Shark League
for the Atlantic and Mediterranean

Bridging the Gaps that Hinder Shark Conservation

An analysis of ICCAT Parties' policies for CITES-listed Atlantic elasmobranchs

By Sonja Fordham, Ali Hood, Shannon Arnold, Daniel Kachelriess, and Julia Lawson

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About the Shark League
The Shark League of the Atlantic and Mediterranean was formed with support from the Shark Conservation Fund to advance responsible regional shark and ray conservation policies. Shark Advocates International, Ecology Action Centre, Shark Trust, and PADI AWARE Foundation are the coalition's founding members.

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EXECUTIVE SUMMARY

Elasmobranchs (sharks and rays) are threatened mainly by overfishing, with international trade as a key driver. Over the last few decades, significant strides toward shark conservation have been made through the Convention on International Trade in Endangered Species (CITES, a global wildlife treaty) and the International Commission for Conservation of Atlantic Tunas (ICCAT, a regional fishery management organization). Because sharks and rays are considered both commodities and wildlife, governments' approaches toward elasmobranch obligations under fisheries and environment agreements are, however, often misaligned. The success of international conservation measures relies on proper implementation at the national level. An associated lack of scrutiny is a core yet surmountable challenge to effective policies and population rebuilding. This analysis documents the performance of ICCAT's 52 Parties and five Cooperators (CPCs) with respect to conservation obligations for Atlantic elasmobranch species listed under CITES between 2002 and 2020, highlights key policy and implementation gaps, and recommends priority improvements at national and international levels.

The vast majority of species listed under CITES are included under Appendix II, which mandates trade permits aimed at ensuring that exports are legally and sustainably sourced. Exporting Parties are to assess the threat to species' survival and issue a "non-detriment finding" (NDF) before granting permits. NDFs need not be public but CITES invites sharing on their site. CITES regulation extends to landing of listed species taken on the high seas, known as "introduction from the sea" (IFS). Fisheries management is key to CITES implementation.

ICCAT banned shark finning in 2004 and has generally prohibited the retention, etc. of bigeye threshers (2009), oceanic whitetip sharks (2010), most hammerhead species (with exceptions, 2010), and silky sharks (with exceptions, 2011). A live release measure for porbeagles was adopted in 2015, North Atlantic shortfin mako retention was banned (short-term) in 2021, and South Atlantic shortfin mako quotas were allocated in 2022.

With respect to elasmobranchs, this analysis explores problematic gaps *in*:
- CITES and ICCAT protections (through reservations and exceptions);
- nations' species-specific reporting of trade, landings, discards, and regulations; and
- transparency associated with essential exploitation statistics.

Also addressed are gaps *between*:
- commitments and compliance;
- governments' policy stances and regulatory actions; and
- environmental and fisheries authorities' policy work.

Despite a rising profile at CITES, sharks and rays are less valuable than traditional food fish and remain a relatively low priority for fisheries bodies. Participation by conservationists is more robust at CITES than at ICCAT. There has been inadequate recognition of competence between the two worlds and generally low interest among experts for engaging in both.

Seven ICCAT CPCs have taken **reservations** on CITES elasmobranch listings: **Japan, Norway, Iceland, Guyana, Republic of Korea, Namibia**, and **South Africa**. The CITES **database** has yet to reflect a complete picture of global trade in the species. A particular lack of pelagic shark trade data reveals inadequate **IFS** implementation. Thirteen CPCs have reported commercial trade in CITES-listed sharks without a public **NDF**. Only four ICCAT CPCs have publicized negative NDFs for sharks. Only three have public NDFs for more than one shark species. Expanded CITES

Overview of ICCAT actions & key dates for CITES-listed Atlantic elasmobranchs

Oceanic Whitetip	Silky Shark	Hammerheads	Porbeagle	Bigeye Thresher	Common Thresher	Shortfin Mako
ICCAT Ban 2010	ICCAT Ban* 2011	ICCAT Ban* 2010	ICCAT Live Release 2015	ICCAT Ban 2009	No ICCAT Limits	ICCAT Limits 2021
CITES II 2013	CITES II 2013	CITES II 2013	CITES II 2013	CITES II 2016	CITES II 2016	CITES II 2019

* exceptions apply

Scalloped hammerhead shark (*Sphyrna lewini*). © Ethan Daniels/Shutterstock

data and NDFs hold promise for informing ICCAT compliance processes. In turn, improved ICCAT information on populations, fishing, and compliance can contribute to NDFs and overall CITES implementation.

Because exports are tied to countries, not **ocean regions**, it is difficult to use international fisheries measures (which vary across the globe) to evaluate the legality of fishing operations from which elasmobranch products originate. Until reporting becomes region-specific, CITES shark trade data is most illuminating within the ICCAT context for CPCs fishing only in the Atlantic. The first CITES **Reviews of Significant Trade** (RSTs) for elasmobranch species, agreed in 2023, focus on hammerheads and oceanic whitetip sharks, and involve ICCAT CPCs **Mexico, Nicaragua, Senegal,** and the **People's Republic of China (PR China)**.

Lack of data with respect to elasmobranch trade and fishing is a primary and persistent hurdle to population assessment, compliance monitoring, and conservation. Governments' reports are too often incomplete, inconsistent, late, or non-existent. It is also hard to tell if increased landings reflect higher fishing pressure or simply better reporting, and similarly, if lacking records are the result of compliance or depletion.

The **EU** is the top ICCAT CPC for **elasmobranch fishing**, with landings that exceed those reported by all other ICCAT CPCs *combined*. **Nigeria** ranks second among ICCAT CPCs for elasmobranch landings reported to FAO but not even in the top 20 with respect to ICCAT sharks, owing to significant coastal fisheries and inadequate ICCAT reporting. Similar stories can be told for several other African countries: **Sierra Leone, Angola, Mauritania, Guinea,** and **Egypt**. Coastal catches commonly reported to FAO but not ICCAT include CITES-listed Atlantic elasmobranchs, such as hammerheads and guitarfishes. Countries with significant discrepancies between ICCAT and FAO elasmobranch reporting include **PR China, Spain, Portugal,** and **Liberia**.

Despite ICCAT measures that ban the retention or encourage the release of at least nine shark species, only six ICCAT CPCs report more than 100t of elasmobranch **discards** over the last decade: **Chinese Taipei, USA, EU, Japan, Canada, Republic of Korea**. Most ICCAT CPCs – including five that rank in top ten for ICCAT shark landings (**Namibia, Morocco, Ghana, Senegal,** and **Belize**) – report none.

While the ICCAT Compliance Committee's "**Shark Check Sheets**" (aimed at eliciting domestic implementation information from CPCs) have recently increased in number, clarity, and detail, many CPCs still lack domestic regulations to implement ICCAT shark measures and/or fail to report in sufficient detail. **Angola, Côte d'Ivoire, Gambia, Grenada, Guinea Bissau, Guinea, Mauritania,** and **Namibia** failed to submit at all in 2022.

Longfin Mako	White Shark	Basking Shark	Whale Shark	Manta & Devil Rays	Sawfish	Wedgefish & Guitarfish
No ICCAT Limits	No ICCAT Action	No ICCAT Action	No ICCAT Action	No ICCAT Action	No ICCAT Relevance	No ICCAT Relevance
CITES II 2019	CITES II 2004	CITES II 2002	CITES II 2002	CITES II 2013 & 2016	CITES I 2007 & 2013	CITES II 2019

Only eight ICCAT CPCs mentioned **CITES obligations** in their 2022 Shark Check Sheets: **Barbados, Curaçao, EU (Portugal), Liberia, Morocco, Senegal, Costa Rica,** and **Guyana**. Only 12 CPCs report plans to increase **observer coverage/electronic monitoring** on longliner vessels to the agreed 10%. Efforts to strengthen ICCAT's **shark finning** ban by requiring sharks be landed with fins naturally attached have been blocked by Japan since 2009.

Key **species-specific findings** address issues for highly traded, threatened elasmobranchs that are either subject to ICCAT measures or in need of them. While ICCAT's bigeye thresher and oceanic whitetip shark bans are relatively broad and simple, exceptions to the hammerhead and silky shark bans allow developing CPCs to opt out — if they report and try not to increase landings while preventing international trade.

Hammerheads (*Sphyrna* spp.) are captured in both coastal and pelagic fisheries that are often managed separately, leading to partial reporting to ICCAT that hinders effectiveness monitoring. **Trinidad and Tobago, Senegal,** and **Ghana** account for most of the ~7500t of hammerhead landings reported to ICCAT since 2010. Ghana takes nearly half, gives contradictory answers to ICCAT, and admits a lack of domestic regulations. As Ghana does not report exports, all these catches would need to come from national waters and be consumed domestically to comply with CITES. **Senegal** has reported a hammerhead ban, substantial annual landings, and (in 2015) fin exports. **Trinidad and Tobago** takes an exemption to the ban that allows for substantial hammerhead landings. Exports are reportedly banned; none are reported to CITES. **Côte d'Ivoire** claims to implement the ban yet regularly reports landings. **Brazil** co-sponsored the ICCAT and CITES hammerhead measures yet reported 500+t of landings in 2012. Landings have since ceased under a domestic ban.

There are CITES records of **silky shark** (*Carcharhinus falciformis*) exports from **Nicaragua**, which would conflict with the ICCAT measure but not Pacific rules. Nicaragua's poor reporting to ICCAT and lack of a public NDF hamper evaluation. **Costa Rica** claims an exemption to the silky shark measure but its substantial export (72% of reported global trade) runs counter to its conditions. Determining how much of the trade is sourced from the Atlantic (subject to ICCAT) is complicated by lacking

Silky shark (*Carcharhinus falciformis*). © Andy Murch

information. **Ghana** has reported ~100t of silky shark landings annually since 2016, apparently under an ICCAT exemption and lack of domestic limits. Recent landings are relatively high, but no international trade has been reported to CITES. **Guyana**'s 300t of silky shark landings in 2018 may have been due to a data reconstruction project, suggesting significant under-reporting in other years. ICCAT CPCs claiming to be implementing the silky shark ban while reporting more than a ton of annual silky shark landings to ICCAT in 2019 and 2020 include **Mexico, Côte d'Ivoire, Grenada, Liberia,** and **São Tomé e Príncipe**.

Mexico is the only CPC consistently reporting annual landings of **oceanic whitetip sharks** (*Carcharhinus longimanus*) to ICCAT. **Brazil** reports landings to FAO, but not ICCAT. **Senegal** is the only ICCAT CPC identified as an exporter of the species. **Turks and Caicos, Costa Rica, Guyana, Honduras,** and **Nicaragua** gave inadequate responses regarding protections. **Dominica**'s oceanic whitetip landings underscore the need to expand membership and/or cooperation from non-CPCs.

ICCAT bans retention of **bigeye thresher sharks** (*Alopias superciliosus*) but has yet to limit catch of common threshers (*Alopias vulpinus*). Most ICCAT thresher records are by genus, which hinders compliance monitoring and population

assessment. **Mexico**, the only CPC with an ICCAT bigeye thresher allocation, claims to implement the measure but cites no species-specific limits. Mexico and **Senegal** have been identified by CITES for sharp increases in bigeye thresher exports; neither report landings of this species to ICCAT. Mexico's exports might be sourced from the Pacific where the species is not prohibited; this scenario is unlikely for Senegal.

The dire status of the North Atlantic **shortfin mako** (*Isurus oxyrinchus*) population argues for long-term extension of the ICCAT retention ban. Improvements in reporting and estimating discards are urgently needed. The vast footprint of EU (Spain and Portugal) vessels complicates exploitation tracking. Misreporting and/or increased fishing pressure on similarly vulnerable and valuable **longfin makos** (*Isurus paucus*) is a concern. The EU (Portugal) has been reporting longfin mako landings to FAO but not ICCAT since 2014. Portugal and Spain report substantial high seas longfin mako take. It is difficult to determine how well landings and export records align for such wide-ranging fleets. Only the **USA** reports longfin mako discards to ICCAT.

Catch-all landings and trade reporting make exploitation data particularly lacking for exceptionally vulnerable **manta and devil rays** (*Mobula* spp.). **Venezuela** is responsible for 94% of total landings (2010-2021). Likely due to a regional data enhancement project, the vast majority of Atlantic mobulid catches reported to ICCAT occur in 2017. None were reported to FAO and many CPCs reported only in that year. Only **Mauritania** and the EU (Spain) report Atlantic mobula ray landings to FAO. ICCAT is the only tuna RFMO that has not protected mobula rays.

There are **myriad gaps** that hinder effective shark and ray conservation; bridging them requires deliberate, sustained attention from multiple government agencies as well as stakeholders. ICCAT and CITES have both advanced elasmobranch conservation, and both bodies face implementation challenges stemming from inadequate resources and political will. There is a need to balance the attention given to achieving conservation agreements with the actions to ensure commitments are fulfilled. Science-based fishing and trade limits are among the most urgent needs. Narrowing the highlighted divides is critical to securing a brighter outlook for sharks and rays in the Atlantic and beyond.

RECOMMENDATIONS

Fishing entities and stakeholders are encouraged to actively pursue increased priority and effectiveness of elasmobranch conservation policies at national, regional, and international levels.

Governments — with support from conservationists, scientists, and fishing communities — should:

- improve the integration of marine fisheries and environmental agency activities;
- coordinate the fulfillment of shark and ray obligations across various treaties;
- strive for greater transparency and accountability with respect to implementation;
- submit accurate, complete, timely fisheries and trade data to relevant authorities;
- request / facilitate technical and financial assistance for low-capacity countries; and
- promote complementary actions under other international conservation treaties.

Needs specific to ICCAT include:

- Enforcement of CPC reporting requirements for all elasmobranch catches (including discards);
- Clearer and more detailed CPC responses regarding implementation of ICCAT shark measures;
- Elimination of exceptions to retention bans for hammerhead, silky, and bigeye thresher sharks;
- Long-term extension and augmentation of the North Atlantic shortfin mako retention ban;
- Safeguards for unprotected species, including mobula rays, longfin makos, common threshers, and whale sharks;
- A stronger finning ban through a prohibition on at-sea shark fin removal, without exceptions; and
- 100% observer coverage (human and/or electronic) for large-scale ICCAT fishing vessels;

Needs specific to CITES include:

- Broader and more accurate trade reporting by Parties, including IFS, for listed species;
- Robust NDFs linked to fishing limits posted to the CITES website;
- Rigorous review of significant elasmobranch trade with prompt remedial action;
- Elasmobranch trade reporting by ocean/population;
- Closer examination of EU permitting exceptions associated with bilateral fishing agreements;
- Retraction of reservations on shark and ray listings; and
- Consideration of measures for skate, dogfish, and deep-sea shark species in trade.

PURPOSE AND SCOPE

Shark Advocates International (a project of The Ocean Foundation), Ecology Action Centre, and Shark Trust maintain a special focus on elasmobranchs (sharks and rays) because of vulnerability that stems from their relatively low reproductive rates as well as their traditionally low priority among fishery managers. Our organizations operate in a coalition (known as the Shark League) toward safeguarding elasmobranchs through the International Commission for Conservation of Atlantic Tunas (ICCAT). Shark League members and colleagues are also engaged in elasmobranch conservation under the Convention on International Trade in Endangered Species (CITES).

This analysis:

- documents the performance of ICCAT Parties and Cooperators with respect to conservation obligations for Atlantic shark and ray species listed under CITES between 2002 and 2020;
- highlights key gaps between concrete restrictions and conservation needs; and
- recommends priority improvements at national and international levels.

INTRODUCTION

Sharks and closely related rays are among the ocean's most threatened animals. They are taken in a wide variety of fisheries by the tens of millions each year, landed primarily for meat and fins or discarded at sea. Collectively known as "elasmobranchs," most sharks and rays are exceptionally susceptible to overfishing because they grow slowly and produce few young. The most recent (2021) IUCN Shark Specialist Group Red List analysis[1] estimates that roughly a third (391) of the world's shark and ray species are threatened with extinction[2], primarily by overfishing. A 2021 analysis[3] focused on oceanic elasmobranchs found a 71% decline in global abundance since 1970, a time period that saw a doubling of fishing pressure and a tripling of shark and ray catches. Three-quarters (77%) of oceanic shark and ray species now qualify as threatened. Elasmobranchs perform vital ecological roles while also offering significant economic and cultural value. Failing to conserve their populations invites widespread disruption of ecosystems and communities.

Countries have been reporting catches of sharks and rays to the United Nations Food and Agriculture Organization (FAO) since 1950. Total reported elasmobranch catch peaked in 2000 at nearly 900,000 metric tons (t) and has since declined to roughly 700,000t in 2018. It is difficult to generalize about the reasons for this decline, as catch reporting has increased in many cases while fishing can subside for a range of reasons, including population depletion, restrictions, and market changes.

Sharks in Common

All of the shark measures adopted by ICCAT address CITES-listed species.

Oceanic Whitetip	Silky Shark	Scalloped Hammerhead	Great Hammerhead	Smooth Hammerhead	Porbeagle Shark	Bigeye Thresher	Common Thresher	Shortfin Mako
Carcharhinus longimanus	*Carcharhinus falciformis*	*Sphyrna lewini*	*Sphyrna mokarran*	*Sphyrna zygaena*	*Lamna nasus*	*Alopias superciliosus*	*Alopias vulpinus*	*Isurus oxyrinchus*
ICCAT Ban 2010	ICCAT Ban* 2011	ICCAT Ban* 2010	ICCAT Ban* 2010	ICCAT Ban* 2010	ICCAT Live Release 2015	ICCAT Ban 2009	No ICCAT Limits	ICCAT Ban** 2021
CITES II 2013	CITES II 2013	CITES II 2013	CITES II 2013	CITES II 2013	CITES II 2013	CITES II 2016	CITES II 2016	CITES II 2019

* = exceptions allowed for local consumption in developing CPCs provided that they report data, cap catches, and prevent exports.

[1] Dulvy, N.K., Pacoureau, N., Rigby, C,L., Pollom, R.A., Jabado, R.W., Ebert, D.A., Finucci, B., Pollock, C.M., Cheok, J., Derrick, D.H., Herman, K.B., Sherman, C.S., VanderWright, W.J., Lawson, J.M,, Walls, R.H.L., Carlson, J.K., Charvet, P., Bineesh, K.K., Fernando, D., Ralph, G.M., Matsushiba, J.H., Hilton-Taylor, C., Fordham, S.V., Simpfendorfer, C.A. Overfishing drives over one-third of all sharks and rays toward a global extinction crisis. 2021. Current Biology. 2021 Nov 22;31(22):5118-5119. doi: 10.1016/j.cub.2021.11.008.

[2] qualifying as *Critically Endangered, Endangered,* or *Vulnerable* according to the criteria and categories of the IUCN Red List of Threatened Species.

