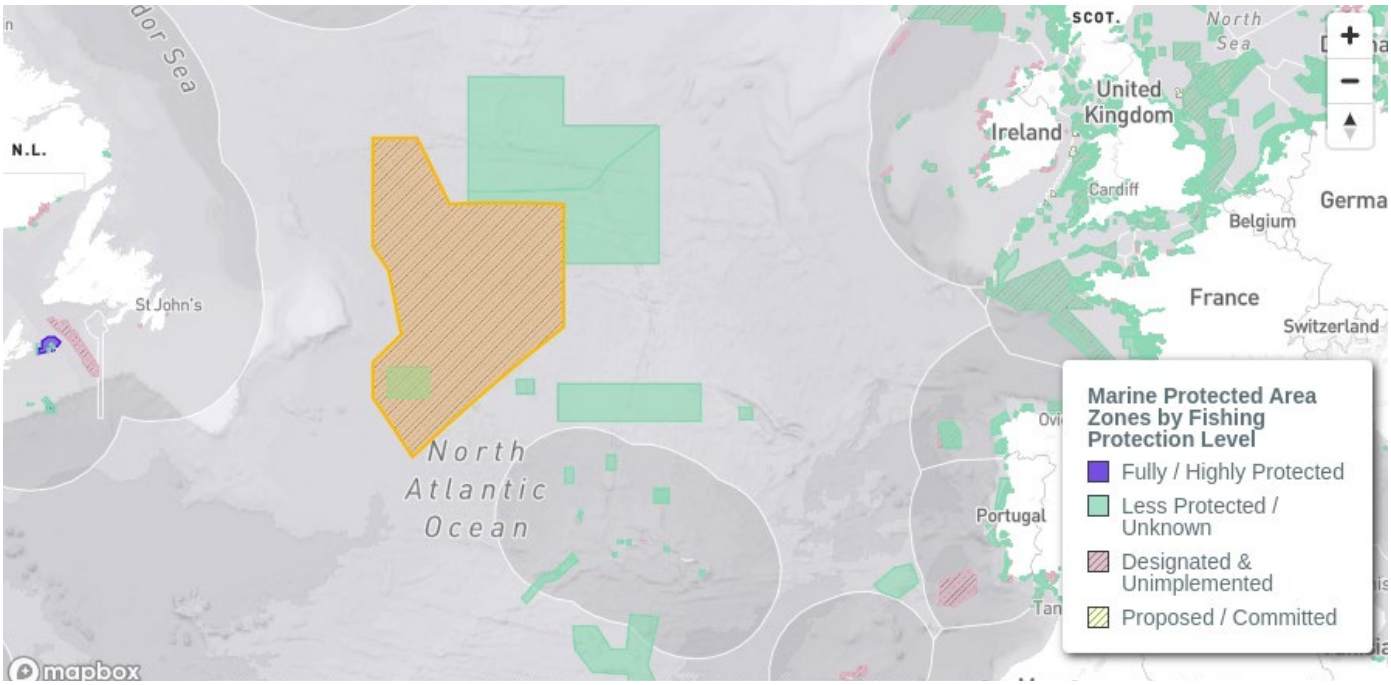


FIGURE 8: MPA declared in the North Atlantic lacking full management plans. Source: https://mpatlas.org/zones/

Shark caught by a Spanish longliner in the Atlantic
© Tommy Trenchard / Greenpeace

Shark fins at a market in Taiwan
© Alex Hofford / Greenpeace

THE GLOBAL TRADE IN SHARK MEAT

The global trade in shark meat is a lucrative business, valued alongside ray meat at US$2.6 billion (2012-2019).

Whilst there is a common misconception that shark meat is chiefly an Asian commodity, Spain is the world's top exporter, with Italy ranking the top importer. Indeed, the EU is responsible for more than one-fifth of the global trade in shark meat.[158]

The main commodities derived from sharks are meat and fins. However, shark liver oil is used to derive squalene, a common ingredient in cosmetics and pharmaceuticals, and chondroitin is extracted from shark cartilage to create health supplements. Shark fins are still the most valuable shark products and the most well-known, namely shark fin soup which is a delicacy in many parts of the world.

As noted, the market for shark meat grew incidentally, with the ban on dumping de-finned sharks at sea creating a need to sell the shark carcasses being brought ashore. Now, the shark meat market is booming, in spite of the impact it is having on endangered shark species.

June, 2022, Portugal. A Greenpeace investigation revealed the extent to which sharks of all species are sold on the open market in Portugal
© Toni Melakoji / Greenpeace.

A RECENT HISTORY OF THE SHARK MEAT TRADE

2000-2011

121,641 tonnes (USD 379.8 million) of chondrichthyan meat were imported in 2011[159] – a 42% increase compared to 2000. This market growth can be attributed to finning regulations and the growing global demand for seafood.

2011-2017

Between 2008-2017, an average of 90,000mt of shark meat products were imported.[160] This declined between 2011-2015 but increased again between 2016-2017. The average value of shark meat imports peaked in 2011 at USD3.1/kg and declined in 2017 to USD2.3/kg.

2018-2020

The COVID-19 pandemic makes analysis of the modern shark meat market more complex, with data clearly reflecting the impact of the pandemic on fisheries and international trade. 2018 data remained similar compared to previous years. However, these figures experienced a decline, both in weight and value, between 2018-2019, a decline which was even more drastic between 2019-2020. In fact, in 2020, shark meat import data fell by 16% in weight compared to the previous year, going from 76,606 tonnes in 2019 to 64,036 tonnes in 2020. The average price of shark meat was at its minimum of the last decade too, at 2 USD/Kg.

As observed in previous analysis,[161] **the EU** (especially **Spain** and **Portugal**) is the most relevant actor in the global shark meat market. These two EU member states are in the list of the top five exporters of shark meat (table 2), considering either the weight of the export or its economic value. In 2020, the main buyer of Portuguese exports was Spain (69%) and the main buyer of Spanish exports was Portugal (34%). This is due to commercial and business

relations between the two countries or because the fleets of each of these countries land their catches in ports of the neighbouring country.

This situation is very similar to that of **Namibia**, which is the fifth largest exporter of shark meat by weight (table 2). Of all shark meat exports, 71% arrived in Spain. It must be taken into account that the Port of Walvis Bay is very important for the Spanish fleet. In fact, in 2019 it was the first landing port for the Spanish surface longline fleet in international waters, to the point of tripling the landings made in the Port of Vigo that same year.[162]

Within the EU, **Italy** is the main importer of shark meat in economic terms, and is only surpassed by Spain and Portugal when calculated by weight (table 3). This is because the average price of meat imported by Italy (4.15 USD/Kg) is between two and three times higher than the price of meat imported in Spain and Portugal (1.55 and 1.18 USD/Kg, respectively). The same happens with **France** (4.44 USD/Kg), which is the fourth importer of shark meat in the EU.

Regarding the largest exporters, the **United States** appears in fourth place when the value of the export of shark meat or its weight is considered (table 2). It plays an important

TOP EXPORTERS BY VALUE

Spain	$24,075,118
China	$21,612,517
Portugal	$17,247,454
United States	$11,867,169
New Zealand	$10,603,901
Indonesia	$9,286,610
Netherlands	$5,090,484
Uruguay	$4,940,639
France	$4,730,065
Namibia	$3,107,741

TOP IMPORTERS BY VALUE

Italy	$24,650,182
Brazil	$19,713,899
Spain	$15,543,810
Australia	$9,962,747
China	$8,743,264
Portugal	$8,596,872
France	$7,642,679
South Korea	$6,714,853
Morocco	$3,562,502
Ukraine	$2,343,542

TOP EXPORTERS BY WEIGHT

Spain	15,276,582
Portugal	10,308,068
Indonesia	7,422,293
United States	3,200,718
Namibia	2,870,475
Japan	2,436,357
China	2,417,663
Uruguay	2,267,517
New Zealand	1,632,563
Singapore	1,011,890

TABLE 2: Top 10 exporters declared in 2020 by value (USD) and weight (kg).