[3] Pacoureau, N., Rigby, C.L., Kyne, P.M., Sherley, R.B., Winker, H., Carlson, J.K., Fordham, S.V., Barreto, R., Fernando, D., Francis, M.P., Jabado, R.W., Herman, K.B., Liu, K.M., Marshall, A.D., Pollom, R.A., Romanov, E.V., Simpfendorfer, C.A., Yin, J.S., Kindsvater, H.K., Dulvy, N.K. Half a century of global decline in oceanic sharks and rays. Nature. 2021 Jan; 589(7843):567-571. doi: 10.1038/s41586-020-03173-9. Epub 2021 Jan 27. PMID: 33505035.

In a 2019 global report[4], TRAFFIC calculated that the top 20 countries for shark and ray catch from 2007–2017 were responsible for about 80% of the average global reported catch for the time period (nearly 600,000 mt per year). Approximately 40% of global catches were reportedly sourced from the Atlantic Ocean and adjacent seas. The top 20 countries for shark catch have remained remarkably consistent over many years. Countries relevant to ICCAT (CPCs and EU Member States) ranking among the top 20 (2007–2017) include Spain (2nd in the world), Mexico (4th), United States (5th), Chinese Taipei (7th), Brazil (9th), Nigeria (10th), Portugal (12th), France (13th), Japan (14th), and Republic of Korea (18th).

Many sharks migrate and are fished across multiple jurisdictions, which makes international agreements key to population health. For pelagic sharks and other highly migratory species that are taken by multiple nations, fisheries management measures are set by Regional Fishery Management Organizations (RFMOs) that generally operate on consensus. For resulting international conservation initiatives to be effective, RFMO measures should be based on science and implemented at the domestic level (by fishing nations). On the high seas of the Atlantic, sharks are usually caught in fisheries targeting swordfish and tuna managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT).

Over the last few decades, conservationists have been turning increasingly to the Convention on International Trade in Endangered Species (CITES) to address the threats facing sharks from global demand for their parts, particularly fins. Between 2002 and 2020, more than 40 elasmobranch species were listed under CITES (by 2/3 majority vote if not consensus). The vast majority of these species were added to Appendix II, which prompts export permits aimed at ensuring that traded products are legally and sustainably sourced (details follow). CITES is the legal instrument for controlling international trade, but sound fisheries management, including that by RFMOs, is key to implementing elasmobranch listings.

Because sharks and rays are considered both commodities and wildlife, governments' approaches toward elasmobranch obligations under fisheries and environment treaties are often misaligned. Despite a rising profile at CITES, sharks and rays are less valuable than tuna and other traditional food fish and remain a relatively low priority for fisheries bodies. At ICCAT, in particular, participation by conservationists is far lower than that of fishing industry representatives and there is inadequate recognition of the binding shark and ray conservation obligations made through CITES. While environmental NGO participation in CITES processes is fulsome, there is generally low interest among CITES experts for engaging directly in fisheries management. Bridging this gap, through improved recognition and coordination, could prove pivotal. Ultimately, be they under CITES or ICCAT, the success of international elasmobranch conservation measures relies on proper implementation at the national level. An associated lack of scrutiny is a core yet surmountable challenge to effective policies and ultimate population rebuilding.

Longfin Mako	**White Shark**	**Basking Shark**	**Whale Shark**	**Oceanic Manta Ray**	**Devil Rays**	**Sawfish**	**Wedgefish**	**Blackchin Guitarfish**
Isurus paucus	*Carcharodon carcharias*	*Cetorhinus maximus*	*Rhincodon typus*	*Mobula birostris*	*Other Mobula spp.*	*Family Pristidae (2 spp.)*	*Family Rhinidae (2 spp.)*	*Glaucostegus cemiculus*
No ICCAT Limits	**No ICCAT Action**	**No ICCAT Action**	**No ICCAT Action**	**No ICCAT Action**	**No ICCAT Limits**	**No ICCAT Relevance**	**No ICCAT Relevance**	**No ICCAT Relevance**
CITES II 2019	**CITES II 2004**	**CITES II 2002**	**CITES II 2002**	**CITES II 2013**	**CITES II 2016**	**CITES I 2007/13**	**CITES II 2019**	**CITES II 2019**

** = retention allowances beyond 2023 may be agreed, depending on calculation of recent mortality.

[4] Okes, N. and Sant, G. (2019). An overview of major shark traders, catchers and species. TRAFFIC, Cambridge, UK.

GAPS AT A GLANCE

This analysis explores problematic gaps *in*:

- CITES and ICCAT elasmobranch protections (through reservations and exceptions)
- nations' species-specific reporting of trade, landings, discards, and regulations
- CITES Non-Detriment Findings that lack connections to fishing limits
- transparency associated with essential exploitation statistics
- applicability of ICCAT measures across the Atlantic (particularly in the Caribbean)
- global protection for manta and devil rays (as ICCAT lacks safeguards)
- capacity building efforts.

Also addressed are gaps *between*:

- commitments and compliance
- governments' policy stances and regulatory actions
- environmental and fisheries authorities' policy work
- the time between evidence and consequences for non-compliance
- ICCAT finning ban enforcement standards and best practice used elsewhere in the Atlantic
- protections for large, charismatic species and smaller, less iconic ones (skates, dogfishes)
- CITES and ICCAT measures for basking, white, and whale sharks.

The Charisma Gap

Various species of skates, deep-sea sharks, smooth-hounds, and dogfishes have been the long-term subjects of high levels of international trade (compared to other elasmobranchs) but have not been listed under CITES. A proposal spearheaded by Germany to list the spiny dogfish (*Squalus acanthias*) was rejected twice (at CoPs in 2007 and 2010). International conservation measures for other species in these groups have been discussed but never formally proposed at CITES, but have been taken by several RFMOs, including NAFO and NEAFC (as previously mentioned). The first elasmobranchs listed under CITES – the iconic basking, whale, and white sharks – have also enjoyed relative priority within other international wildlife bodies and at the national level but not within RFMOs (due primarily to the associated lack of fisheries interest). The first CITES listings for rays (mantas in 2013) were followed by RFMO safeguards at all tuna RFMOs except ICCAT. Perceived charisma appears to have been a factor in elasmobranch policy actions championed and agreed by both CITES and ICCAT (e.g., hammerheads earned ICCAT protection before most other shark species despite their semi-pelagic nature and low ranking in ecological risk assessments). Overall, there is great potential for CITES attention to help heavily traded, under-protected elasmobranchs like skates and dogfishes while ICCAT has the ability to boost the effectiveness of national protection efforts for whale, white, and basking sharks through measures requiring safe handling and increased observer coverage.

Spiny dogfish. © Boris Pamikov/Shutterstock

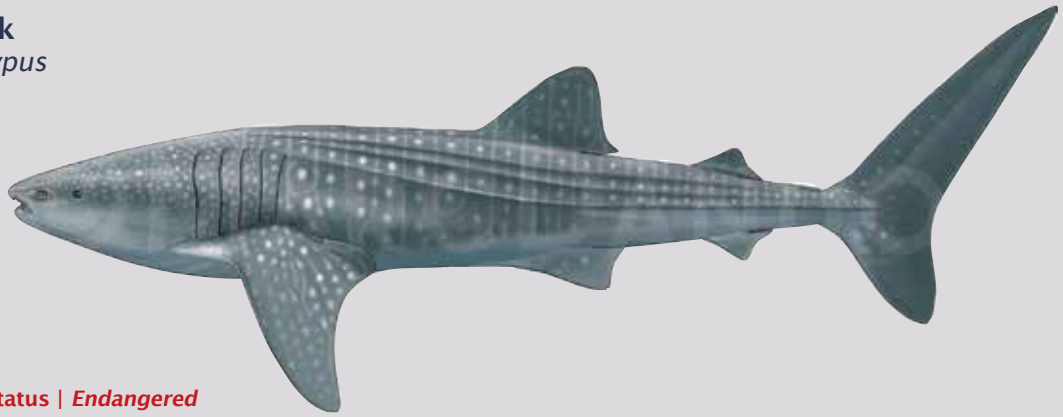
SPECIES SNAPSHOTS

Atlantic sharks & rays listed under CITES before 2022

Notes:

- CPC-specific information is based on trade data, etc. reported to CITES and landings data reported to ICCAT and/or FAO.
- Reported "trade" refers to commercial exports & imports (rather than scientific or display trade), unless otherwise noted.
- CPCs are ranked by landings; the number of CPCs spotlighted depends on volume, history, and other notable factors. Graphs provide more context.
- NDFs are characterized as "public" if they are posted on the CITES website. Others may be publicly available through other means.
- CPCs have approximately six months to implement measures adopted by ICCAT (following official transmission of agreed text). Because ICCAT annual meetings take place in November, the limits highlighted below have entered into force in June of the year after adoption.

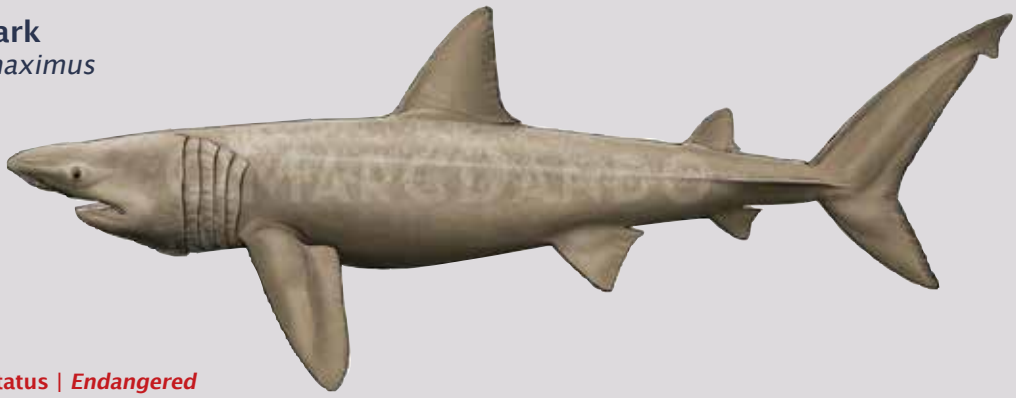
Whale shark
Rhincodon typus



IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted November 2002, took effect February 2003
ICCAT CPCs with CITES reservations	Iceland, Japan, Norway, Republic of Korea
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction, year adopted	None
ICCAT CPCs with reported landings	Essentially none (EU-France, 2010-2011, 0.38t, ICCAT)
ICCAT CPCs with reported export (2002-2021)	People's Republic of China (PR China)

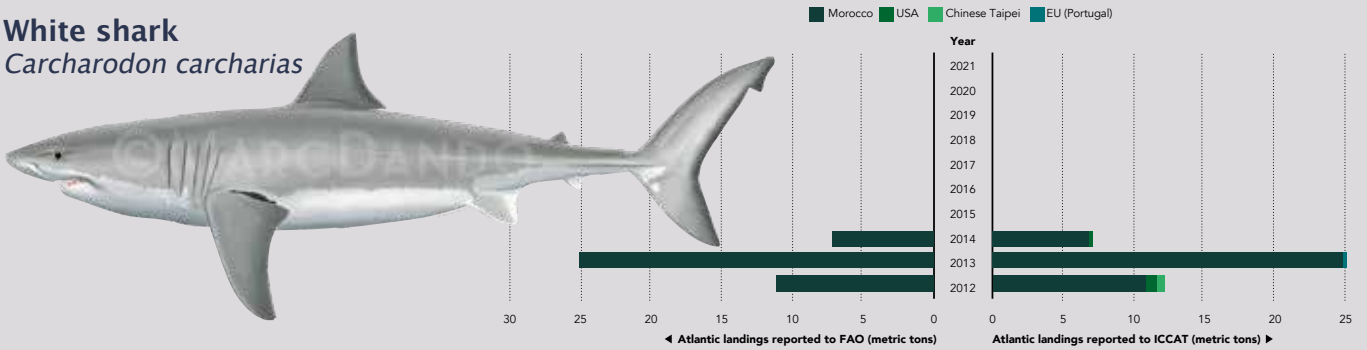
Basking shark
Cetorhinus maximus



IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted November 2002, took effect February 2003
ICCAT CPCs with CITES reservations	Iceland, Japan, Norway, Republic of Korea
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction, year adopted	None
Top ICCAT CPC for landings (FAO)	Norway
ICCAT CPCs with reported trade (2002-2021)	**Exporters:** UK, Norway; **Importers:** USA, PR China

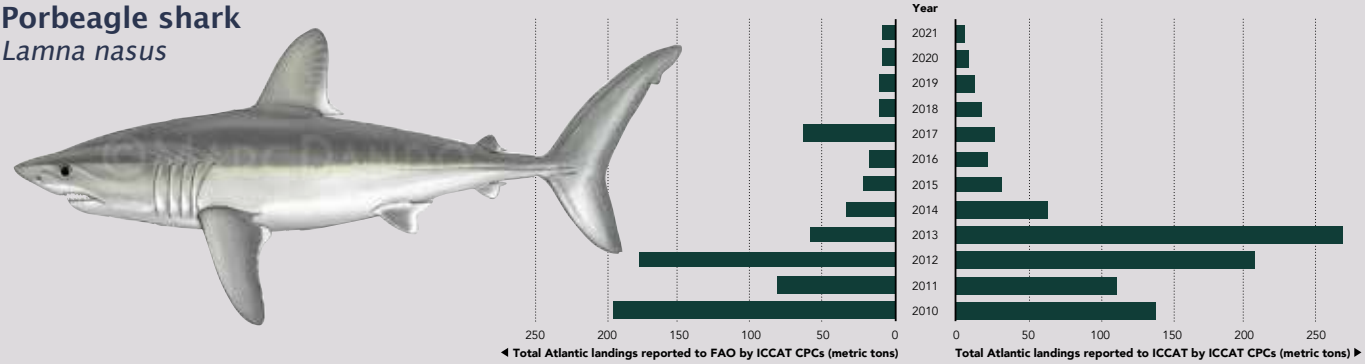
White shark
Carcharodon carcharias



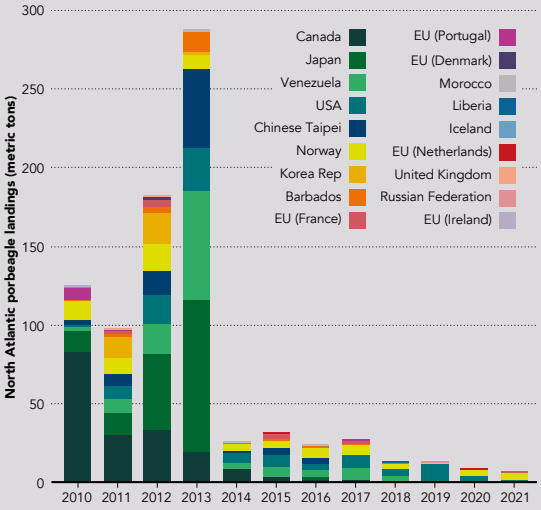
IUCN Red List status | *Vulnerable*

CITES listing, key dates	Appendix II, adopted October 2004, took effect January 2005
ICCAT CPCs with CITES reservations	Iceland, Japan, Norway
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction	None
Top ICCAT CPC for reported landings	Morocco (ICCAT & FAO reports align)
ICCAT CPCs with reported trade (2004–2021)	**Exporters:** Chinese Taipei, USA, UK, Philippines, Nicaragua, Ireland **Importers:** USA, Canada, France, Japan, PR China

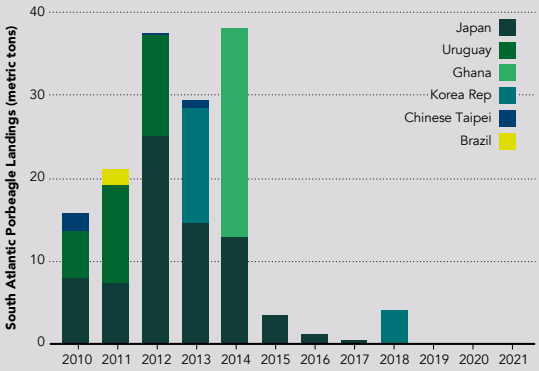
Porbeagle shark
Lamna nasus



North Atlantic porbeagle landings reported to ICCAT by CPCs (2010-2021)



South Atlantic porbeagle landings reported to ICCAT by CPCs (2010-2021)

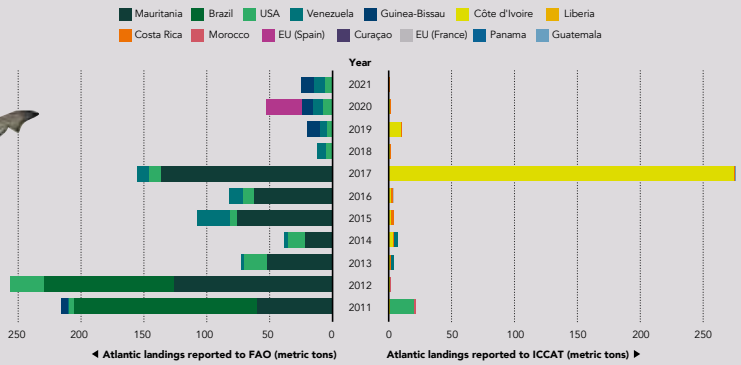


IUCN Red List status | *Vulnerable*

CITES listing, key dates	Appendix II, adopted March 2013, took effect September 2014
ICCAT CPCs with CITES reservations	Iceland, Japan, Guyana, (+ Denmark with respect to Greenland)
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, 2014, 2017) (*Canada has an NDF that is not public*)
Current ICCAT restriction	Live release, 2015
Top 3 ICCAT CPCs for landings (ICCAT)	2010–2014: Japan, Canada, Venezuela; 2015–2021: USA, Norway, Venezuela
ICCAT CPCs with reported trade (2013–2021)	**Exporters:** Canada, Japan, Norway, Spain; **Importers:** Denmark, Netherlands, Spain, USA

Scalloped hammerhead shark

Sphyrna lewini



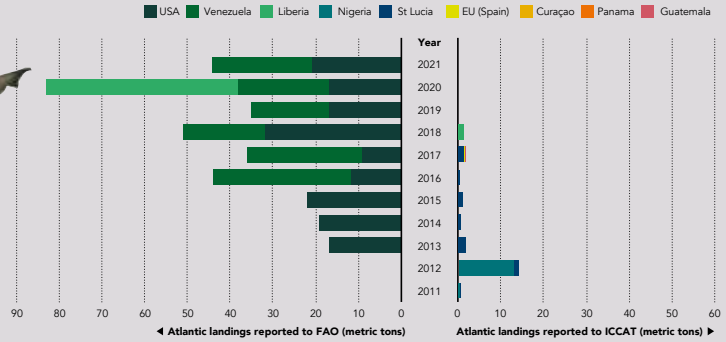
(Note: significant additional landings are reported as nei)

IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix II, adopted March 2013, took effect September 2014
ICCAT CPCs with CITES reservations	Japan and Guyana
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, three species, 2015, 2017), Costa Rica (negative, genus, 2020)
Current ICCAT restriction, year adopted	Ban on retention, etc., 2010 *(local consumption allowed for developing CPCs that report data, cap catches, and prevent export)*
Top 4 ICCAT CPCs for ICCAT landings (2014–2021)	Côte d'Ivoire*, USA, Costa Rica*, Venezuela (*not reporting species-specific hammerhead landings to FAO)
Top 6 for FAO reported landings (2011–2021)	Mauritania, Brazil, USA, Venezuela, Guinea-Bissau, Liberia (no landings reported to ICCAT since 2014)
ICCAT CPCs with reported trade (2004–2021)	**Exporters:** Mexico, Costa Rica, El Salvador, Nicaragua, Netherlands, Republic of Korea, US, PR China **Importers:** PR China, Netherlands, Turkey, US, France, Republic of Korea, Russian Federation, Mexico

Great hammerhead shark

Sphyrna mokarran



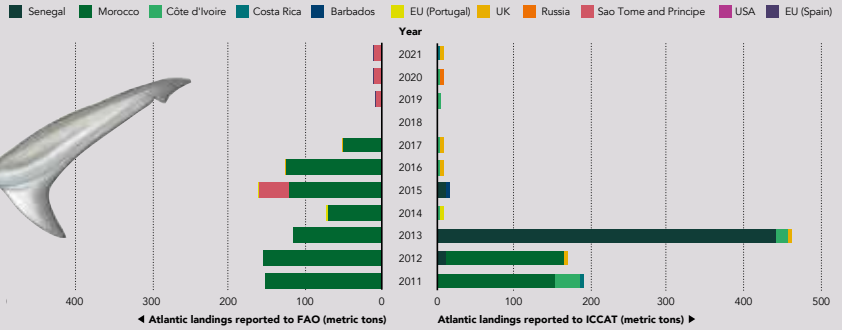
(Note: significant additional landings are reported as nei)

IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix II, adopted March 2013, took effect September 2014
ICCAT CPCs with CITES reservations	Japan and Guyana
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, three species, 2015, 2017), Costa Rica (negative, genus, 2020)
Current ICCAT restriction, year adopted	Ban on retention, etc., 2010 *(local consumption allowed for developing CPCs that report data, cap catches, and prevent export)*
Top 3 ICCAT CPCs for ICCAT landings (2011–2021)	Nigeria, St. Lucia, Liberia (of these 3, only Liberia reports species-specific hammerhead landings to FAO)
Top 3 for FAO reported landings (2011–2021)	USA, Venezuela, Liberia (Liberia reports great hammerhead landings to ICCAT, other 2 report only discards)
ICCAT CPCs with reported trade (2013–2021)	**Exporters:** Mexico, Nicaragua, El Salvador, USA; **Importers:** PR China, USA

Smooth hammerhead shark

Sphyrna zygaena

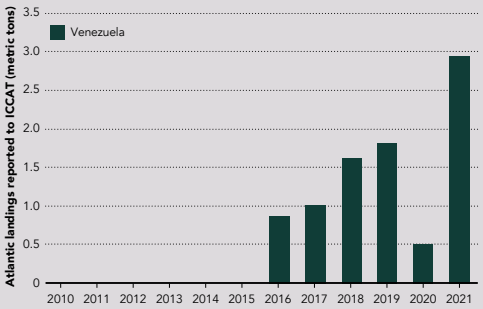


(Note: significant additional landings are reported as nei)

IUCN Red List status | *Vulnerable*

CITES listing, key dates	Appendix II, adopted March 2013, took effect September 2014
ICCAT CPCs with CITES reservations	Japan and Guyana
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, three species, 2015, 2017), Costa Rica (negative, genus, 2020)
Current ICCAT restriction, year adopted	Ban on retention, etc., 2010 *(local consumption allowed for developing CPCs that report data, cap catches, and prevent export)*
Top 3 ICCAT CPCs for ICCAT landings (2011–2021)	Senegal, Morocco, Côte d'Ivoire (of these 3, only Morocco reports species-specific hammerhead landings to FAO)
Top 2 for FAO reported landings (2011–2021)	Morocco, São Tomé and Príncipe (of these 2, only Morocco reports species-specific hammerheads to ICCAT)
ICCAT CPCs with reported trade (2004–2021)	**Exporters:** Senegal, Costa Rica, Mexico, El Salvador, Nicaragua; **Importer:** PR China

Oceanic manta ray
Mobula birostris



IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted March 2013, took effect September 2014
ICCAT CPCs with CITES reservations	Guyana
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, 2019, display)
Current ICCAT restriction	None
Top ICCAT CPC for ICCAT landings (2010–2021)	Venezuela (*only CPC reporting species-specific landings*)
Only ICCAT CPCs with FAO landings (2010–2021)	Mauritania (64t of "Mantas, devil rays, nei" in 2014 only), Spain (10t of "Devil Fish")
ICCAT CPCs with reported trade (2013–2021)	**Exporter:** USA; **Importer:** France

Spinetail devil ray
Mobula mobular

IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted October 2016, took effect April 2017
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction	None
Only ICCAT CPC for ICCAT landings (2010–2021)	EU-Spain, Panama, El Salvador by species + Curaçao, Guatemala, EU-Spain, El Salvador as "Mobulidae" (all 2017 only)
Only ICCAT CPCs with FAO landings (2010–2021)	Mauritania (*64t of "Mantas, devil rays, nei" in 2014 only), Spain (10t of "Devil Fish"*)
ICCAT CPCs with reported trade (2016–2021)	For genus-level *Mobula* spp: **Exporters:** PR China, Mexico **Importer:** USA (meat/medicine confiscated by the USA)

Bentfin devil ray
Mobula thurstoni

IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted October 2016, took effect April 2017
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, display, 2018)
Current ICCAT restriction	None
Top ICCAT CPC for ICCAT landings (2010–2021)	(Only by family, not species): Curaçao, Guatemala, EU-Spain, El Salvador (*all very low volumes, 2017 only*)
Only ICCAT CPCs with FAO landings (2010–2021)	Mauritania (64t of "Mantas, devil rays, nei" in 2014 only), Spain (10t of "Devil Fish")
ICCAT CPCs with reported trade (2016–2021)	For genus-level *Mobula* spp: **Exporters:** PR China, Mexico **Importer:** USA (meat/medicine confiscated by the USA)

Atlantic pygmy devil ray
Mobula hypostoma

IUCN Red List status | *Endangered*

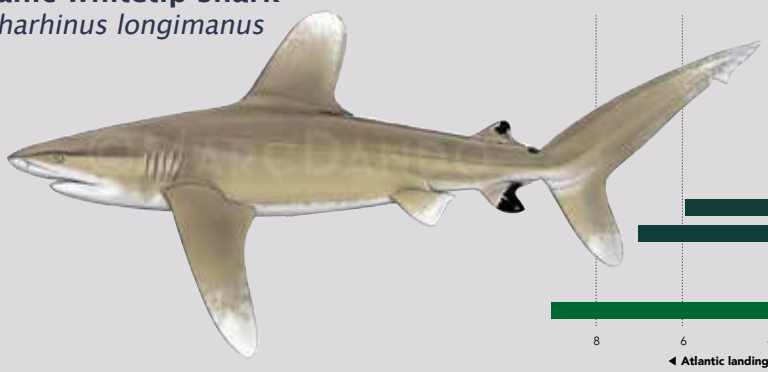
CITES listing, key dates	Appendix II, adopted October 2016, took effect April 2017
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, display, 2018)
Current ICCAT restriction	None
ICCAT CPCs with ICCAT landings (genus, 2010–2021)	(Only by family, not species): Curaçao, Guatemala, Spain, El Salvador (all very low volumes in 2017 only)
Only ICCAT CPCs with FAO landings (2010–20211)	Mauritania (64t of "Mantas, devil rays, nei" in 2014 only), Spain (10t of "Devil Fish")
ICCAT CPCs with reported trade (2016–2021)	**Exporters:** USA; **Importers:** PR China, France

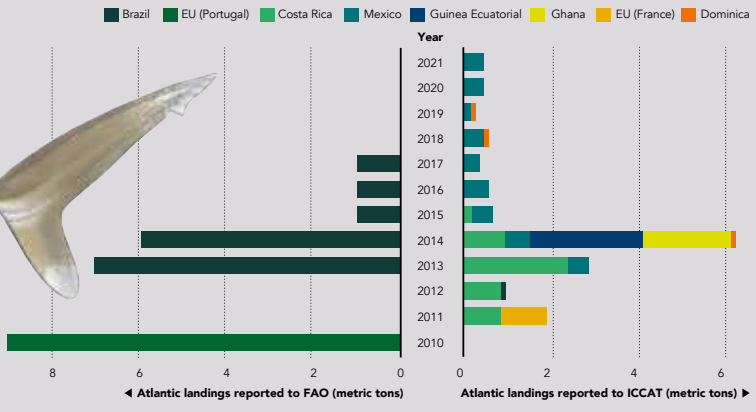
Sicklefin devil ray
Mobula tarapacana

IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted October 2016, took effect April 2017
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction	None
ICCAT CPCs with ICCAT landings (genus, 2010–2021)	(Only by family, not species): Curaçao, Guatemala, Spain, El Salvador *(all very low volumes in 2017 only)*
Only ICCAT CPCs with FAO landings (2010–2021)	Mauritania (*64t of "Mantas, devil rays, nei" in 2014 only), Spain (10t of "Devil Fish"*)
ICCAT CPCs with reported trade (2016–2021)	For genus-level *Mobula* spp: **Exporters:** PR China, Mexico **Importer:** USA (meat/medicine confiscated by the USA)

Oceanic whitetip shark
Carcharhinus longimanus

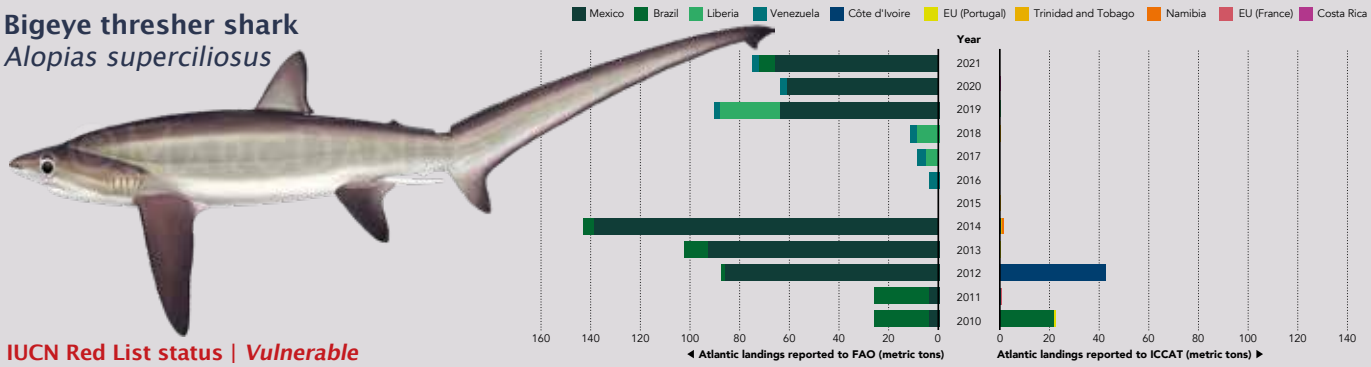




IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix II, adopted March 2013, took effect September 2014
ICCAT CPCs with CITES reservations	Japan and Guyana
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction, year adopted	Ban on retention, etc., 2010
Only ICCAT CPCs with landings (2016–2021)	Mexico (*3t reported to ICCAT, but not FAO*), Brazil (*2t, reported to FAO, but not ICCAT*)
ICCAT CPCs with reported trade (2013–2021)	**Exporters:** Senegal (*+ USA seized 25kg of fins from Mexico, 2019*) **Importers:** PR China, Chinese Taipei, Ghana

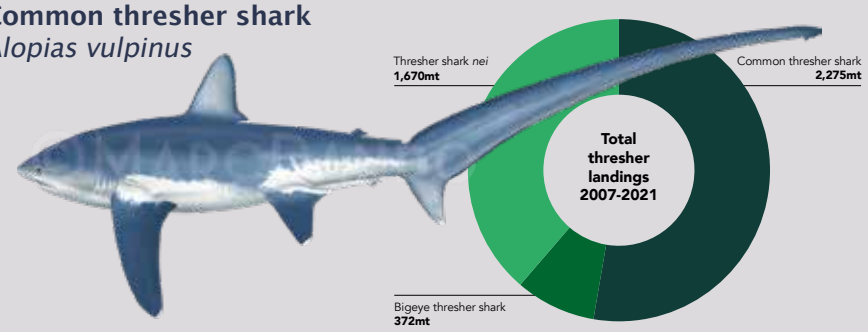
Bigeye thresher shark
Alopias superciliosus

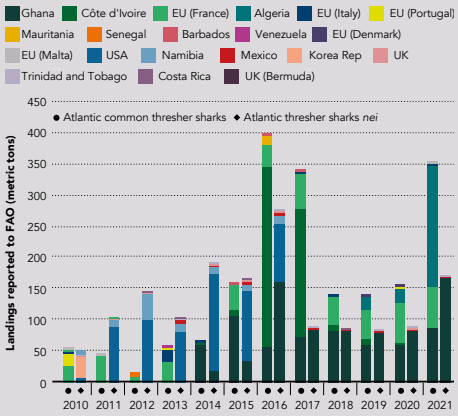


IUCN Red List status | *Vulnerable*

CITES listing, key dates	Appendix II, adopted October 2016, took effect October 2017
ICCAT CPCs with CITES reservations	Japan
ICCAT CPCs issuing public NDFs (Atlantic)	Costa Rica (positive, genus-level, 2020, 2023), Guatemala (positive, genus-level, 2021)
Current ICCAT restriction, year adopted	Ban on retention, etc., 2009
Top ICCAT CPCs reporting landings since 2010	Mexico (only to FAO), Côte d'Ivoire (only to ICCAT), Brazil (to ICCAT in 2010, then only to FAO)
ICCAT CPCs with reported trade (2016-2021)	**Exporters:** Senegal, Mexico; **Importer:** PR China

Common thresher shark
Alopias vulpinus

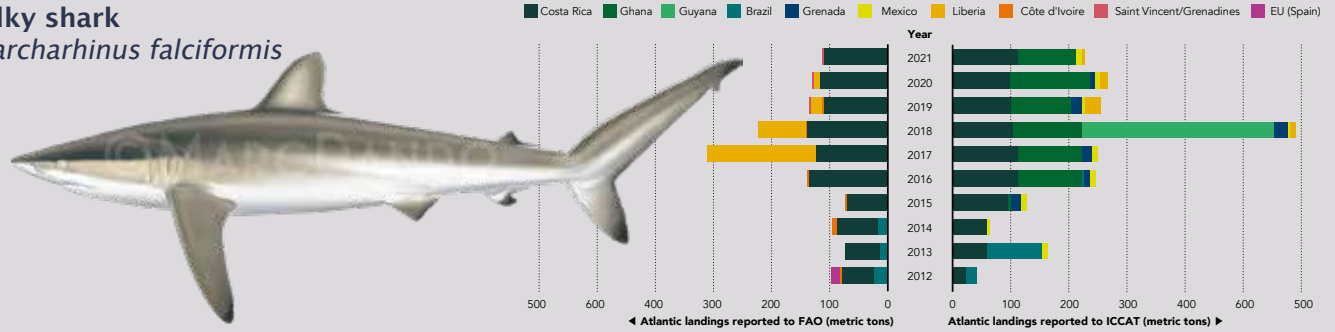




IUCN Red List status | *Vulnerable*

CITES listing, key dates	Appendix II, adopted October 2016, took effect October 2017
ICCAT CPCs with CITES reservations	Japan
ICCAT CPCs issuing public NDFs (Atlantic)	USA (positive, 2017), Costa Rica (positive, genus-level, 2020, 2023), Guatemala (positive, genus-level, 2021)
Current ICCAT restriction, year adopted	Directed fishing discouraged, 2009
Top ICCAT CPCs for landings (2012-2021)	Ghana, Côte d'Ivoire, EU, Algeria
ICCAT CPCs reporting trade (2016-2021)	**Exporters:** Republic of Korea, Costa Rica, Mexico, Nicaragua; **Importers:** Republic of Korea, USA, PR China

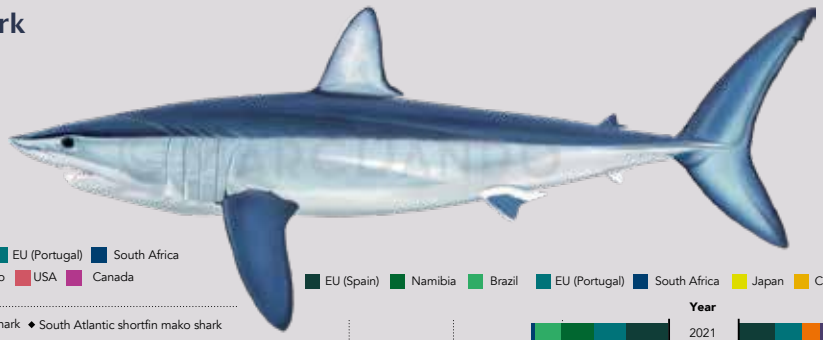
Silky shark
Carcharhinus falciformis

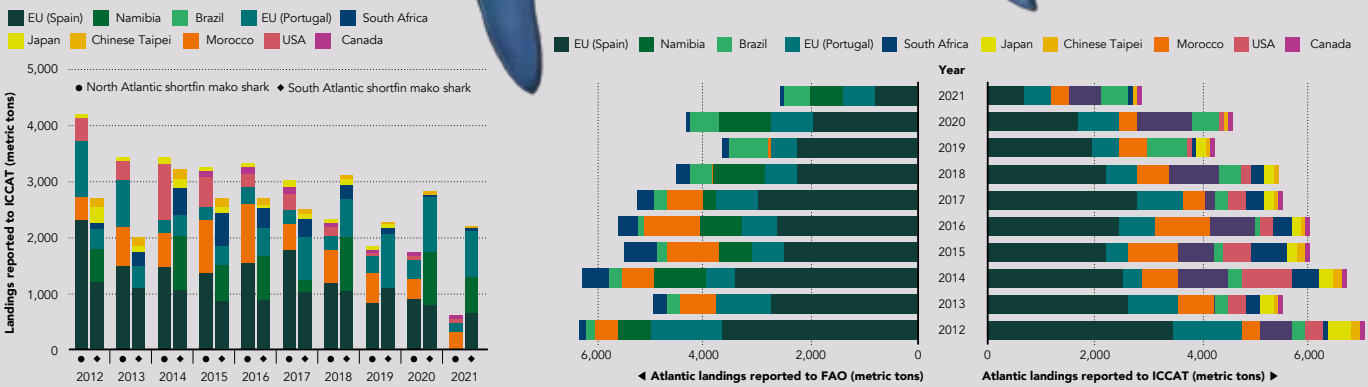


IUCN Red List status | *Vulnerable*

CITES listing, key dates	Appendix II, adopted October 2016, took effect October 2017
ICCAT CPCs with CITES reservations	Japan
ICCAT CPCs issuing public NDFs (Atlantic)	Costa Rica (positive, 2020), Guatemala (positive, 2021)
Current ICCAT restriction, year adopted	Ban on retention, etc., 2011 *(local consumption allowed for developing CPCs that report data, cap catches, and prevent export)*
ICCAT CPCs landing 50+ mt since 2012 (ICCAT)	Costa Rica, Ghana*, Guyana*, Brazil, Grenada*, Mexico*, Liberia *(*not reporting species-specific landings to FAO)*
ICCAT CPCs with reported trade (2016-2021)	**Exporters:** Costa Rica, El Salvador, Mexico, Republic of Korea, Guatemala, USA, Nicaragua, Senegal **Importers:** Chinese Taipei, PR China, Spain, Republic of Korea, Mexico, Guatemala, Italy, USA, Ghana