TOP IMPORTERS BY WEIGHT

Brazil	13,519,614
Spain	10,044,279
Portugal	7,261,226
China	6,880,070
Italy	5,946,389
Uruguay	2,666,157
Morocco	2,628,476
South Korea	2,474,013
Thailand	2,146,976
France	1,719,606

TABLE 3: Top 10 importers declared in 2020 by value (USD) and weight (kg).

role in the world market and has established a commercial link with EU countries, such as **Belgium**, **Germany** and the **Netherlands**, but especially with France, which in 2020 received 23% of its exports.

The shark meat market is a truly global trade, with **Brazil** importing the largest amount by weight and **Uruguay** ranking one of the largest importers and exporters by quantity. In Asia, the main exporters are **Indonesia** and **China**, with **South Korea** and **Thailand** importing large amounts. Another key shark meat export flow is between **New Zealand**, a net exporter of shark meat, and **Australia**, a net importer. In Africa, 88% of **Morocco's** imported shark meat came from Spain. This is yet another indicator of how essential this commodity has become, especially in Europe, and shines a light on why commercial interests are continuing to influence decisions on shark conservation.

"Global market data indicate how essential this commodity has become in Europe and why commercial interests are continuing to influence decisions on shark conservation."

THE COMPANIES DRIVING DESTRUCTION

Fishing companies are commonly part of Producers Organisations and, according to the European Commission, are "the key players in the sector. Through their production and marketing plans, they deliver the EU common fisheries policy and contribute to sustainable fisheries and aquaculture". Yet they also act as the industry's main lobbying force, with processing and trade companies also lobbying on behalf of their members.

In Spain, there are four main Producer Organisations (Vigo, Burela, Marín and A Guarda), one for each home port in Galicia. The leading Spanish organisations defending the interest of the industry are OPNAPA,[163] OPP-7 Burela,[164] OPROMAR[165] (presided over by Juan Carlos Martín Fragueiro, Spain's Secretary General for Fisheries between 2004-2010) and ORPAGU. The latter organisation is the only one that has been recognised as transnational, since it also includes a Portuguese fleet.[166] The Spanish and Portuguese fishing industries are closely linked, with many Portuguese companies integrated into Spain's vast network of companies via ownership or investment.[167]

Also central to industry lobbying is ANECTEAM (National Association of Commercializing Companies and Transformers of Highly Migratory Species). The association was created in 2018 to cooperate with the EU surface longline fleet and is formed of 14 companies.[168] These four Producer Organisations, together with ANECTEAM, represent 90% of the EU's distant-water catch by 124 fishing vessels, representing 95% of the EU fishing fleet in the Atlantic, Indian and Pacific Ocean.[169]

Shortfin mako shark
© Alessandro De Maddalena / iStock

CONCLUSION

The organisations claiming responsibility for sharks are failing. Whilst lack of political prioritisation has led to insufficient or entirely absent regulation, commercial interests have infiltrated government delegations and are influencing policy outcomes.

The market for shark-based products has rapidly expanded, driving demand for catches and decimating populations of sharks that perform vital ocean functions. Meanwhile, ocean health suffers at a time of climate crisis and coastal communities bear the burden, whilst increasingly perilous working conditions aboard fishing vessels weaken human rights.

Solving this intersection of problems is a monumental challenge and one that will require a transformative and collaborative approach to ocean protection. A strong Global Ocean Treaty can do just that – placing conservation at the heart of ocean governance and providing the mechanisms to create fully and highly protected MPAs that will give sharks the respite they so urgently require. Without this kind of decisive action, sharks, our oceans and all of us who depend on healthy oceans will continue to suffer the mounting consequences.

KEY RECOMMENDATIONS

Below are key recommendations for relevant bodies involved in the management of ocean conservation and fishing.

Global Ocean Treaty

It is clear that RFMOs will not prioritise the conservation and restoration of sharks. A strong Global Ocean Treaty must therefore be adopted in 2022 to provide comprehensive protection to marine life in international waters. For sharks and other migratory species, the Treaty would, amongst other things:

- Enable the creation of fully protected areas for critical habitats, including nursery, breeding and feeding grounds, as well as migratory routes, in coordination with but without deferring to relevant management bodies, including RFMOs.
- Ensure that all human activities, including fisheries, are strictly assessed and effectively managed so that sharks and other migratory species are afforded comprehensive protection from the cumulative impacts of human activities, climate change and pollution.
- Trigger cooperation across ocean management bodies, including between RFMOs, for the conservation of sharks and other migratory species, as part of the implementation of the new Global Oceans Treaty.
- Trigger and facilitate the collection of more and better data and data sharing to inform and strengthen conservation of migratory species and all marine life across areas beyond national jurisdiction (ABNJ).

Regional Fisheries Management Organisations

- Strictly implement the provisions of the UN Fish Stocks agreement, particularly on the implementation of the ecosystem-based and precautionary approaches. The regulations adopted to manage fisheries impacting sharks and to protect sharks should have a high probability of recovering shark populations. Where data is insufficient, precautionary measures should be put in place to prevent the overfishing of sharks, consistent with their high vulnerability.
- Solve the deficiencies on data related to sharks by requiring mandatory logbook data for all shark discards – including species with retention bans –, reporting of discard state, research programmes on sharks biology and ecology and provisions to prohibit fishing for those failing to comply with data provisions.
- Improve monitoring, control and surveillance provisions, notably increasing observer coverage of longlin fleets to ensure compliance with provisions adopted to protect sharks. Ban transhipment of all sharks.
- Require fins naturally attached for all sharks without exemption, thereby prohibiting the cutting of fins on board vessels, the retention, transhipment and landing of fins.
- Adopt and implement closed areas and seasons to protect sharks.

ANNEX

International trade data: trends on shark meat market

Despite the efforts of the World Customs Organization (WCO) to facilitate the collection and comparison of data and the analysis of international trade,[170] understanding how the world market works with respect to a certain product or its trends remains extremely complex.

In the case of shark meat, the specific difficulties lie in changes in the Harmonized System (HS) nomenclature in 2012,[171] in which some codes were modified to differentiate the shark meat codes from the meat of rays and skates. The impossibility of comparing the current data with those prior to these changes, added to the different time that the countries take in the implementation of the new nomenclatures,[172] complicates the interpretation and comparison of the data of this market.

It should be noted that this complexity in coding a product for international trade, added to the technical difficulty of customs controls in certifying that the codes have been correctly applied (for example, classification according to shark species or other species such as swordfish) opens up the door to breaching of species conservation regulation and to the commission of crimes.

Methodology for 2018-2020 shark meat global trade analysis

Since data may vary substantially when taken from exporters or importers, in this study we will use the data provided by importers for import analysis and those provided by exporters for export analysis. These data were all collected by UN Comtrade[173] from reporting governments. Although the current WCO's Harmonized System,[174] in relation to sharks, has not been modified since 2012, it remains possible to find some transactions under the outdated codes. Because of this, all these codes will be considered for our analysis of 2020 shark meat global trade:

- Fish, fresh or chilled, 030265 (outdated)
- Fish, fresh or chilled, 030281.
- Fillets, fresh or chilled, 030447
- Other meat, fresh or chilled, 030456
- Fish, frozen, 030375 (outdated)
- Fish, frozen, 030381
- Fillets, frozen, 030488[175]
- Other meat, frozen, 030496

Since not all countries have reported data for 2021, the most accurate current analysis of international trade only can reach 2020. Shark fin trade data is not considered in this report.

May, 2022. The sharks landed in the Port of Horta (Azores Islands, Portugal) by the EU fleet are transported to the mainland in refrigerated containers. The container in the image was loaded on May 4, 2022 with the catches of the Portuguese-flagged longliner Mestre Bobicha and was transported by sea to Lisbon and then by road to Vigo according to the investigation carried out by Greenpeace.

REFERENCES

1 **Virginijus Sinkevičius**, Commissioner for the Environment, Oceans and Fisheries. Ocean Action! Conference (2020) https://seas-at-risk.org/events/ocean-action-conference-commissioner-sinkevicius/

2 **Office of Sustainable Fisheries,** The Surprising Story of Swordfish you May Not Know, 1 May 2019, https://www.fisheries.noaa.gov/feature-story/surprising-story-swordfish-you-may-not-know

3 **Raymakers C, Lynham J**, Slipping the Net: Spain's Compliance with ICCAT Recommendations for Bluefin Tuna and Swordfish, (1999).

4 **Neilson, J., Arocha, F., Cass-Calay, S., Mejuto, J., Ortiz, M., Scott, G., Smith, C., Travassos, P., Tserpes, G. and Andrushchenko, I.** (2013). The Recovery of Atlantic Swordfish: The Comparative Roles of the Regional Fisheries Management Organization and Species Biology. Reviews in Fisheries Science, 21(2), pp.59–97. doi:10.1080/10641262.2012.754842.

5 **ICCAT** Standing Committee on Research and Statistics.

6 "Some fleets, including the United States, Spain, Portugal and Canada, have changed operating procedures to opportunistically target tuna and/or sharks, taking advantage of market conditions and higher relative catch rates." **ICCAT** (1997). Report for biennial period, 1996-97. Part I (1996) - Vol. 2.

7 **J. Mejuto, B. García-Cortés, J. M. de la Serna, A. Ramos-Cartelle.** Scientific estimations of by-catch landed by the Spanish surface longline fleet targeting swordfish (Xiphias Gladius) in the Atlantic Ocean: 2000 -2004 period. Col. Vol. Sci. Pap. ICCAT, 59(3): 1014-1024 (2006).

8 **Schirripa, M.J., Abascal, F., Andrushchenko, I., Diaz, G., Mejuto, J., Ortiz, M., Santos, M.N. and Walter, J.** (2017). A hypothesis of a redistribution of North Atlantic swordfish based on changing ocean conditions. Deep Sea Research Part II: Topical Studies in Oceanography, [online] 140, pp.139–150. doi:10.1016/j.dsr2.2016.08.002.

9 **ICCAT**, Report of the Standing Committee on Research and Statistics (SCRS), 5 October 2018 https://www.iccat.int/Documents/Meetings/Docs/2018/REPORTS/2018_SCRS_REP_ENG.pdf

10 Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (General Assembly resolution 72/249). See: https://www.un.org/bbnj/

11 "Since 1970, the global abundance of oceanic sharks and rays has declined by 71% owing to an 18-fold increase in relative fishing pressure. This depletion has increased the global extinction risk to the point at which three-quarters of the species comprising this functionally important assemblage are threatened with extinction." **Pacoureau, N. et al.** (2021). Half a century of global decline in oceanic sharks and rays. Nature, [online] 589(7843), pp.567–571. doi:10.1038/s41586-020-03173-9.

12 **FAO Code of Conduct for Responsible Fisheries** (1995). See: https://www.fao.org/resilience/resources/resources-detail/en/c/273397/

13 **The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea** of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (in force as from 11 December 2001). See: https://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm

14 **International Plan of Action for the Conservation and Management of Sharks** (1999). See: https://www.fao.org/ipoa-sharks/background/about-ipoa-sharks/en/

15 See **IUCN Red List of Threatened Species:** https://www.iucnredlist.org/

The IUCN Red List only covers the shark species with agreed-upon nomenclature and classification.

16 **Shark League**, IUCN Classifies Makos as Endangered on Red List, Underscores Urgent Need to Ban Fishing, 21 March 2019 sharkleague.org/2019/03/21/iucn-classifies-makos-as-endangeredon-red-list-underscores-urgent-need-to-ban-fishing/

17 **FAO International Plan of Action for Conservation and Management of Sharks.** National and Regional Plans of Action. See www.fao.org/ipoa-sharks/national-and-regional-plans-of-action/en/.

18 **FAO** (2014). The State of World Fisheries and Aquaculture 2014. Rome. p.121.

19 **Heithaus, M., Frid, A., Vaudo, J.J. and Worm, B.** (2010). 'Unraveling the Ecological Importance of Elasmobranchs'. In: J.C. Carrier, J.A. Musick and M.R. Heithaus, eds., Sharks and Their Relatives II Biodiversity, Adaptive Physiology, and Conservation. Boca Raton, Fl: Crc Press/Taylor & Francis, pp. 611 - 637. doi: 10.1201/9781420080483-c16

20 **Roff, G., Doropoulos, C., Rogers, A., Bozec, Y.-M., Krueck, N.C., Aurellado, E., Priest, M., Birrell, C. and Mumby, P.J.** (2016). The Ecological Role of Sharks on Coral Reefs. Trends in Ecology & Evolution, 31(5), pp.395–407. doi:10.1016/j.tree.2016.02.014.

21 **Crespo, G.O., Dunn, D.C., Gianni, M., Gjerde, K., Wright, G. and Halpin, P.N.** (2019). High-seas fish biodiversity is slipping through the governance net. Nature Ecology & Evolution, 3(9), pp.1273–1276. doi:10.1038/s41559-019-0981-4.

22 **McCauley, D.J., Jablonicky, C., Allison, E.H., Golden, C.D., Joyce, F.H., Mayorga, J. and Kroodsma, D.** (2018). Wealthy countries dominate industrial fishing. Science Advances, 4(8), p.eaau2161. doi:10.1126/sciadv.aau2161.

23 **PEW,** Issue Brief March 2022, "El tratado de altamar debe reflejar el rol crítico de los peces en los ecosistemas marinos" https://www.pewtrusts.org/es/research-and-analysis/issue-briefs/2022/03/high-seas-treaty-must-reflect-critical-role-of-fish-in-marine-ecosystems

24 **FAO** (2020). The State of World Fisheries and Aquaculture 2020. https://www.fao.org/3/ca9231en/ca9231en.pdf

25 **Sumaila, U.R. et al. (**2015). Winners and losers in a world where the high seas is closed to fishing. Scientific Reports, [online] 5(1). doi:10.1038/srep08481.

26 **Oremus, K.L., Bone, J., Costello, C., García Molinos, J., Lee, A., Mangin, T. and Salzman, J. (2020).** Governance challenges for tropical nations losing fish species due to climate change. Nature Sustainability, 3(4), pp.277–280. doi:10.1038/s41893-020-0476-y.

Ortuño Crespo, G., Mossop, J., Dunn, D., Gjerde, K., Hazen, E., Reygondeau, G., Warner, R., Tittensor, D. and Halpin, P. (2020). Beyond static spatial management: Scientific and legal considerations for dynamic management in the high seas. Marine Policy, 122, p.104102. doi:10.1016/j.marpol.2020.104102.

27 **Nelson, L.K., Bogeberg, M., Cullen, A., Koehn, L.E., Strawn, A. and Levin, P.S.** (2022). Perspectives on managing fisheries for community wellbeing in the face of climate change. Maritime Studies. doi:10.1007/s40152-021-00252-z.

28 **The Guardian.** (2022). 'You complain, you get fired': migrant crews on UK fishing boats speak out. [online] Available at: https://www.theguardian.com/environment/2022/jun/20/migrant-crew-uk-fishing-boats-abuse-exploitation-danger

29 **Clíodhna Murphy, David M. Doyle and Stephanie Thompson** (2021), Experiences of Non-EEA Migrant Workers in the Irish Fishing Industry, Maynooth University

30 **Sparks, J.** (2022). Letting exploitation off the hook? Evidencing labour abuses in UK fishing. [online] Nottingham: University of Nottingham Rights Lab. Available at: https://www.nottingham.ac.uk/Research/Beacons-of-Excellence/Rights-Lab/resources/reports-and-briefings/2022/May/Letting-exploitation-off-the-hook.pdf

31 **Dinkel, T.M. and Sánchez-Lizaso, J.L.** (2020). Involving stakeholders in the evaluation of management strategies for shortfin mako (Isurus oxyrinchus) and blue shark (Prionace glauca) in the Spanish longline fisheries operating in the Atlantic Ocean. Marine Policy, [online] 120, p.104124. doi:10.1016/j.marpol.2020.104124.