Shortfin mako shark
Isurus oxyrinchus

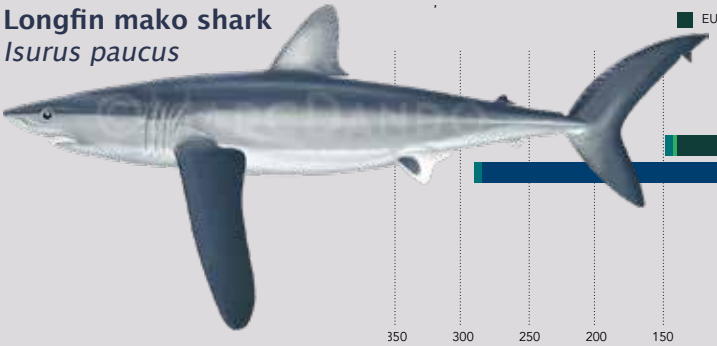


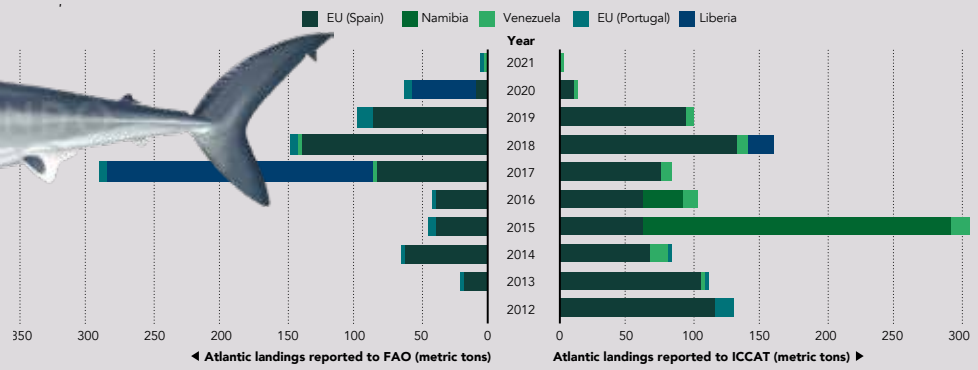


IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted August 2019, took effect November 2019
ICCAT CPCs with CITES reservations	Japan, Namibia, Norway, South Africa
ICCAT CPCs issuing public NDFs (Atlantic)	UK (negative, 2022), EU (negative, N. Atlantic, 2020, 2022 + S. Atlantic, 2022), Brazil (negative, S. Atlantic, 2023)
Current ICCAT restriction, year adopted	North Atlantic retention ban (2021), South Atlantic quota (2022)
Only ICCAT CPCs with landings (2016–2021)	**N. Atlantic**: EU–Spain, Morocco, EU–Portugal, USA, Canada, Japan **S. Atlantic**: EU–Spain, Namibia, Brazil, EU–Portugal, South Africa, Japan, Chinese Taipei
ICCAT CPCs with reported trade (2019–2021)	**Exporters**: South Africa, Japan, Mexico, Namibia, Morocco, Nicaragua, Senegal, Spain, Chinese Taipei, Panama, Trinidad & Tobago, Angola, UK, Republic of Korea **Importers**: Spain, Republic of Korea, Chinese Taipei, USA, PR China, France, Italy, Netherlands, Portugal, Senegal, Trinidad & Tobago, South Africa, Ghana, Japan

Longfin mako shark
Isurus paucus





IUCN Red List status | *Endangered*

CITES listing, key dates	Appendix II, adopted August 2019, took effect November 2019
ICCAT CPCs with CITES reservations	Japan, Namibia, Norway, South Africa
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction	None
Top 4 ICCAT CPC for landings (2012–2021)	EU (Spain & Portugal*), Namibia, Venezuela, Liberia *(*Portugal reporting to FAO but not ICCAT since 2014)*
ICCAT CPCs with reported trade (2019–2021)	**Exporters**: PR China, Spain, UK, USA

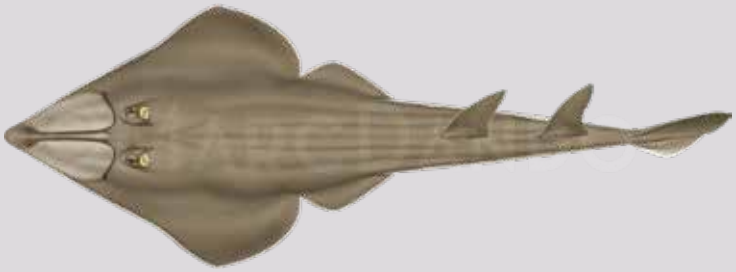
Rhino rays

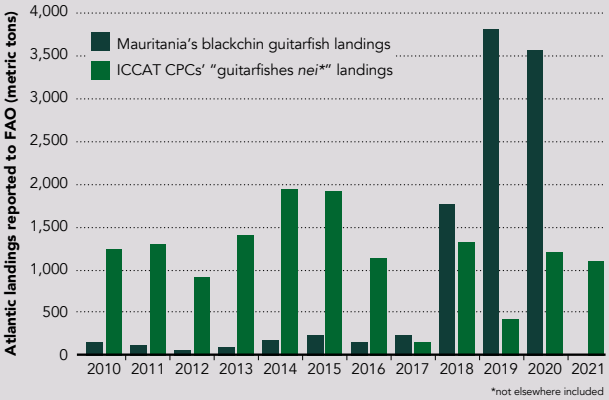
The sawfishes, wedgefishes, and guitarfishes of order Rhinopristiformes — collectively known as "rhino rays" — are not covered by ICCAT measures because they are coastal rather than oceanic.

Some ICCAT Parties do engage in the catch and/or trade of a few Atlantic sawfish, wedgefish, and giant guitarfish species, all of which are Critically Endangered. Wedgefishes and guitarfishes are listed on CITES Appendix II (for trade regulation) while the sawfishes are included in CITES Appendix I (which essentially bans commercial trade).

Common guitarfish
Rhinobatos rhinobatos

Blackchin guitarfish
Glaucostegus cemiculus

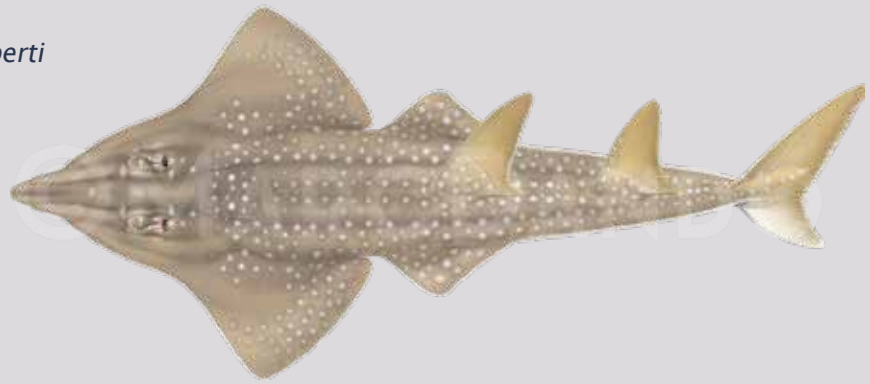




IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix II, adopted August 2019, took effect November 2019
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	None
Current ICCAT restriction, year adopted	None
ICCAT CPCs reporting landings (FAO)	Mauritania (species-specific), (Albania, Senegal, Côte d'Ivoire, Libya & Liberia report "guitarfish, nei" landings)
CPCs with reported commercial trade (2019-2021)	None

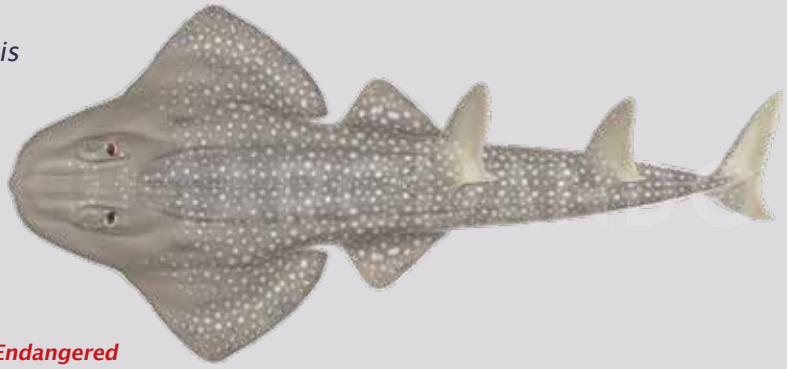
African wedgefish
Rhynchobatus luebberti



IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix II, adopted August 2019, took effect November 2019
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	None
ICCAT CPCs reporting landings (FAO)	None by species or even generally as "wedgefish"
ICCAT CPCs reporting exports (2019-2021)	Senegal

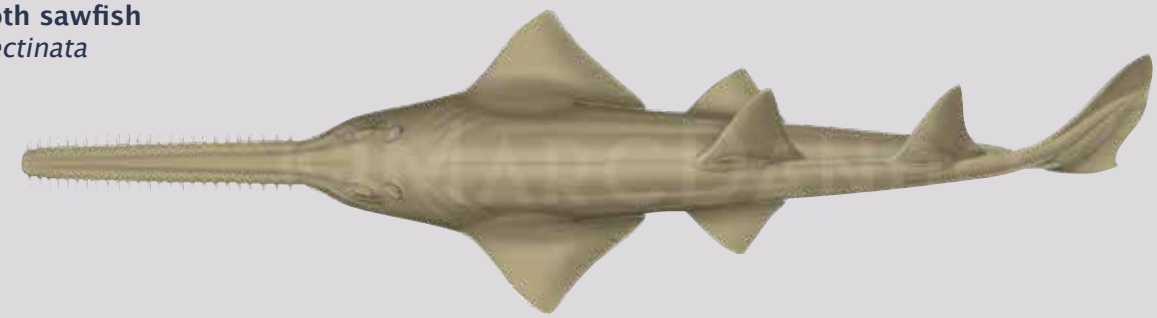
False shark ray
Rhynchorhina mauritaniensis



IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix II, adopted August 2019, took effect November 2019
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	None
ICCAT CPCs reporting landings (FAO)	None by species or even generally as "wedgefish" (Species' range may be restricted to Mauritania)
ICCAT CPCs reporting trade (2019–2021)	None

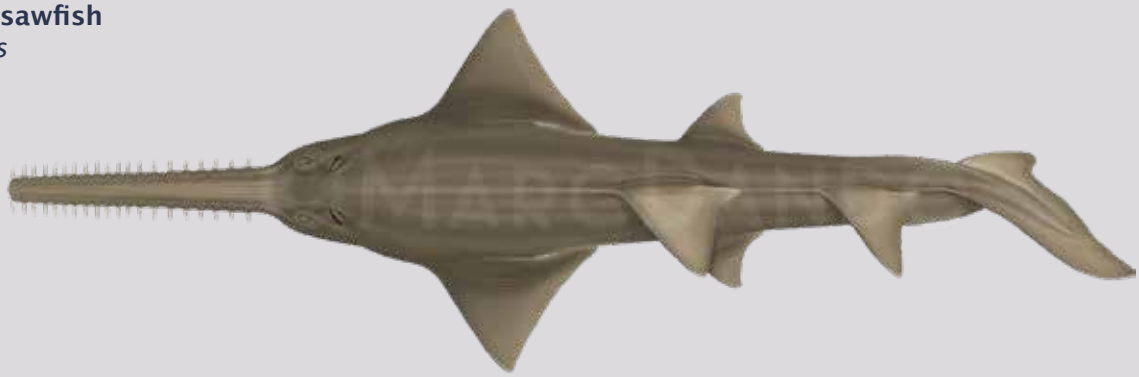
Smalltooth sawfish
Pristis pectinata



IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix I, adopted June 2007, took effect September 2007
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	N/A
ICCAT CPCs reporting landings (FAO)	Senegal (genus-level, 2010, 268t)
CPCs reporting commercial trade	None

Largetooth sawfish
Pristis pristis



IUCN Red List status | *Critically Endangered*

CITES listing, key dates	Appendix I, adopted June 2007, took effect September 2007
ICCAT CPCs with CITES reservations	None
ICCAT CPCs issuing public NDFs (Atlantic)	N/A
ICCAT CPCs reporting landings (FAO)	Senegal (genus-level, 2010, 268t)
CPCs reporting commercial trade	None

ABOUT CITES

CITES is a global agreement with 184 Parties aimed at ensuring that international trade does not threaten the survival of plants and animals. CITES Appendix I is reserved for the most endangered species and essentially bans commercial international trade. The only elasmobranchs listed on Appendix I are the sawfishes (all five species). Most CITES-listed species are included on Appendix II, which requires Parties to demonstrate that exports are legally and sustainably sourced, and to employ a permit system to track associated trade. Between 2002 and 2020, more than 40 elasmobranch species were added to Appendix II. (An additional 104 species were listed in November of 2023 but are beyond the scope of this analysis.)

Prior to issuing trade permits, national scientific authorities of exporting Parties must determine that the trade will not have a negative effect on the survival of the species through an assessment known as a "non-detriment finding" (NDF).

Particularly relevant to sharks is the extension of CITES regulation to the landing of listed species taken on the high seas, known as "introduction from the sea."

The Parties to CITES are collectively referred to as the "Conference of the Parties" (CoP). CITES listings are based on Parties' proposals and decided at meetings of the CoP every two to three years. CITES Parties have the opportunity (within 90 days of a listing) to unilaterally opt out of the associated obligations by declaring a "reservation."

CITES Reservations by ICCAT Parties

Of the 18 CITES Parties that took reservations on elasmobranch listings, seven are ICCAT CPCs. **Japan** has taken and maintained reservations on most of the Appendix II elasmobranch listings (including the 2023 inclusion of the blue shark). **Norway, Iceland,** and **Guyana** have four reservations each. The **Republic of Korea** has two. The mako listings have garnered the most reservations (10 including four ICCAT Parties: Japan, Norway, **Namibia**, **South Africa**). Norway and Japan report some trade in sharks despite taking reservations.

ABOUT ICCAT

ICCAT is a Regional Fishery Management Organization (RFMO) responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and adjacent seas. ICCAT has 52 Contracting Parties and five Cooperators. Cooperators are expected to abide by ICCAT measures and can have their status revoked if judged non-compliant. Contracting Parties and Cooperators are collectively known as "CPCs."

ICCAT Actions for CITES-listed Sharks

All of the shark measures adopted by ICCAT address CITES-listed species. Only eight CPCs mentioned CITES obligations in their 2022 ICCAT Compliance Committee Shark Check Sheets: **Barbados, Curaçao, EU (Portugal), Liberia, Morocco, Senegal, Costa Rica,** and **Guyana**.

ICCAT was the first RFMO to conduct population status and ecological risk assessments (ERAs) for sharks (beginning in 2004), ban shark finning (2004), prohibit retention of particularly vulnerable shark species (beginning in 2009), and establish population-wide international shark catch limits (for blue sharks in 2019). ICCAT has generally prohibited the retention (and related activities such as transshipment and landing) of bigeye threshers (2009), oceanic whitetip sharks (2010), most species of hammerheads (with exceptions, 2010), and silky sharks (with exceptions, 2011). A 2015 measure requires release of porbeagles brought to the boat alive ("to the extent practicable") and aims to prevent increased fishing. For the North Atlantic shortfin makos,

ICCAT PARTIES

Albania, Algeria, Angola, Barbados, Belize, Brazil, Canada, Cabo Verde, People's Republic of China, Côte d'Ivoire, Curaçao, Egypt, El Salvador, EU, France (St. Pierre and Miquelon), Gabon, Gambia, Ghana, Grenada, Guatemala, Guinea-Bissau, Equatorial Guinea, Republic of Guinea, Honduras, Iceland, Japan, Republic of Korea, Liberia, Libya, Mauritania, Mexico, Morocco, Namibia, Nicaragua, Nigeria, Norway, Panama, Philippines, Russian Federation, São Tomé e Príncipe, Senegal, Sierra Leone, South Africa, St. Vincent and the Grenadines, Syria, Trinidad and Tobago, Tunisia, Turkey, UK, Uruguay, USA, and Venezuela.

ICCAT COOPERATORS

Bolivia, Costa Rica, Guyana, Suriname, and Chinese Taipei.

Hammerhead sharks. © Shutterstock

ICCAT followed its 2017 stopgap measures with a temporary ban in 2021. A quota for South Atlantic shortfin makos was allocated to CPCs in 2022.

CITES Information Relevant to ICCAT Compliance

The CITES trade database does not yet reflect a complete picture of global shark and ray exports. Product volumes reported to date have been far lower than what would be expected based on catch data and seizure information; moreover, records do not reflect the diversity of countries or species otherwise known to be involved[5]. CITES Parties, at CoPs in 2019 and 2022, have directed the CITES Secretariat to investigate such mismatches.

A lack of CITES trade reporting for pelagic sharks, in particular, raises concerns about potential inadequacies with regards to Parties' implementation of CITES "introduction from the sea" (IFS) requirements. Whereas any specimen of CITES-listed sharks taken in areas beyond national jurisdiction falls under CITES regulation, they can be reflected in CITES trade records in different ways. If vessels land them in their own flag state, they should be reported as imports from the high seas. If landed in a different country, they should be reported as exports from the high seas. **Belize, Republic of Korea, Spain,** and **Portugal** report exports of high seas commercial landings of CITES-listed sharks.

If implemented well, CITES IFS can be mutually supportive and complementary to ICCAT measures, given that Parties approving any type of international trade under IFS are to:

> *(…) take into account whether or not the specimen was or will be acquired and landed:*
>
> *i) in a manner consistent with applicable measures under international law for the conservation and management of living marine resources, including those of any other treaty, convention or agreement with conservation and management measures for the marine species in question; (…)*[6]

More examination is needed to determine if the paucity of shark and ray international trade data in the CITES trade database reflects an effective reduction of fishing, a more temporary suspension of trade (with fishing and stockpiling continuing), shifts to domestic consumption, or unreported international trade in contravention with CITES obligations.

Nevertheless, CITES trade data and Parties' NDFs for shark and ray species can offer information to enhance ICCAT compliance processes. In turn, ICCAT's work on shark population status, catches, fishing practices, and compliance can be valuable for informing CITES Parties' NDFs and evaluations of CITES implementation. Greater transparency with respect to NDFs is recommended across the board. CITES does not require Parties to make their NDFs public but has repeatedly invited Parties to share shark NDFs regionally for shared populations and generally on the CITES website[7].