32 **Nowicki, R.J., Thomson, J.A., Fourqurean, J.W., Wirsing, A.J. and Heithaus, M.R.** (2021). Loss of predation risk from apex predators can exacerbate marine tropicalization caused by extreme climatic events. Journal of Animal Ecology. doi:10.1111/1365-2656.13424.

33 **Fourqurean, J.W. et al.** (2012). Seagrass ecosystems as a globally significant carbon stock. Nature Geoscience, [online] 5(7), pp.505–509. doi:10.1038/ngeo1477.

34 **Mariani, G., Cheung, W.W.L., Lyet, A., Sala, E., Mayorga, J., Velez, L., Gaines, S.D., Dejean, T., Troussellier, M. and Mouillot, D.** (2020). Let more big fish sink: Fisheries prevent blue carbon sequestration—half in unprofitable areas. Science Advances, 6(44), p.eabb4848. doi:10.1126/sciadv.abb4848.

35 **Diaz-Carballido, P.L., Mendoza-González, G., Yañez-Arenas, C.A. and Chiappa-Carrara, X.** (2022). Evaluation of Shifts in the Potential Future Distributions of Carcharhinid Sharks Under Different Climate Change Scenarios. Frontiers in Marine Science, 8. doi:10.3389/fmars.2021.745501.

36 **Crear, D., Brill, R., Bushnell, P., Latour, R., Schwieterman, G., Steffen, R. and Weng, K.,** (2019). The impacts of warming and hypoxia on the performance of an obligate ram ventilator. Conservation Physiology, 7(1). doi:10.1093/conphys/coz026

37 **Vedor, M., Queiroz, N., Mucientes, G., Couto, A., da Costa, I., dos Santos, A., Vandeperre, F., Fontes, J., Afonso, P., Rosa, R., Humphries, N.E. and Sims, D.W.** (2021). Climate-driven deoxygenation elevates fishing vulnerability for the ocean's widest ranging shark. eLife, [online] 10, p.e62508. doi:10.7554/eLife.62508.

38 **Edgar, G.J. et al.** (2014). Global conservation outcomes depend on marine protected areas with five key features. Nature, [online] 506(7487), pp.216–220. doi:10.1038/nature13022.

39 **ICCAT (**2015). Report of the 2015 ICCAT Blue Shark Stock Assessment Session. (Oceanário de Lisboa, Lisbon, Portugal - July 27 to 31, 2015

40 **ICCAT** (2019). Report of the 2019 Shortfin Mako Shark Stock Assessment Update Meeting. (Madrid, Spain 20-24 May 2019)

41 **Campana, S.E.** (2016). Transboundary movements, unmonitored fishing mortality, and ineffective international fisheries management pose risks for pelagic sharks in the Northwest Atlantic. Canadian Journal of Fisheries and Aquatic Sciences, 73(10), pp.1599–1607. doi:10.1139/cjfas-2015-0502.

42 Makos are chosen as an example and this problem is more serious with sharks given their inherent vulnerability to overfishing. But the dynamics described are very similar when it comes to the main fisheries targeting species of tunas or any other fish for that matter.

43 See CITES adopted Resolution Conf 9.17 on the Status of International Trade in shark species: https://cites.org/sites/default/files/eng/res/all/09/E09-17.pdf

44 As noted by the ICCAT Sub-committee on by-catch. See ICCAT (1997). Report for biennial period, 1996-97. Part I (1996) - Vol. 2.

45 **ICCAT** (2001). Report for biennial period, 2000-01. Part I (2000) - Vol. 2

46 In ICCAT terminology, Resolutions adopted by the Committee are non-binding, while Recommendations adopted by the Committee are binding.

47 **ICCAT** (2001) Resolution 01-11 on Atlantic sharks.

48 "For assessment purposes, the Committee encourages member nations, entities and fishing entities catching sharks in the Atlantic and Mediterranean, or having caught sharks in the past in these waters, to submit species-specific shark catch statistics including estimation of shark catch, dead discards and size data. **Emphasis should be on porbeagle, blue and shortfin mako sharks**" [emphasis added]. In ICCAT (2002). Report for biennial period, 2000-01. Part II (2001) - Vol. 2.

49 "It should be noted that, in addition to the **data for the major species being very incomplete**, some Contracting Parties and/or non-Contracting Parties, Entities or Fishing Entities continue to report combined species of shark with no species breakdown. These considerations may cause difficulties for the assessments scheduled for 2004 [...] It was emphasised that there are many gaps in the data; that in some cases the data are only in numbers, not weight; and that conversion factors are lacking or not verified. **These deficiencies need to be improved before the 2004 shark assessments**" [emphasis added]. ICCAT (2003). Report for biennial period, 2002-03. Pat I (2002) - Vol. 2.

50 "The Committee **reiterates previous recommendations** for all Contracting and non-Contracting Parties to provide estimates of historical catches and dead discards of sharks from both by-catch and directed shark fisheries to the Secretariat. Both landed and dead discarded shark catch need to be monitored, **especially considering that many sharks have been finned and not kept on board vessels**" [emphasis added]. Repeated in ICCAT (2005). Report for biennial period, 2004-05. Part I (2004) - Vol. 2 and ICCAT (2006). Report for biennial period, 2004-05. Part II (2005) - Vol. 2.

51 "Of particular concern is the **very low level of compliance** with the obligation of CPCs to provide Task I and II data for sharks caught by their vessels, **greatly hampering, when not completely impeding, the assessment of the status of the exploited shark stocks**" [emphasis added]. ICCAT (2008) Report for biennial period, 2006-07. Part II (2007) - Vol. 2.

52 "The quantity and quality of the data available to conduct stock assessments have increased with respect to those available in the first (2004) shark assessments. However, they are still quite uninformative and do not provide a consistent signal to inform the assessment. **Unless these and other issues can be resolved, the assessments of stock status for all pelagic shark species will continue to be very uncertain and our ability to detect stock depletion to levels below the Convention Objective level will remain considerably low**" [emphasis added]. Repeated in ICCAT (2009). Report for biennial period, 2008-09. Part I (2008) - Vol. 2, ICCAT (2010). Report for biennial period, 2008-09 Part II (2009)

- Vol. 2 and ICCAT (2011). Report for biennial period, 2010-11. Part I (2010) - Vol. 2.

53 "Earlier reviews of the shark database resulted in recommendations to improve data reporting on shark catches. Though global statistics on shark catches included in the database have improved, **they are still insufficient to permit the Committee to provide quantitative advice on stock status with sufficient precision** to guide fishery management toward optimal harvest levels" [emphasis added]. Repeated in ICCAT (2012). Report for biennial period, 2010-11. Part II (2011) - Vol. 2, ICCAT (2013). Report for biennial period, 2012-13. Part I (2012) - Vol. 2, ICCAT (2014). Report for biennial period, 2012-13. Part II (2013) - Vol. 2, ICCAT (2015). Report for biennial period, 2014-15. Part I (2014) - Vol. 2, ICCAT (2016). Report for biennial period, 2014-15. Part II (2015) - Vol. 2, ICCAT (2017). Report for biennial period, 2016-17. Part I (2016) - Vol. 2 and ICCAT (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

54 "The Committee emphasised that reporting all sources of mortality is an essential element to decrease the uncertainty in stock assessment results, and particularly the report of estimated dead discards for all fisheries. Although the reporting of dead discards **is already part of the ICCAT data reporting obligations (Rec. 17-08), the requirement has been ignored by many CPCs"** [emphasis added] ICCAT (2020). Report for biennial period, 2018-2019. Part II (2019) - Vol. 2.

55 "In order to carry out the assessment, **many of the catches had to be raised in order to be able to estimate total catch**." ICCAT (2005). Report for biennial period, 2004-05. Part I (2004) - Vol. 2.

56 As an example, the SCRS estimated North Atlantic shortfin mako catches of 6,188 t vs 4,366t reported in 2000; 8,732 t estimated vs 4,522t reported in 2001; and 8,317 t estimated vs 4,792 t reported in 2002. See Table SHK-2, page 158, in ICCAT (2005). Report for biennial period, 2004-05. Part I (2004) - Vol. 2.

57 "Due to limitations of the quantity and quality of the information available for the stock assessment of blue shark and shortfin mako, the assessment was considered very preliminary in nature." ICCAT (2005). Report for biennial period, 2004-05. Part I (2004) - Vol. 2.

58 "The North Atlantic shortfin mako shark stock is likely to have historically experienced some level of stock depletion as suggested by the historical CPUE trend and model outputs. The Committee cannot rule out the possibility that the current stock size is below the biomass that can support MSY, as trends in CPUE suggest depletions of fifty percent or more. For the South Atlantic, the stock may have decreased since 1971, but the magnitude of decline appears to be less than in the North Atlantic. The current stock biomass may be above the biomass at MSY, but due to the lack of a clear signal from the catch rates, there is a wider variety of possible historical stock trends: from virtually undepleted, to fully exploited." ICCAT (2005). Report for biennial period, 2004-05. Part I (2004) - Vol. 2.

59 Uncertainties about fishing induced mortality were not the only ones. ICCAT scientists also had to face uncertainties regarding basic life-history characteristics of blue shark and shortfin mako, their reproductive cycles and other biological characteristics, for which the SCRS consistently demanded more research in order to make better assessments.

60 **ICCAT** (2004) Recommendation 04-10 concerning the conservation of sharks caught in association with fisheries managed by ICCAT.

61 **ICCAT** (2006). Report for biennial period, 2004-05. Part II (2005) - Vol. 2.

62 "Although technical measures such as modifications to fishing gear, restrictions on fishing areas and times, minimum or maximum sizes for allowable retained catch might prove beneficial, without more detailed information gathered through research programs designed to estimate the potential benefits of such measures provide the most direct benefit to shortfin mako sharks." ICCAT (2006). Report for biennial period, 2004-05. Part II (2005) - Vol. 2.

63 In 2005, ICCAT also adopted Recommendation 05-05 calling its members to report on the implementation of ICCAT Recommendation 04-10 and to reduce the mortality on the North Atlantic shortfin mako population.

64 **ICCAT** (2006). Supplementary Recommendation 06-10 concerning the conservation of sharks caught in association with fisheries managed by ICCAT.

65 "Previous reviews of the shark database resulted in recommendations to improve the data reporting for sharks, but **a measurable progress in the quantity and quality of the overall shark catch statistics has not yet resulted, in spite of a few isolated improvements.** The Committee noted, with great concern, that more than two years after the Recommendation by ICCAT Concerning the Conservation of Sharks Caught in Association with Fisheries Managed by ICCAT [Rec. 04-10] entered into force on June 13, 2005, making it mandatory for Contracting Parties, Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs) to annually report Task I and Task II data for catches of sharks, in accordance with ICCAT data reporting procedures, including available historical data, **most parties are still not complying with it**. This information is considered **incomplete and inadequate for stock assessment purposes.** As already noted in previous years, data on less abundant large pelagic shark species, which stocks might be more vulnerable based on biological characteristics, are virtually non-existent. Considering the limitations on the quantity and quality of the information available to the Committee, the following results, achieved during the stock assessment carried out in 2004, should be considered very preliminary" [emphasis added]. ICCAT (2008) Report for biennial period, 2006-07. Part II (2007) - Vol. 2.

66 ICCAT (2007). Supplementary Recommendation 07-06 concerning sharks.

67 ICCAT (2008) Report for biennial period, 2006-07. Part II (2007) - Vol. 2.

68 Longfin mako (*Isurus paucus*); Bigeye thresher shark (*Alopias superciliosus*); Thresher (*Alopias vulpinus*); Oceanic whitetip (*Carcharhinus longimanus*); Silky shark (*C. falciformis*); Porbeagle (*Lamna nasus*); Scalloped hammerhead (*Sphyrna lewini*); Smooth hammerhead (*Sphyrna zygaena*); and Pelagic stingray (*Pteroplatytrygon violacea*).

69 "The assessment results presented high levels of uncertainty due to data limitations. Therefore, increased research and data collection are required to enable the Committee to improve the advice it can offer." ICCAT (2009). Report for biennial period, 2008-09. Part I (2008) - Vol. 2.

70 "For the North Atlantic, most model outcomes indicated stock depletion to about 50% of biomass estimated for the 1950s. Some model outcomes indicated that the stock biomass was near or below the biomass that would support MSY with current harvest levels above FMSY, whereas others estimated considerably lower levels of depletion and no overfishing [...] There is a non-negligible probability that the North Atlantic shortfin mako stock could be below the biomass that could support MSY. A similar conclusion was reached by the Committee in 2004, and recent biological data show decreased productivity for this species. Only one modelling approach could be applied to the South Atlantic shortfin mako stock, which resulted in an estimate of unfished biomass which was biologically implausible, and thus the Committee can draw no conclusions about the status of the South stock." ICCAT (2009). Report for biennial period,

2008-09. Part I (2008) - Vol. 2.

71 RFMOs are urged to conduct regular independent performance reviews to evaluate their work, suggest improvements, and identify best practices. See United Nations (2006). Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks." Doc. A/CONF.210/2006/15.

72 "In spite of previous recommendations to improve data reporting for sharks, there has been no measurable progress in the quantity and quality of the overall shark catch statistics. The available information is considered incomplete and inadequate for stock assessment purposes [...] The Panel notes with great concern, that three years after it became mandatory [Rec. 04-10] for CPCs to report Task I and Task II data for sharks, in accordance with ICCAT data reporting procedures, including available historical data, most parties are still not complying with the recommendation." G.D. Hurry, M. Hayashi and J. J. Maguire (2008). Report of the Independent Review of the International Commission for the Conservation of Atlantic Tunas.

73 "The Panel has no formal basis to judge whether the objectives of the Commission are met with respect to the status of sharks and other associated and dependent by-catch species. However, based on the general knowledge about the biology of large sharks, the Panel is of the opinion that it is unlikely that the objectives of the Commission are being met." G.D. Hurry, M. Hayashi and J. J. Maguire (2008). Report of the Independent Review of the International Commission for the Conservation of Atlantic Tunas.

74 In 2016 ICCAT conducted a second Independent Performance Review, with similar comments in respect of sharks, noting that: "The information for non-target stocks appears to have improved compared with the information available to the 2008 Panel, but not significantly so"and that, in respect of sharks: "There has been only a modest improvement in data provision" and "there remain major uncertainties underlying all the shark assessments." See ICCAT (2016). Report of the Independent Performance Review of ICCAT.

75 Migratory species that need or would significantly benefit from international co-operation are listed in Appendix II of the Convention. See: https://www.cms.int/en/legalinstrument/cms

76 See: https://www.cms.int/sharks/en/legalinstrument/sharks-mou

77 **ICCAT** (2010). Recommendation 10-06 on Atlantic shortfin mako sharks caught in association with ICCAT fisheries.

78 **ICCAT** (2012). Report for biennial period, 2010-11. Part II (2011) - Vol. 2.

79 "For species of high concern (in terms of overfishing), and for which a high survivorship is expected in fishin gears after release, the Committee recommends that the Commission prohibit retention and landing of the species to minimise fishing mortality."ICCAT (2012). Report for biennial period, 2010-11. Part II (2011) - Vol. 2.