FAST FACTS | CITES NDFs by ICCAT CPCs (*details in text)

- Only seven ICCAT CPCs have posted at least some shark NDFs on the CITES website
- Only four ICCAT CPCs have publicly available *negative* NDFs for sharks
- 13 CPCs have reported commercial trade in CITES-listed sharks without a public NDF
- Only three CPCs have publicly available NDFs for more than one shark species.

To date, only seven ICCAT CPCs (**US, UK, Guatemala, Costa Rica, EU, Brazil,** and **Japan**) have posted at least some of their shark NDFs on the CITES website. **Canada, Panama,** and **Nicaragua** report working on or having issued NDFs for shark species but have not made details related to export justification publicly available. Thirteen ICCAT CPCs report commercial trade in CITES-listed sharks without publicly available NDFs. The **UK, EU, Brazil,** and **Costa Rica** appear to be the only CPCs with public, negative NDFs for CITES-listed sharks (the first three for shortfin mako, the last one for hammerheads). The USA, **Costa Rica,** and **Guatemala** are the only ICCAT CPCs to have produced publicly available NDFs for more than one shark species. Only **Spain, Ecuador, Belize, Republic of Korea,** and **Portugal** have reported commercial landings of CITES-listed sharks from the high seas as IFS.

CITES Reviews of Significant Trade

If there is sufficient concern among CITES Parties that unsustainable international trade in CITES Appendix II-listed species is continuing, Parties trading them can be selected for a Review of Significant Trade (RST) aimed at improving compliance for specific species-country combinations. A new CITES RST Management System launched by the CITES Secretariat in 2022 helps increase RST transparency and engagement by allowing governments and stakeholders to track progress for selected country/species combinations online.

The first elasmobranch/country RST combinations were agreed in June 2023 by the CITES Animals Committee and include the following combinations relevant to ICCAT. The reviews were justified by the species' endangered status and "sharp increases" in global and country specific trade (export volume in 2021 was more than triple the average of the preceding five years):

- **People's Republic of China (PR China), Mexico,** and **Nicaragua** with respect to scalloped hammerheads;
- **Mexico** with respect to great hammerheads; and
- **Senegal** with respect to oceanic whitetip sharks.

[5] Pavitt, A., Malsch, K., King, E., Chevalier, A., Kachelriess, D., Vannuccini, S. and Friedman, K. 2021. CITES and the sea: Trade in commercially exploited CITES-listed marine species. FAO Fisheries and Aquaculture Technical Paper No. 666. Rome, FAO.

[6] CITES Resolution Conf. 14.6 (Rev. CoP16), paragraph 3.

[7] See e.g. CITES Resolution Conf. 12.6 (Rev. CoP18)

For now, CITES shark trade data can be most illuminating within the ICCAT context for CPCs fishing only in the Atlantic (e.g., Senegal) because records of exports are not tied to regions. Over the next year, the RST process should shed light on ICCAT compliance questions regarding the percentage of hammerhead exports that Mexico and Nicaragua source from the Atlantic high seas (where ICCAT-dictated bans on retention or international trade should apply) versus the Pacific (where international restrictions are more lenient). A review of the selected Parties' responses and resulting recommendations is expected at the 2024 CITES Animals Committee Meeting. Amending the CITES trade reporting protocols to provide for reporting by population and/or ocean basin could provide similar information on other shark species and CPCs while improving the ability to evaluate compliance and population health overall.

The CITES trade report[8] that informed the selection of these species-countries combinations contained other issues of concern. Most notably, Costa Rica was identified as being responsible for 72% of silky shark exports reported globally. This species-country combination was not selected for RST at the 2023 Animals Committee meeting because the dataset was still deemed too short. This case may, however, be a strong candidate for the next round of RST in 2026.

Offering a broader perspective is a 2022 study[9] by TRAFFIC that reviews catch and trade of CITES-listed shark species on a global scale, largely on a presence/absence basis (rather than examining volume mismatches). The report highlights the lack of transparency around the implementation of associated obligations by Parties (particularly those with catch history prior to listings) and makes specific recommendations aimed at increasing confidence in the shark trade data, demonstrating international adherence to CITES requirements, and documenting the long-term effects of listings.

Inadequate Reporting

Lack of data with respect to shark fishing and trade is a primary and persistent hurdle to conservation noted in countless CITES and ICCAT documents. In these and many other realms, governments' reports are too often incomplete, inconsistent, late, or non-existent. The new CITES RST for sharks (described above) represents a crucial opportunity to improve our understanding of elasmobranch trade data and compliance with CITES listings. At the same time, ICCAT has been increasing its scrutiny of the implementation of shark-specific measures, including data reporting requirements, based on detailed "Shark Check Sheets" from CPCs (described below).

While non-reporting is an obvious problem, it is important to note the difficulties in determining if increased landings reflect higher fishing pressure or simply better reporting, and similarly, if lacking records are the result of compliance with restrictions or depletion of the population.

A closer look at Mexico's shark trade

The CITES trade database reveals a notable number of discrepancies associated with shark exports from Mexico, particularly with respect to fins destined for PR China and the Hong Kong Special Administrative Region (SAR). For example:

- In 2016, Mexico reported exporting 20,088 kg of smooth hammerhead (*S. zygaena*) fins to Hong Kong SAR. In the same record, Hong Kong SAR reports import of only 10,426 kg of fins;
- In 2020, Mexico reported only one 10,711 kg export of *S. zygaena* fins to PR China. The only 2020 import record for *S. zygaena* fins was made by Hong Kong SAR, which reported importing 5,223 kg of fins from Mexico, accounting for about half of the exports that Mexico report going to PR China; and
- Mexico has not yet reported 2021 shark exports, but eight records from Hong Kong SAR for that year show a total of 48,620 kg of fins from eight shark species (*A. pelagicus, A. superciliosus, A. vulpinus, C. falciformis, I. oxyrinchus, S. lewini, S. mokarran, S. zygaena*) imported from Mexico.

The majority of Mexico's substantial commercial export records for shark products report Hong Kong SAR or PR China as the destination. Noteworthy exceptions involve reports of Mexico exporting:

- 878 kg of smooth hammerhead fins to Chile in 2015; there is no import record by Chile;
- 133 kg of silky shark skins to the USA in 2019; the USA import record confirmed this amount exactly; and
- 164 kg of silky shark skins to the USA in 2020; there is no USA import record for this.

The 2023 agreement by the CITES Animals Committee to include Mexico's great hammerhead trade under the first Review of Significant Trade for sharks provides an excellent opportunity to shed light on these issues and develop strategies for improvement.

[8] CITES. 2023. Selection of new species/country combinations for review following CoP19. Prepared for the Compliance Review of Significant Trade in specimens of Appendix-II species. 32nd Meeting of the Animals Committee Geneva, 19-23 June 2023.
[9] Okes, N. and Sant, G. (2022). Missing Sharks: A country review of catch, trade and management recommendations for CITES-listed shark species. TRAFFIC.

Overview of ICCAT CPCs' Non-Detriment Findings (NDFs) for CITES Appendix II-Listed Shark and Ray Species

Note: *For the purposes of this analysis, NDFs are characterized as "public" if they are posted on the CITES website. Other NDFs may be publicly available through other means. * IFS = Introduction from the Sea.*

ICCAT CPC	NDF Status	NDF species	NDF year	Duration	Limits noted in NDF	Ocean	Commercial exports/IFS* reported to CITES?	Notes
Canada	Not public, positive	Porbeagle shark *(Lamna nasus)*	2014 2015	?	?	Atlantic	Yes	Reported at 2015 CITES Animals Committee meeting (AC28).
United States	Public, positive	Scalloped, great & smooth hammerheads *(Sphyrna lewini, S. mokarran, S. zygaena)*	2015 2017	Annual review intended	Based on domestic Atlantic fisheries management, including catch limits.	Atlantic	Yes	USA reports exports of scalloped and great (not smooth) hammerheads.
United States	Public, positive	Porbeagle shark *(Lamna nasus)*	2014 2017	Annual review intended	Based on domestic Atlantic fisheries management, including catch limits.	Atlantic	No	
United States	Public, positive	Common thresher *(Alopias vulpinus)*	2017	Annual review intended	Based on domestic Atlantic fisheries management, including catch limits.	Atlantic	No	
United States	Public, positive	Atlantic pygmy devil ray *(Mobula hypostoma)*	2018	6 specimens suggested as single event	Notes protocols for capture & captivity prior to export.	Atlantic	Yes	There are 3 USA records of live specimen exports of this species: 4 rays to China in 2018, 12 to France in 2018 & 6 to France in 2019. USA reported them as commercial trade while France reported imports under the zoo code.
United States	Public, positive	Bentfin devil ray *(Mobula thurstoni)*	2018	1 specimen, suggested as single event	Notes protocols for capture & captivity prior to export.	Atlantic	No	
United States	Public, positive	Oceanic manta ray *(Mobula birostris)*	2019	1 specimen, suggested as single event	Notes protocols for capture & captivity prior to export.	Atlantic	Yes	USA reported 1 export of 2 live mantas to France as commercial trade. France reported this import under the zoo code.
Costa Rica	Public, negative	Hammerheads (*Sphyrna* spp.)	2020	18 months	Discourages landings & export. Recommends size limit for scalloped hammerheads.	Atlantic & Pacific	Yes	
Costa Rica	Public, positive	Thresher sharks (*Alopias* spp.)	2020 2023	17 months	Recommends export quotas: 484t of bodies + 11t of dried fins.	Pacific	Yes	
Costa Rica	Public, positive	Silky shark *(Carcharhinus falciformis)*	2023	17 months	Recommends export quotas: 3Kt of bodies + 63t of dried fins.	Pacific	Yes	
Guatemala	Public, positive	Silky shark *(Carcharhinus falciformis)*	2021 2023	Review at 24 months	Calls for cap on fishing effort & exports (2021: 234t, 2023: 273t) for medium & large vessels. Suggests using 50% of that amount to account for not-yet-registered small-scale fleet.	Pacific	Yes	
Guatemala	Public, positive	Thresher sharks (*Alopias* spp.)	2021 2023	Review at 24 months	Calls for cap on fishing effort & exports (2021: 68t, 2023: 55t) for medium & large vessels. Suggests using 50% of that amount to account for not-yet-registered small-scale fleet.	Pacific	Yes	

ICCAT CPC	NDF Status	NDF species	NDF year	Duration	Limits noted in NDF	Ocean	Commercial exports/IFS* reported to CITES?	Notes
European Union	Public, negative	Shortfin mako *(Isurus oxyrinchus)*	2020 2022	Annual review	Calls for no imports or IFS.	North Atlantic	Yes (Spain, Portugal), including IFS	0 export/re-export quotas under consideration, would be reviewed annually
European Union	Public, negative	Shortfin mako *(Isurus oxyrinchus)*	2022	Indefinite	Calls for no imports, IFS, exports, or re-exports.	South Atlantic	Yes (Spain, Portugal), including IFS	
United Kingdom	Public, negative	Shortfin mako *(Isurus oxyrinchus)*	2022	Until declines reversed, recovery demon-strated	Recommends import ban. Retention ban in place.	Atlantic Mediter-ranean Indian Ocean	Yes	Spain reported commercial import of 16K shortfin mako bodies from UK in 2021. UK did not report the export.
United Kingdom	Public, positive	Shortfin mako *(Isurus oxyrinchus)*	2022	Unclear	Suggests limiting to average of estimated total annual catch from previous 5 years.	Pacific	Yes	
Brazil	Public, negative	Shortfin mako *(Isurus oxyrinchus)*	2023	Unclear	Threatened species status once updated will imply ban on retention, landing & commercialization, including export. Recommends similar bans under ICCAT + bycatch (mortality) mitigation, less shark gear, better fisheries data, more research, monitoring & effort control.	South Atlantic	No	Warns negative NDF may not be effective if other S. Atlantic fishing nations issue positive ones. Calls for RFMO measures & bilateral work with Uruguay & Argentina + wider action for S. America & Africa, perhaps regional sanctuary. Sustainability requirements include observers, size limits, selective gear, science-based quotas & satellite tracking.
Panama	Not public, negative	"Sharks and rays"		Unclear	Retention ban in place.	?	Yes	Reported in 2017 (AC29) a 2015 negative NDF for "sharks and rays." Only commercial trade records involve 2020 shortfin mako export & re-export (to Chinese Taipei & Republic of Korea).
Mexico	Reportedly positive & available but not found	?	?	?	?	?	Yes	Publicized 2021 guidance to assist in shark NDF preparation and a 2022 report on conservation of CITES-listed Mexican sharks.
Nicaragua	Not public, negative	?	?	?	?	?	Yes	Reported in 2015 (AC28) work towards harmonizing Sphyrna & "rays" NDFs within "System for Integration of Central America." NDFs may have been issued "on a precautionary basis" but unclear.
Japan	Public, positive	Shortfin mako *(Isurus oxyrinchus)*	2021	Re-confirmed in 2023	Explains that sustainability is assumed under current fishing activities based on stock status & that negative NDF is possible if species no longer meets criteria. Notes lack of catch limits.	North Pacific	Yes	Notification response for AC31 (2021) notes lack of NDFs for elasmobranchs other than shortfin mako due to insufficient data. Reservation in effect.
Japan	Public, positive	Shortfin mako *(Isurus oxyrinchus)*	2023	Indefinite	Notes lack of regional catch limits.	North Pacific	Yes	Reservation in effect.

Landings

Shark fishing countries vary with respect to the types of sharks they catch because fisheries, gear, and markets vary. Some nations may support a few large vessels fishing on the high seas for species managed by ICCAT while others host vast fleets of small boats. Widespread inadequacies with catch reporting greatly hinder elasmobranch population assessment, compliance monitoring, and therefore conservation. Ideally, ICCAT CPCs should be reporting all of their landings and discard data for ICCAT-managed species, including coastal catches, to ICCAT. Countries' data submitted to FAO should cover many more elasmobranch species than are covered by ICCAT, but data on ICCAT-managed populations should match that sent to FAO. Examination of ICCAT and FAO elasmobranch catch data reveals important reporting gaps.

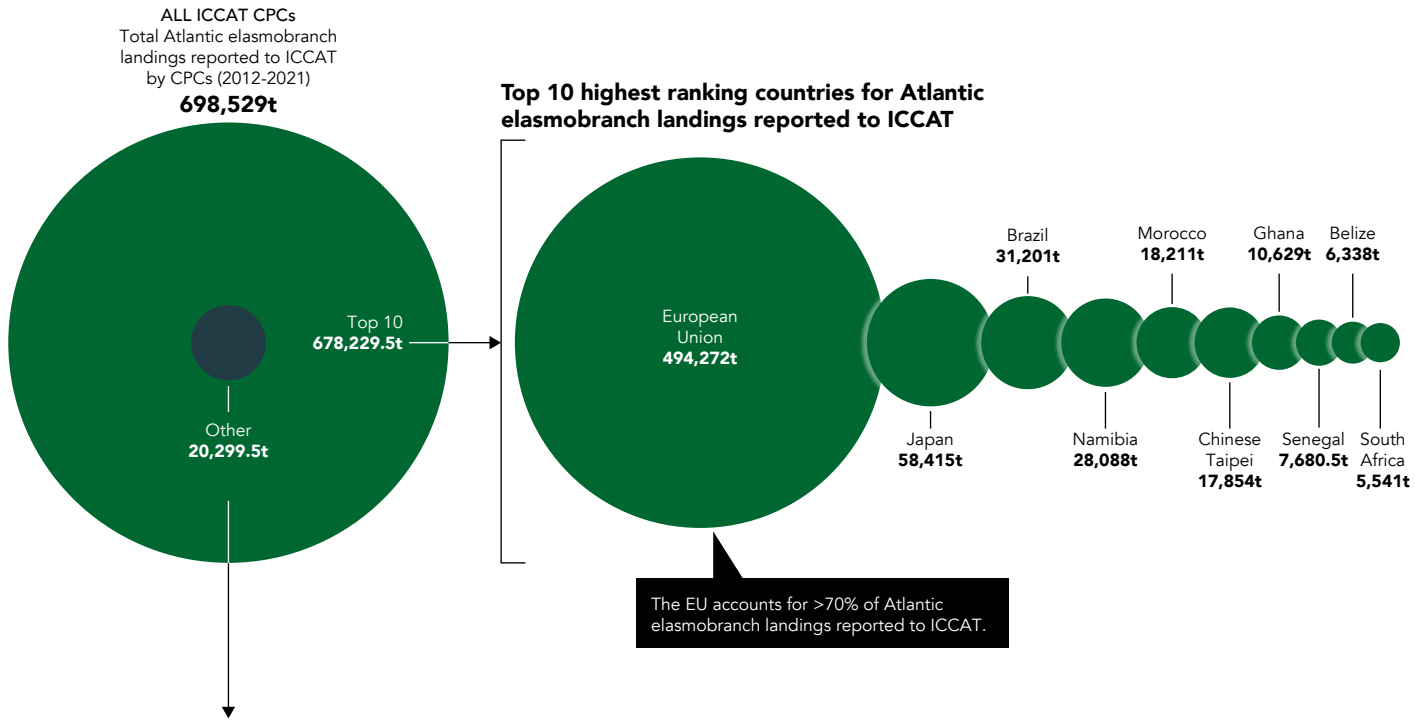
The EU is the top ICCAT CPC for elasmobranch fishing no matter how one slices the data. Even with serious under-reporting of discards, EU shark and ray catches (primarily from just two Member States: Spain and Portugal) reported to FAO exceed the total of those reported by the next eight ranking ICCAT CPCs. In terms of ICCAT reports, EU elasmobranch landings are higher than those reported by all other ICCAT CPCs *combined*.

In addition to the EU, countries ranking in the top 20 ICCAT CPCs with respect to elasmobranch landings reported to both ICCAT and FAO include **Japan, Brazil, Namibia, Morocco, Senegal, Chinese Taipei, Ghana, USA, Côte d'Ivoire**, and **the Republic of Korea.**

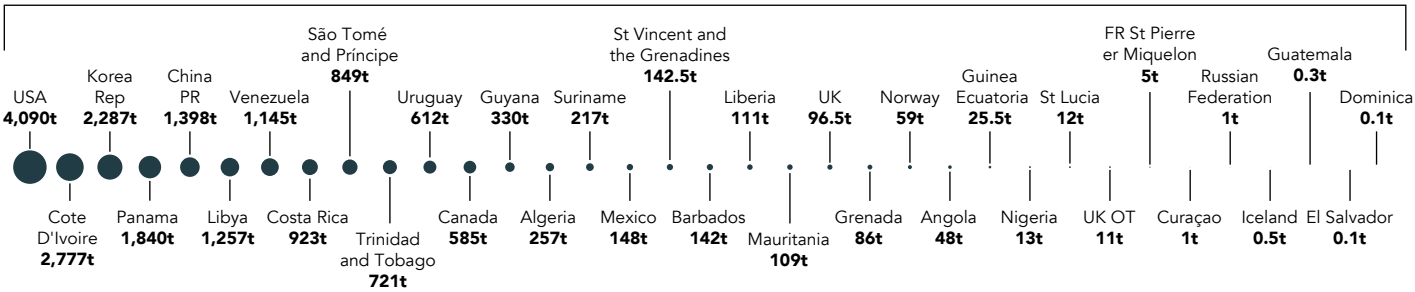
Countries with significant discrepancies between ICCAT and FAO elasmobranch reporting include the **People's Republic of China (PR China), Spain, Portugal,** and **Liberia**.