80 **Oceana** (2012). ICCAT's unmanaged shark fisheries. Available at https://eu.oceana.org/sites/default/files/euo/OCEANA_ICCAT_sharks_ENG.pdf

81 "The available CPUE series showed increasing or flat trends for the finals years of each series (since the 2008 stock assessment) for both North and South stocks, hence the indications of potential overfishing shown in the previous stock assessment have diminished and the current level of catches may be considered sustainable. Thus, these results indicated that both the North and South Atlantic stocks are healthy and the probability of overfishing is low. However, they also showed inconsistencies between estimated biomass trajectories and input CPUE trends, which resulted in wide confidence intervals in the estimated biomass and fishing mortality trajectories and other parameters. The high uncertainty in past catch estimates and deficiency of some important biological parameters, particularly for the southern stock, are still obstacles for obtaining reliable estimates of current status of the stocks." ICCAT (2013). Report for biennial period, 2012-13. Part I (2012) - Vol. 2.Y

82 See Annex II. Protocol concerning specially protected areas and biological diversity in the Mediterranean. List of endangered and threatened species. Available at https://rac-spa.org/sites/default/files/annex/annex_2_en_2013.pdf.

83 "Specimens of sharks' species listed in Annex II of the SPA/BD Protocol cannot be retained on board, transhipped, landed, transferred, stored, sold or displayed or offered for sale". GFCM (2012). Recommendation GFCM/36/2012/3 on fisheries management measures for conservation of sharks and rays in the GFCM area.

84 See Table SMA-Table 1, page 241, in ICCAT (2020). Report for biennial period, 2018-19. Part II (2019) - Vol. 2.

85 See ICCAT (2012). Recommendation 12-05 on compliance with existing measures on shark conservation and management, ICCAT (2014). Recommendation 14-06 on shortfin mako caught in association with ICCAT fisheries and ICCAT (2016). Recommendation 16-13 on improvement of compliance reviews of conservation and management measures regarding sharks caught in association with ICCAT fisheries.

86 **ICCAT** (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

87 "Although all results indicated that stock abundance in 2015 was below BMSY, results of the production models (BSP2JAGS and JABBA) were more pessimistic (B/BMSY deterministic estimates ranged from 0.57 to 0.85) and those of the age-structured model (SS3), which indicated that stock abundance was near MSY (SSF/SSFMSY = 0.95 where SSF is spawning stock fecundity), were less pessimistic." ICCAT (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

88 "F was overwhelmingly above FMSY, with a combined 90% probability from all the models of being in an overfished state and experiencing overfishing." ICCAT (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

89 "The future outlook is probably more pessimistic because the fisheries are removing mostly juveniles and thus it can be anticipated that spawning stock size will keep declining for years after fishing pressure has been reduced until recruits reach maturity." ICCAT (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

90 "Additional recommended measures that can potentially further reduce incidental mortality include **time/area closures**, gear restrictions, and safe handling and best practices for the release of live specimens (since post release survival can reach 70%)." ICCAT (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

91 "For the South Atlantic stock of shortfin makos, given the uncertainty in stock status, the large fluctuations in catch, the high intrinsic vulnerability of this species, and the depleted status for the North Atlantic stock, the Committee recommends that until this uncertainty is reduced, catch levels should not exceed the minimum catch in the last five years of the assessment." ICCAT (2018). Report for biennial period, 2016-17. Part II (2017) - Vol. 2.

92 In 2017, out of a total reported catch of 3,112 t of North Atlantic shortfin makos, Spain caught 1,784 t (57.3%), Morocco 450 t (14.4%) and Portugal 276 t (8.8%). Data taken from SMA-Table 1, page 231 in ICCAT (2019). Report for

biennial period, 2018-2019. Part I (2018) - Vol. 2.

93 "Una propuesta que parte de un dislate, como es que el informe científico haya obviado los datos de capturas de España, basados en más de 30.000 mareas en el norte y en el sur del Atlántico, para dar por válidos los de países como China, Taiwán o de Estados Unidos que, como quien dice, «tienen datos desde anteayer», apuntan desde el sector, y que, además, no «realizan pesca dirigida hacia la especie», recuerda Javier Garat, secretario general de la patronal Cepesca." La Voz de Galicia (15/11/2017). España tratará de frenar la cuota cero que los científicos piden para el marrajo. Available at https://www.lavozdegalicia.es/noticia/somosmar/2017/11/15/espana-tratara-frenar-cuota-cero-cientificos-piden-marrajo/0003_201711G15P32991.htm

94 **ICCAT** (2017). Recommendation 17-08 on the conservation of North Atlantic stock of shortfin mako caught in association with ICCAT fisheries.

95 Catches of North Atlantic shortfin mako in 2018 (2,373t) and 2019 (1,863t) were, as it was expected, way higher than those recommended to stop overfishing and recover the population. Data taken from SMA-Table 1, page 348 in ICCAT (2021). 2020 SCRS Advice to the Commission.

96 **Shark League** (2017). Shark Fishing Decisions at Atlantic Tuna Meeting Fall Short. Available at: http://www.sharkleague.org/2017/11/21/shark-fishing-decisions-atlantic-tuna-meeting-fall-short/

97 **Pew** (2017). Backsliding by ICCAT Jeopardizes Future of Atlantic Fisheries. Available at: https://www.pewtrusts.org/en/research-and-analysis/articles/2017/11/22/backsliding-by-iccat-jeopardizes-future-of-atlantic-fisheries

98 **Galicia Press** (26/11/2019). La flota de palangre valora mantener la pesca de marrajo. Available at: https://www.galiciapress.es/texto-diario/mostrar/1644463/flota-palangre-valora-mantener-pesca-marrajo

99 **Europêche** (2017). Europêche regrets the Recommendations adopted by ICCAT on Bluefin tuna. Available at: http://europeche.chil.me/post/europeche-regrets-the-recommendations-adopted-by-iccat-on-bluefin-tuna-176609

100 **Europêche** (2019). Europêche rejects EU proposal to restrict mako shark trade. Available at: https://europeche.chil.me/post/europeche-rejects-eu-proposal-to-restrict-mako-shark-trade-242906

101 **ICCAT** (2018). Recommendation 18-06 to replace recommendation 16-13 on improvement of compliance review of conservation and management measures regarding sharks caught in association with ICCAT fisheries.

102 **IUCN Redlist**. Shortfin mako, available at: https://www.iucnredlist.org/species/39341/2903170. Longfin mako, available at: https://www.iucnredlist.org/species/60225/3095898

103 As of today, "approximately 25% of the shark and ray trade is now regulated via CITES. These regulations recognize that the species have suffered significant population declines due to high demand in global markets." See: https://citessharks.org/

104 Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid "utilisation" incompatible with their survival.

105 See: https://cites.org/sites/default/files/eng/cop/18/prop/060319/E-CoP18-Prop-42.pdf

106 "CEPESCA Secretary General and Europêche President Javier Garat, accompanied by Daniel Voces and Rosalie Tukker of Europêche, have been holding meetings in Brussels this week with the Fisheries and Environment Councillors of the Permanent Representations to the EU of France, the United Kingdom, Portugal, the Netherlands, Poland and Spain.." Fiskerforum (2019). European industry warns against CITES listing of shortfin mako shark. Available at: https://fiskerforum.com/european-industry-warns-against-cites-listing-of-shortfin-mako-shark/

107 **Europêche** (2019). Europêche rejects EU proposal to restrict mako shark trade. Available at https://europeche.chil.me/post/europeche-rejects-eu-proposal-to-restrict-mako-shark-trade-242906

108 *Europêche* (2019). No evidence supporting the inclusion of mako shark in CITES Appendix II. Available at: https://europeche.chil.me/post/no-evidence-supporting-the-inclusion-of-mako-shark-in-cites-appendix-ii-248859

109 **La Voz de Galicia** (28/08/2019). 'Es una vergüenza equiparar el marrajo con el lince o el rinoceronte blanco'. Available at: https://www.lavozdegalicia.es/noticia/somosmar/2019/08/28/tiburon-marrajo-protegido-desgracia-palangreros-gallegos/00031567001203511370826.htm

110 In 2003 basking and whale sharks were included in CITES Appendix II. The great white shark was added in 2005. In 2007, in light of population declines, porbeagle was proposed for inclusion in CITES Appendix II, but rejected. In 2010, porbeagle was proposed for listing again, as well as oceanic whitetip and great, scalloped, and smooth hammerhead sharks, with all proposals rejected. In 2013 all five species were finally added to Appendix II. In 2016, they were joined by bigeye, common, and pelagic thresher sharks and silky shark. And most recently, in 2019, longfin and shortfin mako sharks were also included in Appendix II. See: https://www.sharktrust.org/cites

111 See ICCAT (2009). Recommendation 09-07 on the conservation of thresher sharks caught in association with fisheries in the ICCAT Convention area; ICCAT (2010). Recommendation 10-07 on the conservation of whitetip sharks caught in association with fisheries in the ICCAT Convention area; ICCAT (2010). Recommendation 10-08 on hammerhead sharks (family Sphyrnidae caught in association with fisheries managed by ICCAT; and ICCAT (2011), Recommendation 11-08 on the conservation of silky sharks caught in association with ICCAT fisheries.

112 "The sector insists that a trade limitation of the species would have a massive economic impact on the European surface longline fleet. Only in Spain, the sales notes of shortfin mako show that almost 3.000 tonnes in 2017 and 2.000 tonnes in 2016 were sold, with associated profits of around € 10 mill. and € 8 mill. respectively." **Europêche** (2019). Europêche rejects EU proposal to restrict mako shark trade. Available at https://europeche.chil.me/post/europeche-rejects-eu-proposal-to-restrict-mako-shark-trade-242906

113 **Greenpeace** (2019). Sharks under attack. Overfished and under protected. A case study in the North Atlantic. Available at https://www.greenpeace.org/international/publication/22700/sharks-under-attack/

114 **Faro de Vigo** (27/06/19). Greenpeace hostiga a un palangrero gallego en alta mar. Available at https://www.farodevigo.es/mar/2019/06/27/greenpeace-hostiga-palangrero-gallego-alta-15650139.html.

La Voz de Galicia (28/06/2019). Palangreros de A Guarda exigen a Greenpeace que deje de hostigarlos. Available at https://www.lavozdegalicia.es/noticia/somosmar/2019/06/28/palangreros-guarda-exigen-greenpeace-deje-hostigarlos/0003_201906G28P30991.htm

115 In a secret ballot, CITES adopted the proposal, with 102 States in favour and 40 against. See: https://enb.iisd.org/cites/cop18/indextest.html

116 "The Committee noted that North Atlantic catches increased from 2,964 t in 2015 to 3,347 t in 2016 and then decreased to 3,116 t in 2017, and that they further decreased to 2,388 t in 2018. It is not clear if the decrease can be

attributed to Rec. 17-08 or to continued decrease in stock size." ICCAT (2020). Report for biennial period, 2018-2019. Part II (2019) - Vol. 2.

117 "The Committee agreed that the projections that addressed the exceptions in Rec. 17-08 indicated that any retention of shortfin makos will not permit the recovery of the stock by year 2070." ICCAT (2020). Report for biennial period, 2018-2019. Part II (2019) - Vol. 2.

118 "The level of catch and effort data currently submitted to the Secretariat makes it difficult to evaluate time/area closures." ICCAT (2020). Report for biennial period, 2018-2019. Part II (2019) - Vol. 2.

119 In this section we are focusing on North Atlantic makos, but the situation with the South Atlantic mako population is very concerning. According to the SCRS, "given that fishery development in the South predictably follows that in the North and that the biological characteristics of the stock are similar, there is a significant risk that this stock could follow a similar history to that of the North stock. If the stock declines it will, like the North stock, require a long time for rebuilding even after significant catch reductions. To avoid this situation and considering the uncertainty in the stock status, the Committee recommends that, at a minimum catches should not exceed the minimum catch in the last five years of the assessment (2011-2015; 2,001 t with catch scenario C1 [Task I catches])." ICCAT (2020). Report for biennial period, 2018-2019. Part II (2019) - Vol. 2.

120 **ICCAT** (2019). Recommendation 19-06 on the conservation of North Atlantic stock of shortfin mako caught in association with ICCAT fisheries.

121 **Shark Conservation Fund** (2019). EU and US Prevent Vital Protections for Endangered Mako Shark. Available at https://www.sharkconservationfund.org/stories/eu-and-us-prevent-vital-protections-for-endangered-mako-sharks/

122 See Consolidated Statement by Shark Project, in ICCAT (2021). Report for biennial period, 2020-21. Part I (2020) - Vol. 1.

123 **ICCAT** (2021). Report for biennial period, 2020-21. Part I (2020) - Vol. 1.

124 **ICCAT** (2021). Recommendation 21-09 on the conservation of the North Atlantic stock of shortfin mako caught in association with ICCAT fisheries.

125 The advice to the Commission produced by ICCAT scientists was literally: "the Committee has no additional advice to that provided in 2019." ICCAT (2022). Report for biennial period, 2020-21. Part II (2021) - Vol. 2.

126 **Terje Løbach, T., Petersson, M., Haberkon, E. and Mannini, P.** 2020. Regional fisheries management organizations and advisory bodies. Activities and developments, 2000–2017. FAO Fisheries and Aquaculture Technical Paper No. 651. Rome, FAO https://doi.org/10.4060/ca7843en

127 See: https://www.iucnredlist.org/

128 See: https://www.cms.int/

129 **FAO Fisheries and Aquaculture Report** No. 939 (2010). Report of the Twelfth Session of the Sub-Committee on Fish Trade.

130 **FAO Fisheries and Aquaculture Report** No. 1070 (2014). Report of the Fourteenth Session of the Sub-Committee on Fish Trade.

131 It should be noted that CITES members are allowed to enter reservations, effectively exempting them from implementing CITES trade regulations. CITES. Reservations entered by the parties. Accessed February 2020. https://cites.org/sites/default/files/eng/app/2019/E-Reserv-2019-11-26.pdf

132 UNGA Resolution 74/18 on Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments, adopted on 10 December 2019

133 **UNGA Resolution** 74/18 recalls "also that the Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals, at its twelfth session, added 5 new species of sharks and rays to those listed in the appendices to that Convention,14 bringing the number to 34 species"

134 **Organization for the Promotion of Sustainable Tuna Fisheries** (2019). 2019 OPRT Business Year. See http://oprt.or.jp/eng/oprt-business-plan/2019-oprt-business-year/.

135 **ICCAT** (2018). Report for biennial period, 2018-19. Part I (2018)-Vol. 1. p. 523.

136 **ICCAT** (2018). Coordination and cooperation between T-RFMOs: adjusting the work under the Kobe process - A concept note. Document. Available at https://www.iccat.int/com2018/ENG/PLE_117_ENG.pdf

137 **Pacoureau, N. et al.** (2021). Half a century of global decline in oceanic sharks and rays. Nature, [online] 589(7843), pp.567–571. doi:10.1038/s41586-020-03173-9.

138 **Campana, S.E.** (2016). Transboundary movements, unmonitored fishing mortality, and ineffective international fisheries management pose risks for pelagic sharks in the Northwest Atlantic. Canadian Journal of Fisheries and Aquatic Sciences, 73(10), pp.1599–1607. doi:10.1139/cjfas-2015-0502.