Nigeria ranks second among ICCAT CPCs for overall elasmobranch landings reported to FAO but not even in the top twenty with respect to ICCAT shark species, owing to significant coastal fisheries as well as inadequate ICCAT reporting. A similar story can be told for several other African countries that rank among the top 20 ICCAT CPCs for elasmobranch catch reported to FAO, including **Sierra Leone** (7th), **Angola** (12th), **Mauritania** (16th), **Guinea** (17th), and **Egypt** (18th).

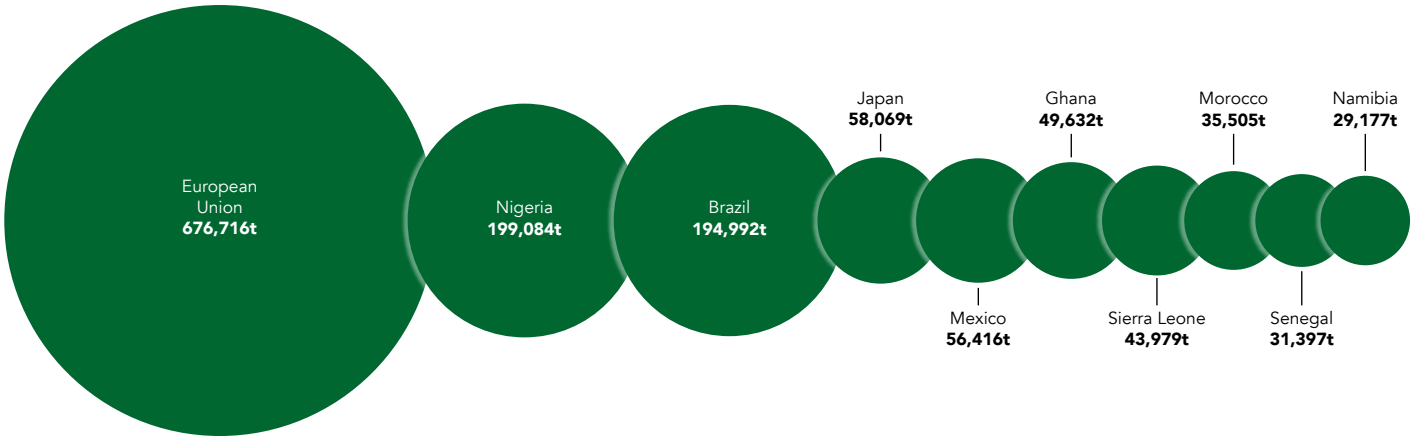
Elasmobranch landings reported to ICCAT by CPCs (2012–2021)
EU leads with landings exceeding all other nations combined.



Additional ICCAT CPCs reporting elasmobranch landings to ICCAT (in descending order of magnitude).



Top 10 ICCAT CPCs reporting Atlantic elasmobranch landings to FAO (2012–2021)
Spotlight on the primary contributors shaping the documentation landscape of Atlantic elasmobranch fisheries.



Coastal catches commonly reported to FAO but not ICCAT include CITES-listed Atlantic elasmobranchs, such as hammerheads (that should be reported to ICCAT regardless of where they were caught) and rhino rays.

Norway ranks in the top 20 ICCAT CPCs reporting elasmobranch landings with respect to FAO, but not ICCAT. Nearly all of this catch is made up of skates and rays. The **USA** ranks high in both categories; catches reported to FAO are dominated by coastal dogfish and skates, while ICCAT catch reports include a significant amount of discards (reflecting compliance with reporting requirements).

Landings reported by **Belize, South Africa, Panama, PR China, Libya, São Tomé and Príncipe,** and **Costa Rica** put them in the top 20 shark fishing ICCAT CPCs with respect to ICCAT reports but not FAO, reflecting a focus on pelagic sharks and likely inadequacies in ICCAT reporting.

Discards

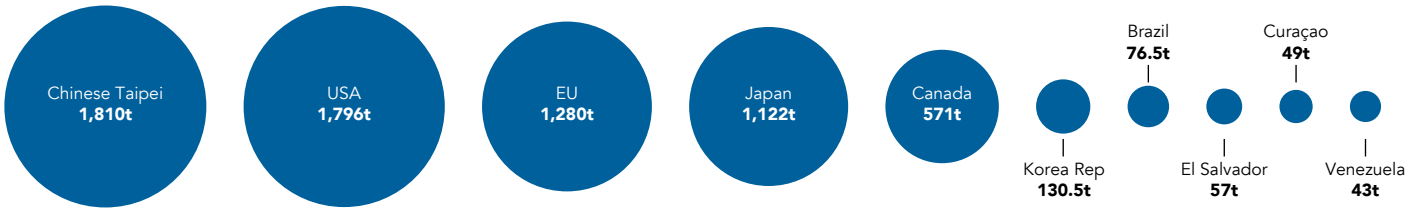
Monitoring the amount of sharks and rays discarded in fisheries is essential for accurate assessment of populations and the effectiveness of conservation measures. The mandate for countries to report elasmobranch discards is much clearer under ICCAT than FAO. Nevertheless, the vast number of ICCAT CPCs – including five that rank in the top ten for ICCAT shark landings (**Namibia, Morocco, Ghana, Senegal,** and **Belize**) – claim to have no discards (reporting either zeroes or leaving columns blank).

Despite ICCAT measures that ban the retention or encourage the release of at least nine shark species (since 2009), only six ICCAT CPCs report more than 100t of shark discards over the last decade (in descending order of magnitude): Chinese Taipei, USA, EU, Japan, Canada, Republic of Korea. Not surprisingly, low-capacity countries have the worst record in terms of reporting discards, but they are also the CPCs most likely to use all that is caught. (Relevant opportunities for improvement are discussed in the capacity building section).

Discards reported by the EU, the longtime, leading CPC for shark landings (by far) would be expected to greatly exceed those reported by the 11th ranked **USA**, and yet they do not (1796t vs. 1280t, 2012–2021). **Morocco**'s complete lack of shortfin mako discards has attracted scrutiny as the country consistently ranked among the top CPCs in terms of North Atlantic landings for a decade before the 2021 ban.

ICCAT-affiliated scientists are increasingly underscoring the importance of reporting discards (as well as the condition of released animals), especially for mako sharks.

Top 10 ICCAT CPCs for reporting elasmobranch discards to ICCAT (2012–2021)
ICCAT CPCs are required to report discards to ICCAT but few CPCs do and there is significant under-reporting.



ICCAT Shark Check Sheets

In 2016, in recognition that sharks were getting insufficient attention during ICCAT Compliance Committee discussions, ICCAT agreed to institute special "Shark Check Sheets" to elicit from CPCs information about domestic implementation of the various shark measures. The first round of submissions occurred in 2017. In 2018, the forms and associated guidance were revised to reflect new measures and provide more detail regarding proper reporting protocols as well as deadlines. In 2019, ICCAT began a process to dedicate focused time during every other annual Compliance Committee meeting to carefully evaluate Shark Check Sheet responses and address inadequacies by individual CPCs, specifically and directly. Although the 2021 "deep dive" into Shark Check Sheets was truncated due to COVID-19, focused discussion is planned for the November 2023 meeting and likely thereafter every two years for the foreseeable future. In those years, all CPCs are required to submit their forms and are expected to participate in the review as a matter of priority. In off years, CPCs that have complied well with reporting requirements in the past and have no major updates regarding regulations or other domestic developments are not required to submit a Shark Check Sheet, but rather to simply affirm that the information remains unchanged and valid.

There was an overall increase in the number, clarity, and detail associated with the Shark Check Sheets between 2019 and 2022. Nevertheless, analysis of the 2022 Shark Check Sheets reveals that many CPCs continue to fall far short of implementation and reporting requirements and/or offer responses that are too often vague, contradictory, and otherwise inadequate. These persistent problems seriously hinder compliance monitoring and, in turn, further jeopardize shark population health.

Eleven ICCAT CPCs submitted their 2022 Shark Check Sheets late. Most concerning is the failure of eight CPCs to submit them at all: **Angola, Côte d'Ivoire, Gambia, Grenada, Guinea Bissau, Guinea, Mauritania,** and notably **Namibia**, which ranks fourth in shark landings reported to ICCAT.

Only eight ICCAT CPCs mentioned CITES obligations in their 2022 ICCAT Compliance Committee Shark Check Sheets: **Barbados, Curaçao, EU (Portugal), Liberia, Morocco, Senegal, Costa Rica,** and **Guyana**.

Many CPCs still lack binding domestic measures to implement ICCAT shark Recommendations and/or continue to fail to report on such policies in sufficient detail. The following CPCs have extensive gaps with respect to citing and/or explaining relevant domestic shark regulations: **Barbados, Côte d'Ivoire, Curaçao, El Salvador, Ghana, Honduras, Liberia, Nicaragua, Nigeria, São Tomé e Principe, Trinidad and Tobago, Costa Rica, Guyana, Suriname, St. Vincent and the Grenadines**, and **Venezuela**.

In addition, a great number of CPCs, despite repeated guidance to the contrary, continue to include invalid excuses in order to avoid submitting the required information:

- 43% of CPCs (21 of 49) submitted answers that were contradictory, vague, and insufficiently detailed, to understand if corresponding domestic management in in place;

- 43% of CPCs also continue to claim "no target fishing" or "no fishing" for at least one species, even though the Compliance Committee Chair has been notifying CPCs for several years that these responses are not acceptable. In particular, **Algeria, Cabo Verde, St. Pierre et Miquelon, Gabon, Guatemala, Guinea Equatorial, Senegal, Sierra Leone,** and **Suriname** use this excuse extensively;

- 22% of CPCs (11 of 49) claim that at least one managed shark species does not occur or is 'not caught' in their waters as a reason to omit information, even though the SCRS has yet to confirm any CPC exemptions on this basis: **Algeria, Barbados, Brazil, Ghana, Honduras, Iceland, Norway, South Africa, Tunisia, Costa Rica, Guyana**[10];

- several CPCs such as **Guatemala, Honduras, Nigeria, Philippines,** and **Bolivia** report that they have no ICCAT vessels or do not fish in the Convention area (another unacceptable response).

Only 12 CPCs reported plans to increase observer coverage and/or electronic[11] monitoring systems on longliner vessels to ICCAT's agreed level of 10%: **Canada, PR China, EU, Japan, Mexico, Nigeria, Philippines, St. Vincent and the Grenadines, Sierra Leone, Tunisia, USA,** and **Chinese Taipei**.

[10] Two Parties (Norway, Tunisia) have made an effort to submit this request officially for consideration.
[11] SVF TO INSERT SOMETHING ABOUT NGO TUNA FORUM HERE

Retention Ban Exceptions for Hammerheads and Silky Sharks

CPCs' reports regarding implementation of ICCAT measures for hammerhead (Rec. 10-08) and silky sharks (Rec. 11-08) and associated scrutiny by the ICCAT Compliance Committee have been seriously insufficient for more than a decade, particularly with respect to information on how the CPCs claiming exemptions are meeting the associated conditions to prevent catch increases and international trade.

Table 1 highlights a range of concerns associated with compliance with ICCAT's hammerhead and silky shark measures, as revealed through CPCs' responses in the Shark Check Sheets. Problems range from non-reporting (e.g., Côte d'Ivoire) to answers that are contradictory (e.g., Ghana claiming to be both implementing a ban and exempt from it) and/or misleading (e.g., Mexico citing a shark management plan that has no hammerhead or silky shark-specific measures). Senegal deflects relevant export questions by declaring that trade is controlled by the nation's environmental authorities, thereby underscoring one of the central drivers of this analysis. In several cases, landings are reported but export is not, which suggests domestic consumption (given the CITES requirement to report exports and re-exports). Conversely, Senegal reports exports but no landings of silky sharks, indicating a violation of the ICCAT measure as well as the possibility that specimens are being imported from other CITES Parties without proper documentation. Costa Rica's poor Shark Check Sheet reporting with respect to hammerheads is somewhat negated by new national bans on landings and exports (as well as their public NDF), but its top ranking for silky shark landings warrants greater exploration of trade records. As discussed in several other sections, these issues are complicated by the lack of ocean source information in CITES trade reports and separate management arrangements for coastal fisheries.

In-depth discussion of these issues is planned for the short-term. In the broader context, however, considering that both compliance and population status are exceptionally poor, allowing exemptions to continue fishing these vulnerable species seems very difficult to justify.

Table 1: ICCAT CPCs of particular concern regarding compliance with ICCAT and/or CITES obligations for hammerhead and/or silky sharks

	Domestic *Hammerhead* retention ban reported to ICCAT?	Domestic *Hammerhead* fishing limits or trade ban reported to ICCAT?	*Hammerhead* landings reported to ICCAT since 2011?	Commercial *Hammerhead* exports reported to CITES?	Domestic *Silky Shark* retention ban reported to ICCAT?	Domestic *Silky Shark* fishing limits or trade ban reported to ICCAT?	*Silky Shark* landings reported to ICCAT since 2012?	Commercial *Silky Shark* exports reported to CITES?
Ghana	Claims adherence to ban (without regulations) but also claims exemption	None in place	Yes (ranks 1st)	No	Claims adherence to ban (without regulations) but also claims exemption	None in place	Yes	No
Senegal	Yes	Export limit deferred to Environment Ministry	Yes (ranks 2nd)	Yes (only smooth)	No	Export limit deferred to Environment Ministry	No	Yes (2021)
Costa Rica	Claimed exemption but ban has since been adopted	No, but landings/ export ban has since been adopted	Yes, through 2021	Yes, but 2000 negative NDF took effect in 2021	No (claims exemption)	No (claims NA)	Yes (ranks 1st)	Yes (ranks 1st, % Pacific unclear)
Mexico	Claims adherence to ban generally but also claims exemption	No species-specific limits cited	Yes	Yes, including estimated 385t Atlantic *S. mokarran* (2021-2023)	Claims adherence to ban generally but also claims exemption	No species-specific limits cited	Yes, 4-10t annually since 2013	Yes, but reportedly all Pacific
Côte d'Ivoire	No 2022 Shark Check Sheet submitted	No 2022 Shark Check Sheet submitted	Yes, every year 2011—2020	No	No 2022 Shark Check Sheet submitted	No 2022 Shark Check Sheet submitted	Yes, most years since 2012	No

Information is based on 2022 ICCAT Compliance Committee Shark Check Sheets, the CITES trade database, and Mexico's NDF guidance document. Unlike ICCAT's measures for bigeye thresher and oceanic whitetip sharks (that clearly prohibit retention), ICCAT's "bans" on hammerheads (2010) and silky sharks (2011) allow exemptions for local consumption in developing countries if landings are reported, catches are capped, and international trade is prevented. The international trade ban condition has become increasingly easier to evaluate since the species were listed under CITES. Appreciating the gaps in these species' protections (and the fishing mortality that continues despite what many perceive as "bans") is a key step toward strengthening measures and reversing declines.

CAPACITY BUILDING

Insufficient financial, technical, and legal capacity, particularly in developing countries, is a persistent barrier to effective elasmobranch conservation, hindering both implementation and enforcement of associated policies. CITES and ICCAT — along with other RFMOs, FAO and various aid organizations, foundations, and NGOs — should continue to make capacity building and associated outreach a priority.

There is a particular need for knowledge-sharing with respect to the development of elasmobranch regulations and NDFs as well as tools to identify catches and products by species. Greater discussion of opportunities to enhance such assistance is offered in a broader publication[18] by the authors and in many resources available on the IUCN Shark Specialist Group website. Specific to ICCAT are several curious landings reports from **El Salvador**, **Curaçao**, and **Guatemala** of bigeye threshers, porbeagles, hammerheads, and oceanic whitetip sharks only in 2017. This year is also the only year with records of **Panama** discarding these same shark species and the start of a three-year period when **Ghana** reports landings of threshers and silky sharks. As mentioned above, the vast majority of ICCAT records (mostly discards) for mobulids were reported in 2017 by several CPCs including Curaçao, El Salvador, Guatemala, and Panama.

This data may be related to an ICCAT-funded capacity building project[19] to evaluate artisanal fisheries targeting sharks in Caribbean and Central American countries. The associated report demonstrates the benefits of investing in capacity building for improved fisheries data while heightening concern about unreported exploitation in other years.

Scalloped hammerhead. © Andy Heitsch/Shutterstock

GAPS BY KEY SPECIES

The following findings address issues for highly traded, threatened elasmobranchs that are either subject to ICCAT measures (oceanic whitetip sharks, bigeye threshers, silky sharks, and hammerheads) or in need of them (mobulid rays and common threshers).

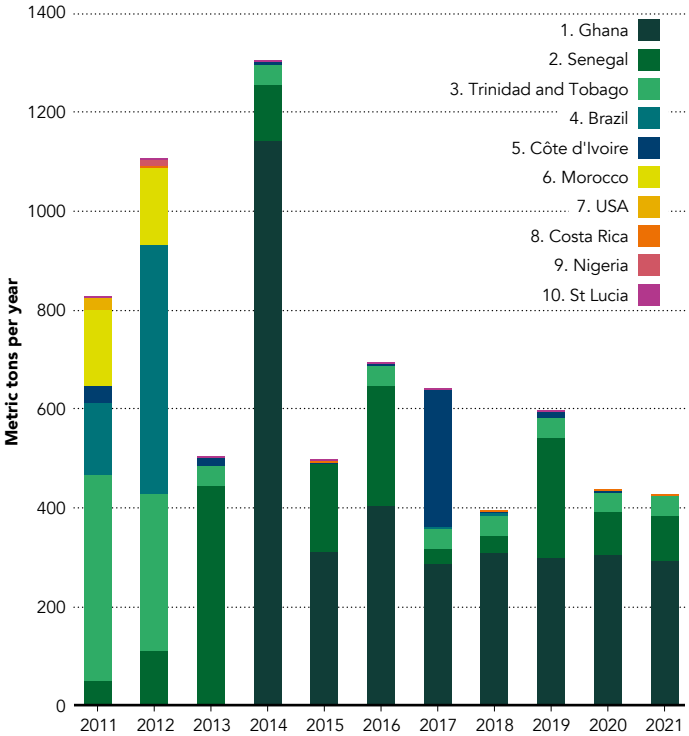
ICCAT's first two bans – for bigeye threshers and oceanic whitetip sharks – are relatively broad and simple. In contrast, exceptions to the hammerhead and silky shark bans that allow developing CPCs to opt out – if they report and try not to increase landings while preventing international trade – have proven problematic.

Hammerhead Sharks (*Sphyrna spp.*)

Scalloped and great hammerheads have long been recognized as exceptionally threatened shark species and, accordingly, have been prioritized by conservationists and governments. One particular conservation challenge for hammerheads stems from their semi-pelagic nature and resulting capture in both coastal and pelagic fisheries. High seas catches should be addressed by RFMOs while those from domestic waters tend to be managed separately. As a result, most governments report only a fraction of their total hammerhead landings to ICCAT (as opposed to FAO), especially when taken in artisanal fisheries and/or demersal gear. Moreover, while the CITES listing is generating important data regarding trade

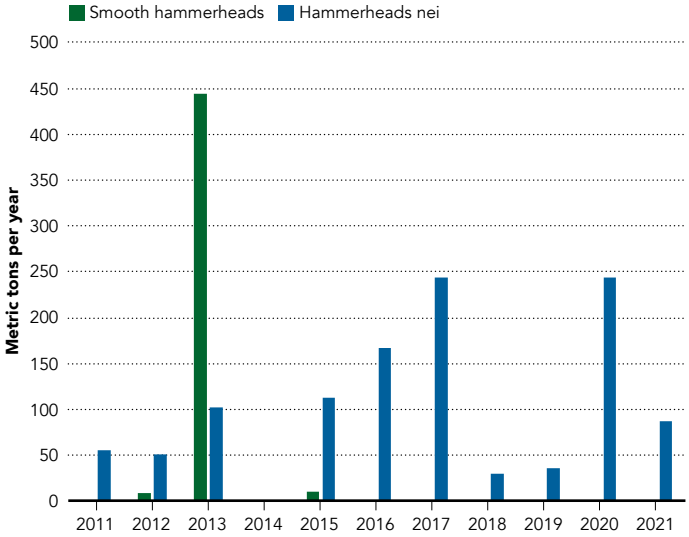
Total hammerhead landings reported to ICCAT since the ICCAT hammerhead measure (2011–2021)

The 2010 hammerhead "ban" allows exceptions for developing countries if they report and try not to increase landings while preventing international trade.



Atlantic hammerhead landings reported to ICCAT by Senegal (2011–2021)

Senegal reported hammerhead landings by species (smooth) a decade ago but has since reverted to a problematic catch-all reporting category (nei - not elsewhere included). Senegal's only reported commercial hammerhead exports are recorded as *Sphyrna zygaena* (smooth, 2015).



in exceptionally valuable hammerhead fins, export records are tied to countries, not ocean regions. As such, it is difficult to use RFMO measures (which vary across the globe) to evaluate the legality of the fishing operations from which the shark products originated. These data gaps seriously complicates efforts to monitor compliance and effects of the ICCAT measure.

Overall hammerhead landings reported to ICCAT have decreased since the adoption of the hammerhead measure. Three CPCs – Trinidad and Tobago, Senegal, and Ghana – are responsible for more than 6000t of the nearly 7500t of landings reported since 2010 (usually by genus). These countries take different approaches to accounting for the exploitation.

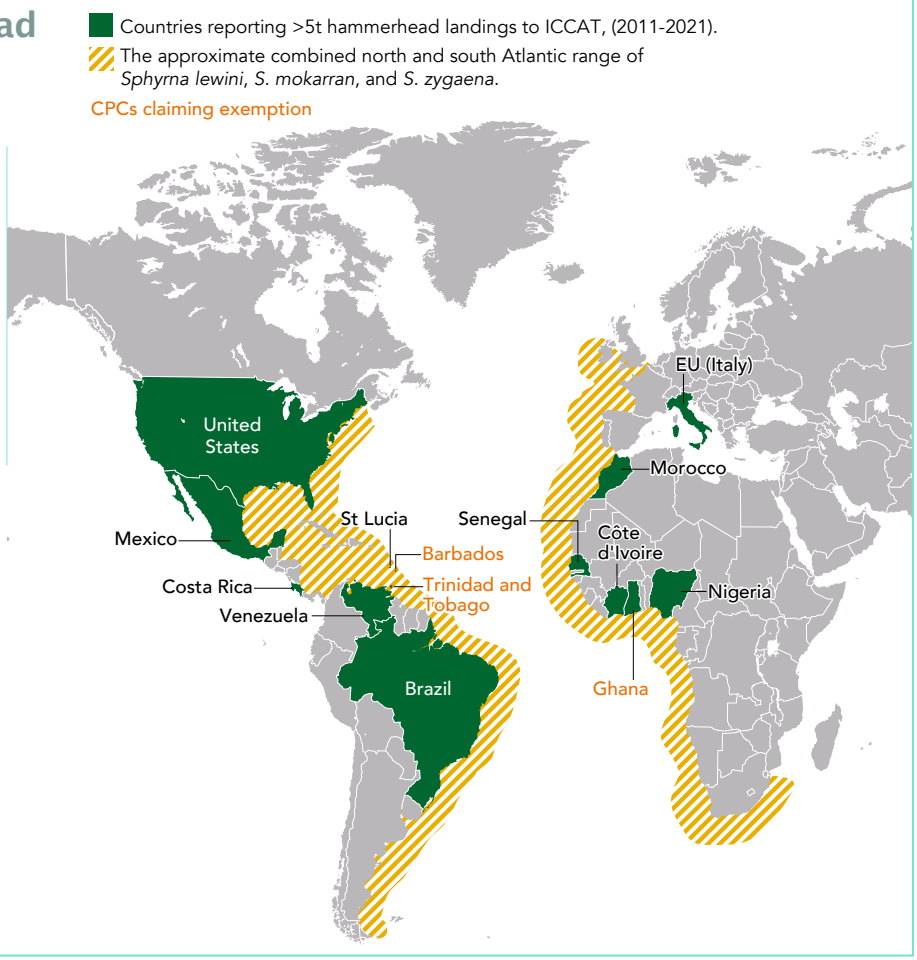
Approximately 45% of ICCAT hammerhead landings are attributed to **Ghana**, with more than 1000t reported in 2014 and about 300t every year since. On its ICCAT Shark Check Sheet, Ghana answers "Yes" to questions about implementing both the ban and its exceptions, while admitting to a lack of domestic regulations. There are no CITES reports of Ghana exporting hammerheads or introducing them from the sea. For compliance with CITES, all that catch would have to come from national waters and be used for domestic consumption.

Senegal, which ranks second among ICCAT CPCs for hammerhead landings since the ICCAT measure took effect, states in its Shark Check Sheet that it is implementing the ban, that exemption is not applicable, and "it is prohibited to fish for these sharks." Senegal cites a specific decree banning hammerhead retention and sale, while noting that entry of CITES-listed species into the international market is controlled by the Ministry of the Environment. Nevertheless, Senegal reported 444t of smooth hammerhead landings in 2013 before reverting to genus level records that

CPCs' Atlantic hammerhead landings since ICCAT measure (ban with exceptions)

Mapping the range of Atlantic hammerheads against the CPCs that continue to land them (despite a measure widely touted as a ban) reveals that the oft-overlooked exceptions essentially amount to the rule. To make matters worse, the two of the most landed hammerhead species have been assessed by IUCN as Critically Endangered. These circumstances argue for immediate revocation of exceptions to the ICCAT ban as well as urgent improvements in domestic management of coastal fisheries.

In the meantime, all entities should end the misleading suggestions that this measure is a straightforward ban.



have since fluctuated between about 30t and 243t annually. Senegal reported exports of approximately 10t (converted using FAO factors for meat and fins) of smooth hammerhead fins in 2015[12], the year that the CITES listing for the species came into force. While the species-specific reporting is commendable, and Senegal may well exempt coastal fisheries from its hammerhead ban, it is hard to imagine how such exports can be deemed sustainable.

Trinidad and Tobago takes an exemption to ICCAT's hammerhead ban that allows for substantial landings (3rd for tonnage among ICCAT CPCs). A national hammerhead export ban satisfies the ICCAT retention ban exemption condition and is backed up by a lack of exports reported to CITES. (Trinidad and Tobago does report hammerhead imports from the high seas, not as IFS.) Consistent landings of about 40t a year suggest catch might be limited, but no such restrictions are noted. In fact, the country reports that its outdated fisheries legislation does not allow for development of regulations to comply with many ICCAT measures.

Côte D'Ivoire is notable for claiming to have implemented the hammerhead ban yet regularly reporting significant landings since its adoption. Most years show ICCAT landings of 10t or less, but nearly 275t were reported in 2017. This may be another case of separate management for pelagic and coastal fisheries.

Barbados stands out for its justification of a hammerhead ban exemption, clearly stating its status as a developing state, reporting about 3t of hammerhead landings between 2015 and 2017 with no marked increase, and noting CITES obligations with respect to its lack of export.

In 2012, more than a year after adoption of the ICCAT hammerhead ban, **Brazil** reported more than 500t of hammerhead landings (the highest annual amount for any CPC in ICCAT records since 2011). In 2013, the USA confiscated 104 scalloped hammerhead fins exported from Brazil without the required trade documentation[13]. This incident took place before the extended implementation deadline for the scalloped hammerhead listing (that Brazil co-sponsored), but about two years after the ICCAT ban (that Brazil co-proposed) took effect. Hammerhead landing reports by Brazil ceased in 2019. In its 2022 ICCAT Shark Check Sheet, Brazil reports domestic bans on hammerhead retention and export.

Mexico's significant trade in hammerhead products, primarily fins, is reviewed in detail on page 22.

[12] Pavitt, A., Malsch, K., King, E., Chevalier, A., Kachelriess, D., Vannuccini, S. and Friedman, K. 2021. CITES and the sea: Trade in commercially exploited CITES-listed marine species. FAO Fisheries and Aquaculture Technical Paper No. 666. Rome, FAO.

[13] Eskew, E. A., White, A. M., Ross, N., Smith, K. M., Smith, K. F., Rodríguez, J.P., Zambrana-Torrelio, C., Karesh, W.B., and Daszak, P. 2019. United States LEMIS wildlife trade data curated by EcoHealth Alliance (1.1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.3565869

Silky Sharks (*Carcharhinus falciformis*)

Reported landings of silky sharks have increased since adoption of the ICCAT measure. Because silky sharks are more pelagic than hammerheads, ICCAT compliance monitoring of the associated ban should be less complicated. Using trade data to complement ICCAT reporting remains challenging, however, as several CPCs also fish silky sharks in the Pacific, where restrictions are more lenient.

For example, the CITES database includes records of silky shark exports from Nicaragua, which would conflict with the ICCAT measure, but not international Pacific rules. Because **Nicaragua**'s ICCAT Shark Check Sheet is essentially empty and there is no public NDF for this trade, it is difficult to evaluate compliance.

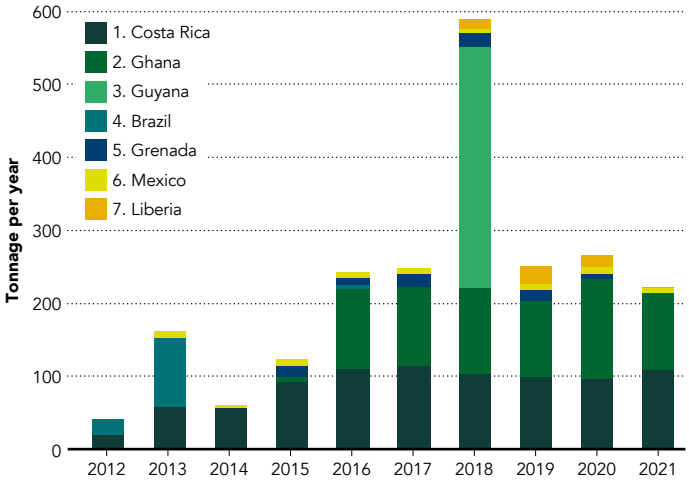
Costa Rica claims an exemption to the ICCAT silky shark measure but, as previously noted, reports substantial international trade that runs counter to the associated conditions. Costa Rica's reported landings leveled off around 2016 to about 100t per year. The CITES 2023 RST background document reveals Costa Rica as the world's top exporter of silky shark products, responsible for 72% of reported trade. Determining how much of the trade involves Atlantic silky sharks subject to ICCAT rules is complicated because the CITES database does not allow for that distinction, Atlantic and Pacific landings may be aggregated under the existing NDF, and information in the ICCAT Shark Check Sheet is lacking.

Ghana has reportedly landed about 100t of Atlantic silky sharks annually since 2016, increasing from nothing at the time the ICCAT measure was adopted. Ghana claims to be both implementing the ban and taking an exemption, while admitting a lack of domestic limits.

While recent landings are relatively high (second among ICCAT CPCs), No IFS or other international trade has been reported to CITES.

Total silky shark landings reported by top 10 ICCAT CPCs since ICCAT silky shark measure (2012–2021)

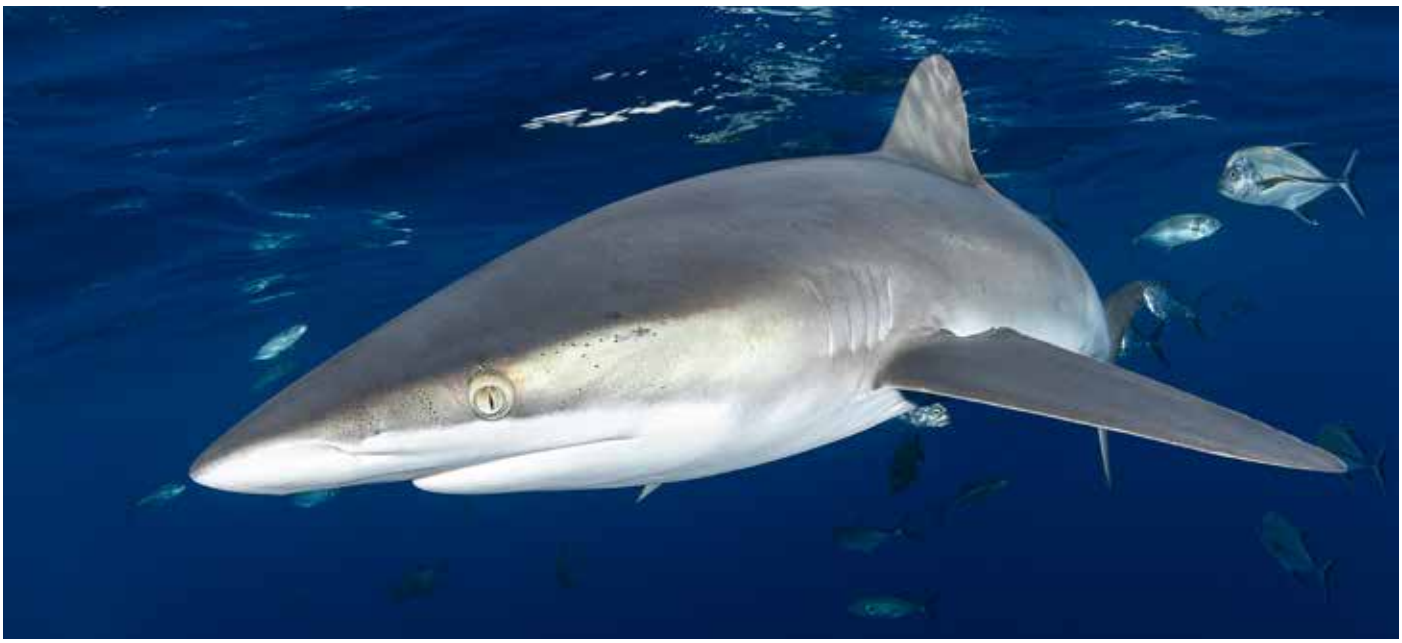
The 2011 ICCAT silky shark "ban" allows exceptions for developing countries if they report and try not to increase landings while preventing international trade.



The **EU** had annual Atlantic silky shark landings of more than 160t in 2007. These landings dropped dramatically after the ICCAT measure was adopted, but relatively small amounts are still consistently being reported as landed despite the ban.

Guyana's 2018 report of more than 300t of silky shark landings was the highest of all CPCs in the last decade. This is the year that ICCAT reports appear to have benefited from a data reconstruction project, suggesting that significant landings may have been going on unreported in the years prior and since.

Other CPCs claiming to be implementing the silky shark ban that have reported more than a ton of annual silky shark landings to ICCAT in 2019 and 2020 include M**exico, Côte d'Ivoire, Grenada, Liberia**, and **São Tomé e Príncipe**.



Silky shark. © François Baelen/Ocean Image Bank

Oceanic Whitetip Sharks (*Carcharhinus longimanus*)

ICCAT's reported landings of oceanic whitetip sharks have declined overall since the 2010 ban.

Mexico is the only CPC consistently reporting annual landings (apparently in the absence of national species-specific limits).

Brazil reports to ICCAT more than 6t of oceanic whitetip discards in 2017 followed by none since. Yet, Brazil reports annual landings of 1–7t (2013 to 2017) to FAO (not ICCAT).

Senegal is the only ICCAT CPC identified as an oceanic whitetip shark exporter in a 2023 trade analysis by the Maldives based on data from CITES and Hong Kong SAR of the PR China. Of the 13 countries identified for exports, Senegal was among four that failed to report them as required. The Hong Kong SAR confiscated shark fins exported from Senegal in 2019 and 2021, but it is difficult to tell from available records if oceanic whitetip fins were included in these shipments. With respect to ICCAT, Senegal's claim that their "industrial fishery does not target or catch" oceanic whitetip sharks is an inadequate Shark Check Sheet response under Compliance Committee rules.

Turks and Caicos is only UK Overseas Territory that is not claiming compliance with the ICCAT oceanic whitetip ban. Simply reporting that their vessels do not catch the species is insufficient for ICCAT Shark Check Sheets. Other ICCAT CPCs offering inadequate Check Sheet responses regarding oceanic whitetip shark protections include **Costa Rica, Guyana, Honduras,** and **Nicaragua**.

Records from the **USA** document a transition from landings to discards, suggesting compliance with the ban and reporting requirements.

Oceanic whitetip shark landings reported by **Dominica** underscore the importance of ICCAT's continuing efforts to expand membership and/or cooperation from countries that are not CPCs.

Common thesher shark. © Toby Gibson Photography/Adobe Stock

Thresher Sharks (*Alopias superciliosus, Alopias vulpinus*)

The bigeye thresher was the first shark to receive ICCAT protection based on top ranking in ICCATs' groundbreaking 2008 Ecological Risk Assessment for pelagic elasmobranchs. The more valuable common thresher remains without landing limits. ICCAT catch records for threshers (from 18 CPCs) are usually reported by genus, which hinders both compliance monitoring for the bigeye thresher ban and assessment of common thresher populations. The bigeye thresher measure did result in dramatically reduced reported landings, from 130t a few years prior to negligible amounts in recent years. The **USA**, **Venezuela**, and **Chinese Taipei** are the only CPCs to report discards of the species since 2018. Improved reporting is vital to protecting exceptionally vulnerable bigeye threshers and ensuring sustainability of common thresher fishing.