139 "the value negotiated for these agreements does not commensurate with the value of species removed, as such favours the EU economically than African states." **Okafor-Yarwood, Ifesinachi** (2022). African countries must protect their fish stocks from the European Union - here's how. Available at https://theconversation.com/african-countries-must-protect-their-fish-stocks-from-the-european-union-heres-how-177095

140 **Oceana** (2010). Hunted for fins. https://oceana.org/reports/hunted-fins-how-eu-fleets-target-threatened-sharks-without-management-worlds-oceans/

141 Orden AAA/658/2014, de 22 de abril, por la que se regula la pesca con el arte de palangre de superficie para la captura de especies altamente migratorias https://www.boe.es/buscar/doc.php?id=BOE-A-2014-4514

142 **Villasante, S. and Sumaila, U.R.** (2010). Estimating the effects of technological efficiency on the European fishing fleet. Marine Policy, 34(3), pp.720–722. doi:10.1016/j.marpol.2009.11.008.

143 **Eigaard, O.R., Marchal, P., Gislason, H. and Rijnsdorp, A.D.** (2014). Technological Development and Fisheries Management. Reviews in Fisheries Science & Aquaculture, 22(2), pp.156–174. doi:10.1080/23308249.2014.899557.

144 **Villasante, S. & Sumaila U.R.** (2010), Ibid.

145 **Greenpeace** briefing (June, 2019). Assessment of the Marine Stewardship Council (MSC) Fisheries Certification Programme https://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/planet3/PDFs/assessment-of-the-msc.pdf

146 **MSC.** Assessment for North and South Atlantic swordfish Spanish longline fishery: https://fisheries.msc.org/en/fisheries/north-and-south-atlantic-swordfish-spanish-longline-fishery/@@assessments

147 **Bureau Veritas** (2016). North and South Atlantic swordfish Spanish longline fishery. Public Comment Draft Report, Volume 1 https://www.researchgate.net/publication/333389896_North_and_South_Atlantic_swordfish_Spanish_

longline_fishery_Public_Comment_Draft_Report_Volume_1

148 **European Commission Report to the European Parliament and to the Council on the operation of Council Regulation** (EC) No 1185/2003 on the removal of fins https://eur-lex.europa.eu/resource.html?uri=cellar:be6ff5ef-02ea-11e6-b713-01aa75ed71a1.0022.02/DOC_2&format=PDF

149 **Mucientes, G., Vedor, M., Sims, D.W. and Queiroz, N.** (2022). Unreported discards of internationally protected pelagic sharks in a global fishing hotspot are potentially large. Biological Conservation, 269, p.109534. doi:10.1016/j.biocon.2022.109534.

150 **MSC**. Assessment for North and South Atlantic swordfish Spanish longline fishery: https://fisheries.msc.org/en/fisheries/north-and-south-atlantic-swordfish-spanish-longline-fishery/@@assessments

151 **Mucientes, G., Vedor, M., Sims, D.W. and Queiroz, N.** (2022). Unreported discards of internationally protected pelagic sharks in a global fishing hotspot are potentially large. Biological Conservation, 269, p.109534. doi:10.1016/j.biocon.2022.109534.

152 **Our Fish.** (2021). Climate impacts and fishing industry profits from EU fuel tax subsidies. A selection of cases within european fishing fleet. Report. https://our.fish/publications/report-climate-impacts-fishing-industry-profits-from-eu-fuel-tax-subsidies/

153 **Edgar, G.J. et al.** (2014). Global conservation outcomes depend on marine protected areas with five key features. Nature, [online] 506(7487), pp.216–220. doi:10.1038/nature13022.

154 **Allan, J. and Beazley, K.** (2021). Ecological criteria for designing effective MPA networks for large migratory pelagics: Assessing the consistency between IUCN best practices and scholarly literature. Marine Policy, 127(May). doi:10.1016/j.marpol.2020.104219

155 **Williams J.J., Papastamatiou Y.P., Caselle J.E., Bradley D., Jacoby D.M.P.** (2018). Mobile marine predators: an understudied source of nutrients to coral reefs in an unfished atoll. Proceedings. Biological sciences vol. 285,1875. doi:10.1098/rspb.2017.2456

156 **Campana, S.E.** (2016). Transboundary movements, unmonitored fishing mortality, and ineffective international fisheries management pose risks for pelagic sharks in the Northwest Atlantic. Canadian Journal of Fisheries and Aquatic Sciences, 73(10), pp.1599–1607. doi:10.1139/cjfas-2015-0502.

157 OSPAR Decision 2021/01 on the establishment of the North Atlantic Current and Evlanov Sea basin Marine Protected Area https://www.ospar.org/documents?d=46308

158 **WWF** (2021). The Shark And Ray Meat Network: A Deep Dive Into A Global Affair. https://wwfeu.awsassets.panda.org/downloads/a4_shark_2021_low.pdf

159 **Dent, Felix & Clarke, S.**. (2015). State of the global market for shark products. FAO Fish. Aquacult. Tech. Pap.. 590. https://www.fao.org/3/i4795e/i4795e.pdf

160 **Okes, N. and Sant, G.** (2019). An overview of major shark traders, catchers and species. TRAFFIC, Cambridge, UK. https://www.traffic.org/site/assets/files/12427/top-20-sharks-web-1.pdf

161 **Okes, N. and Sant, G.** (2019). An overview of major shark traders, catchers and species. TRAFFIC, Cambridge, UK. https://www.traffic.org/site/assets/files/12427/top-20-sharks-web-1.pdf

162 **Website of the Spanish Fishing Confederation** (CEPESCA); Document "Puertos Pesqueros/MAPA 2019": https://cepesca.es/wp-content/uploads/2021/06/Puertos-de-Espa%C3%B1a_2019.xlsx

163 Opnapa website: https://opnapa.com/quienes-somos/

164 OPP-7 Burela website: https://oppburela.com/

165 Opromar website: https://opromar.com/

166 Orpagu website: https://orpagu.com/

167 **Ward Warmerdam, B.,** (2019). Research for PECH Committee - Seafood Industry Integration in all EU Member States with a coastline, EPRS: European Parliamentary Research Service. Retrieved from https://policycommons.net/artifacts/1337455/research-for-pech-committee/1945302/ on 07 Jul 2022.

168 Espaderos del Atlántico, Mascato Salvaterra, Pescados Pérez Piñeiro, AllPelagic, Congelados Noribérica, Maravilla Congelados, Hermanos Fernández Ibañez Consignatarios de Pesca, Grupo Botas (Casa Botas, Peixemar y Fandicosta), Marfrío, Grupo Confremar, Cabomar and the Portuguese company Brasmar Comércio de Produtos Alimentares.

169 **FIP BLUES** website, a Fishing Improvement Project for the Swordfish and Blue Shark Fisheries https://fipblues.com/en/fip-blues promoted by 4 producer organizations and ANECTEAM.

170 The WCO's "Harmonized Commodity Description and Coding System", also called "Harmonized System" or simply "HS" was developed in 1988 by the World Customs Organization (WCO) to "facilitate international trade and the collection, comparison and analysis of statistics by harmonizing the description, classification and coding of goods in international trade". This "Harmonized System" is used by more than 200 countries and economies as a basis for their Customs tariffs and for the collection of international trade statistics. The WCO is in charge of the maintenance of the HS by securing uniform interpretation of the codes and its periodic updating in light of developments in technology and changes in trade patterns.

171 Prior to 2012 there were only two codes to specifically classify shark meat, one for fresh dogfish and other sharks meat and one for frozen dogfish and other sharks' meat. These categories also included the meat of "rays and skates". As of 2012 the nomenclature changes and differentiates between sharks and rays and includes specific categories of shark meat (such as fish, fillets or other types of meat).

172 Although sporadically the codes prior to the HS nomenclature of 2012 have continued to be used by some countries until 2021.

173 UN Comtrade is a repository of official international trade statistics and relevant analytical tables at: https://comtrade.un.org/

174 HS Nomenclature 2022 edition at: http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2022-edition/hs-nomenclature-2022-edition.aspx

175 In this case "rays" are included under the sub-code 03048890.

Front cover:
A shark is hauled onboard the Nuevo Zumaya, a Spanish longliner

Published by Greenpeace UK and Greenpeace Spain
July 2022
greenpeace.org.uk/hooked-on-sharks

GREENPEACE
PROTECT
THE OCEANS