Mexico is the only CPC that was given an allocation of bigeye threshers (110 individuals annually) in the ICCAT ban. In their Shark Check Sheet, Mexico claims to be implementing the measure, but has yet to cite species-specific limits. The aforementioned 2023 CITES trade review lists Mexico and **Senegal** for sharp increases in bigeye thresher exports; neither report landings of this species to ICCAT. Mexico's exports might be sourced from the Pacific where the species is not prohibited, but this scenario is unlikely for Senegal.

Oceanic whitetip shark, *Carcharhinus longimanus*. © Andy Mann and Trevor Bacon

[14] Maldives, 2023. *A global analysis of the Implementation of the inclusion in Appendix II of Oceanic Whitetip Shark (Carcharhinus longimanus).* Information document 3. Thirty-second meeting of the Animals Committee. Geneva, Switzerland.

Diver films a mako and a blue shark. © Martijn Schouten

Shortfin Mako Sharks (*Isurus oxyrinchus*)

As ICCAT limits and CITES listings for shortfin makos are relatively new, compliance monitoring is more challenging than for shark species that have been subject to international protections for many years. The status of this species is most dire in the North Atlantic; rebuilding is estimated to take roughly five decades (if recent cutbacks are widely and properly implemented). The 2021 North Atlantic shortfin mako retention ban was based on ICCAT scientific advice, but its temporary nature is worrisome. Conservationists continue to argue for long-term extension. In the meantime, better compliance and bycatch mitigation, as well as, improvements in reporting and estimating of discards are urgently needed.

It is clear and notable, however, that the **EU** has led ICCAT CPCs, and indeed the world, for shortfin mako landings, with **Spain** alone responsible for 40% of global reported landings in 2020 (~ 4,061t). The EU's North Atlantic shortfin mako negative NDF includes 2020 data (May 26 to December 31) showing that Spain fished 34% of their North Atlantic shortfin mako catch in international waters, 52% in EU EEZs (39% in **Portugal**, 11% in Spain, and 1% in each Ireland and France), and 14% in EEZs of Non-EU countries (8% in **Mauritania** and 6% in **Cabo Verde**). It notes from the same dataset that most of Spain's 2020 catch was landed in Portugal or outside the EU (32% in Spain, 31% in Portugal, 17% in Cabo Verde, and 19% in undisclosed ports). Such patterns will continue to complicate the tracking of exploitation, if/when North Atlantic landings be allowed to resume. Similar complications remain for South Atlantic shortfin makos, as EU vessels are subject to a negative NDF, but at the same time have been allocated the lion's share (503t, 39%) of the new (2022) ICCAT catch limit (1295t total) for that population.

ICCAT is expected to revisit its provisions for both North and South Atlantic makos after scientists update population status (scheduled for 2024).

The EU Scientific Review Group (SRG) has a mandate to give advice on NDFs for specimens entering the EU, including IFS, but not for those taken within the jurisdiction of EU Member States. In 2021, based on a 2019 ICCAT assessment of North Atlantic shortfin mako sharks and call to ban all retention, the SRG issued a negative opinion regarding an NDF (effective January 1, 2021). At about the same time, the Council of the EU set their first-ever catch limit[15] for the stock at 289t, despite scientists' findings and advice. A (temporary) retention ban[16] for North Atlantic shortfin makos was agreed by ICCAT in November of 2021. Accordingly, the next month, the Council adopted an EU retention ban for North Atlantic shortfin makos for 2022. This mismatch of directives in 2021 allowed significant, ill-advised mortality to continue for another year, likely further stalling reversal of a declining trajectory.

Notably, according to the EU shortfin mako NDFs, EU vessels can fish and land CITES-listed specimens from territorial waters and EEZs of countries with which the EU has bilateral fishing agreements (such as Mauritania and Cabo Verde) without the need for CITES permits. These goods can subsequently be traded legally within the EU. The legal basis of this claimed exemption from CITES regulation is unclear to the authors and may warrant closer examination, beyond the scope of this study.

[15] COUNCIL REGULATION (EU) 2021/92, 28 January 2021
[16] COUNCIL REGULATION (EU) 2022/109, 27 January 2022

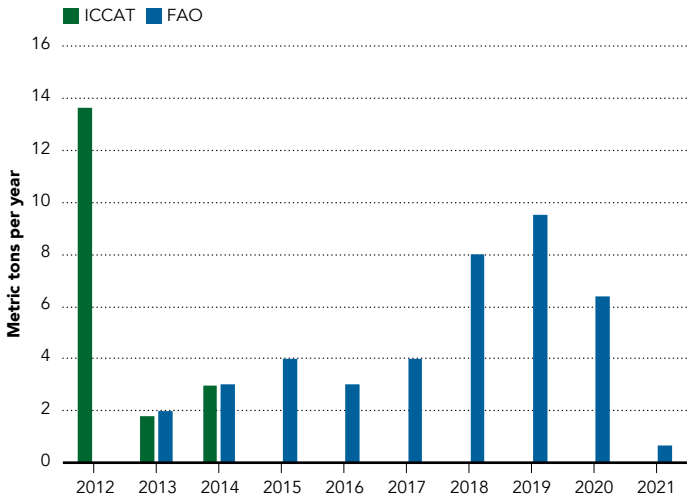
Longfin Mako Sharks (*Isurus paucus*)

There are currently no ICCAT protections for longfin mako sharks. This species is similar to shortfin makos in appearance and inherent vulnerability, but much less understood and virtually unprotected outside the **USA**. There is concern that increasing regulation of shortfin mako sharks could result in higher fishing pressure on longfin makos and/or misreporting to conceal shortfin mako landings. The latest ICCAT measure for shortfin mako sharks also directs scientists to examine trends for longfin makos.

All but one of the top countries for Atlantic longfin mako fishing report consistent levels of landings to ICCAT and FAO. **Portugal** has been reporting longfin mako landings to FAO but not ICCAT since 2014. Portugal has however reported longfin mako IFS to CITES in recent years (in excess of 330kg in 2020 and 600kg in 2021). **Spain**, by comparison, reported more than 8t (8,379kg) of longfin mako take from the high seas over that same time period. Because Spanish and Portuguese fleets fish across the globe and CITES trade reports for sharks are not identified by various ocean regions, it is difficult to determine how well landings and export records align.

Mexico's NDF guidance notes that its "sustainable export volume" figures for longfin mako sharks are included within those for shortfin makos. The USA is the only ICCAT CPC reporting longfin mako discards to ICCAT.

Portugal's reported landings of Atlantic longfin mako sharks to ICCAT and FAO (2012–2021)



The disparity in ICCAT measures and the precarious status of these particularly vulnerable species warrant vast improvements in species-specific mako catch and trade reporting throughout the Atlantic.

Longfin mako shark, *Isurus paucus*. © NOAA Fisheries

[17] Lawson, J.M., Fordham, S.V., O'Malley, M.P., Davidson. L.N.K, Walls. R.H.L., Heupel, M.R., Stevens, G., Fernando, D., Budziak, A., Simpfendorfer, C.A., Ender, I., Francis, M.P., Notarbartolo di Sciara, G., Dulvy, N.K. 2017. *Sympathy for the devil: a conservation strategy for devil and manta rays.* PeerJ 5:e3027 https://doi.org/10.7717/peerj.3027

Manta and Devil Rays (*Mobula spp.*)

Manta and devil rays (family Mobulidae) are thought to produce just a single pup every one to three years and, as a result, are among the most intrinsically vulnerable of all elasmobranch species. To make matters worse, there is a particular dearth of species-specific information on their use as they are often fished and traded under one general category. The high risks to mobula rays led to IUCN Shark Specialist Group to convene an expert workshop for the development of a global conservation strategy[17] for the family, one of just three to date. As of 2023, ICCAT is the only tuna RFMO that has not adopted protections for mobula rays over the last decade.

From 2010 to 2021, the level of mobula discards reported to ICCAT (30t) was far higher than that of landings (9.2t). **Venezuela** is responsible for 94% (8.7t) of total mobula ray landings reported to ICCAT from 2010-2021; those landings, specified as (IUCN-*Endangered*) oceanic manta rays (*Mobula birostris*), rose from zero in 2015 to 3t in 2021 and were not reported to FAO. Likely due to the regional ICCAT data enhancement project (discussed in the capacity building section), the vast majority of Atlantic mobulid catches reported to ICCAT occur in 2017. Many CPCs (**Curaçao, Canada, El Salvador, EU [France], EU [Spain], Guatemala**, and **Panama**) report mobula ray landings and/or discards only in that one year. In 2017, minor landings were reported by EU-Spain, Curaçao, Guatemala, El Salvador to the family level (Mobulidae) and by EU-Spain, Panama, El Salvador to the species level: (IUCN *Endangered*) spinetail devil ray (*Mobula mobular*). None of the 2017 mobula ray landings reported to ICCAT were reported to FAO. The only ICCAT CPCs to report Atlantic mobula ray landings to FAO are **Mauritania** (64t as "Mantas, Devil rays, nei" in 2014 only) and **Spain** (10t as "Devil Fish", 2010-2021). Mobula ray discards are reported to ICCAT as Mobulidae, *Manta birostris, Mobula thurstoni, Mobula tarapacana, Mobula mobular*, and *Mobula japanica*. **EU (France)** is the only ICCAT CPC to report mobula ray discards in other years (and does so consistently).

The **USA** is the only ICCAT CPC that has posted mobula ray NDFs to the CITES website. There are, however, some discrepancies within the associated trade records. A 2018 USA NDF for six Atlantic pygmy devil rays (*M. hypostoma*) suggests approval for a one-time export, explicitly for public exhibit in an aquarium. Import records, however, show three USA records of live specimen exports of this species: four rays to PR China in 2018, 12 to France in 2018, and six to France in 2019. Further complication stems from the USA reporting the exports as "commercial" trade (purpose code "T") while France reported the imports under the zoo category (purpose code "Z"). Similarly, in 2019, the USA issued a now public NDF for one oceanic manta ray, explicitly for exhibit in an aquarium, but France reported the import of two live mantas from the USA that year. Again, the USA reported the export as commercial trade while France recorded the import under the zoo code. Misalignment of export and import codes obviously complicates the tracking of international trade, which is particularly important with respect to exceptionally vulnerable and valuable species. Gaps could be closed through more careful reporting and more detailed guidance regarding the application of codes.

There are also *Mobula* spp. trade records for PR China that include educational export to UK and confiscation by USA.

Oceanic manta ray. © Francesca Reina/Shutterstock

[18] Fordham, S.V., Lawson, J.M., Koubrak, O., Cronin, M.R., 2022. Chapter 23: Elasmobranch Conservation Policy: Progress and Priorities. In: Biology of Sharks and Their Relatives 3rd Edition, J. Carrier, C.A. Simpfendorfer, M.R. Heithaus, K.E. Yopak (Eds.). CRC Marine Biology Series, CRC Press.

[19] Arocha, F. 2019. Comprehensive study of strategic investments related to artisanal fisheries data collection in ICCAT fisheries of the Caribbean/Central American Region: Draft Final Report. SCRS/2018/114 Collect. Vol. Sci. Pap. ICCAT, 75(8): 2319-2368.

A Word on Blue Sharks (*Prionace glauca*)

The blue shark (along with other species in family Carcharhinidae) was listed under CITES Appendix II in 2022, leaving it out of the scope of this analysis. ICCAT limits for blue sharks are also relatively new, making compliance monitoring more challenging than for shark species that have been regulated for many years. Blue sharks do however deserve special mention as they dominate both ICCAT shark landings and the global shark fin trade, while still offering the best hope for a sustainable international shark fishery (owing to biological factors).

Vessels from the EU (primarily Spain and Portugal) have long been responsible for the lion's share of the substantial take of Atlantic blue sharks. Overall catches from the North Atlantic are trending downward while those from the South Atlantic are on the rise. Thanks to relatively long-term catch data, ICCAT scientists have been conducting blue shark stock assessments for roughly 20 years (most recently in 2023). Groundbreaking, science-based total allowable catch (TAC) limits were established by ICCAT in 2019. Allocations to key fishing CPCs have been agreed only for the North Atlantic. Recent overages of the South Atlantic TAC warrant immediate allocation for that region as well. Interest in a broader, long-term harvest control strategy for the species is rising.

Blue shark. © Ellen Cuylaerts/OceanImageBank

Prohibited Species

The most prevalent shark and ray measures involve bans on retaining and transporting species of particular conservation concern. Such protections can be initiated by countries which in turn rally support for complementary international action, or – more often – mandated at the domestic level by a binding regional or global agreement. Complete retention bans are relatively simple to enforce (as opposed to international quotas or high seas gear restrictions) and can increase fishers' incentive to avoid threatened species interactions. Infractions of particularly large elasmobranch species tend to attract the greatest publicity. Relevant Mediterranean examples include:

- Two basking sharks landed (separately) in Greece (2009);
- 30 spinetail devil rays landed in Turkey with intention to export (2017); and
- Two white sharks landed in Tunisia and sent to market (2020).

© Unknown

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ICCAT 25th Regular Meeting November 2017. © Shark League

Other Relevant International Bodies

The following organizations have adopted various commitments for conserving CITES-listed Atlantic shark and ray species. There is considerable overlap between the members of each of these bodies and ICCAT CPCs.

Convention on Migratory Species (CMS): Most of the elasmobranchs listed on CITES before 2022 are listed on CMS Appendix I (mandating strict protection) and/or Appendix II (encouraging international conservation). Whale, basking, white, and oceanic whitetip sharks, as well as all the sawfishes and mobula rays, are listed on Appendix I. A 2018 Shark Advocates International review[20] found that only 28% of CMS Parties were meeting their obligations for Appendix I-listed elasmobranchs.

General Fisheries Commission for the Mediterranean (GFCM): The GFCM has banned fishing and retention of the 24 elasmobranch species listed on Annex II of the Barcelona Convention. These safeguards are put in a broader ecosystem context in a 2020 *Action Plan for the Conservation of Cartilaginous Fishes in the Mediterranean Sea* developed by the Specially Protected Areas Regional Activity Centre (RAC/SPA).

North East Atlantic Fisheries Commission (NEAFC): NEAFC has prohibited directed fishing for porbeagle and basking sharks as well as several deep-sea sharks, rays and chimaeras; a similar ban on spiny dogfish was recently replaced with a catch limit.

Cartagena Convention, Specially Protected Areas and Wildlife (SPAW) Protocol: SPAW Annex II (aimed at strict protection) includes the Atlantic sawfish species, the oceanic whitetip shark, giant (oceanic) manta ray, and the whale shark. Annex III (highlighting regional conservation need) includes two other mantas and the silky shark as well as scalloped, great, and smooth hammerheads.

Western Central Atlantic Fisheries Commission (WECAFC). In 2019, WECAFC adopted a non-binding recommendation that members prohibit retention and trade of elasmobranch species similarly protected under ICCAT, CMS, and/or the SPAW Protocol. WECAFC has also developed a Regional Plan of Action for Sharks.

The **Northwest Atlantic Fisheries Organization (NAFO)** has agreed landmark protections for elasmobranchs that are not currently listed under CITES (international quotas for thorny skates starting in 2004 and a retention ban for Greenland sharks in 2022).

[20] Lawson J.M. and Fordham S. V. 2018. Sharks Ahead: Realizing the Potential of the Convention on Migratory Species to Conserve Elasmobranchs. Shark Advocates International.

Shark Finning

Shark finning is the wasteful practice of slicing off a shark's fins and discarding the body at sea. As mentioned previously, ICCAT's 2004 finning ban was the first among RFMOs and started a trend that rapidly spread across the globe. Unfortunately, ICCAT has not remained a leader in this regard. The ICCAT finning ban's enforcement standard – a 5% fin-to-carcass ratio – was based on several CPCs' finning bans at the time, but has proven complicated, imprecise, and otherwise difficult to enforce. Many CPCs have since started requiring that sharks be landed with their fins naturally attached, as this policy has become widely regarded as the best practice for ensuring finning ban compliance while also facilitating collection of much needed species-specific catch data. Efforts to strengthen ICCAT's finning ban with such an amendment began in 2009 and have failed every year through 2022, despite support from the vast majority of Parties. Opposition that has prevented adoption has come primarily from Japan and PR China. In the meantime, the GFCM, NAFO, and NEAFC, have adopted fins-attached landing requirements.

A November 2022 *Mongabay* exclusive[21] detailed incidents of shark finning on vessels from Dalian Ocean Fishing (DOF), a **PR China**-based tuna firm that includes seven longline vessels operating in the Atlantic Ocean. According to this comprehensive article, a deckhand who had worked on one of the Atlantic vessels said roughly 30 sharks were caught per day and 90% of the finned carcasses were discarded. Almost every DOF deckhand interviewed said their boat had transshipped shark fin with other boats in violation of ICCAT rules. Deckhands from three DOF Atlantic longliners recounted fin transfers to vessels outside DOF's fleet. Deckhands from two of those longliners said they had offloaded fins onto a vessel called the *Lisboa*; a boat flagged to **Senegal** with the same name has a track record of illegal shark fin transshipments. Another DOF Atlantic longliner recalled offloading fins onto a non-DOF boat on four separate occasions.

Overall, the current lenient fin-to-carcass weight ratio limit makes documentation of shark finning by ICCAT vessels challenging. Moreover, Shark Check Sheet information submitted by several CPCs — including **Algeria, Cabo Verde, Côte d'Ivoire, El Salvador, Ghana, Guatemala, Guyana, Iceland, Mexico, Norway, Russian Federation, São Tomé e Principe, Senegal, St. Pierre et Miquelon, Trinidad and Tobago**, and **Uruguay**[22] — fails to clarify if the 5% ratio minimum standard or other enforcement standards are reflected in a specific domestic regulation.

Pile of sharks fins from illegal fishing on a black market. © CatwalkPhotos/Shutterstock

[21] Mongabay Series: Illegal Wildlife Trade, Oceans: Shark finning rampant across Chinese tuna firm's fleet, November 1, 2022: https://news.mongabay.com/2022/11/exclusive-shark-finning-rampant-across-chinese-tuna-firms-fleet/

[22] This list reflects amendments made to an earlier version submitted as comment to the ICCAT Compliance Committee.

CONCLUSIONS

Overfishing is the main threat to elasmobranchs and many unsustainable fishing activities are driven by international demand for elasmobranch products. There are myriad gaps that hinder effective shark and ray conservation; bridging them requires deliberate, sustained attention from multiple government agencies as well as stakeholders. Critical to success is better collaboration between the environmental and fisheries realms – at the international level as well as within individual countries. Thanks to various concerted efforts, the relationship between fishing and wildlife treaty authorities has been slowly shifting from competition toward complementarity, but much work remains to be done. Greater recognition of RFMOs' and CITES' common goals and respective competencies (by all actors) can accelerate urgently needed progress.

Both ICCAT and CITES have broken ground with major advances in elasmobranch conservation. Both bodies also face serious implementation challenges stemming from inadequate coordination, resources, and political will. In these and other relevant arenas around the world, there is a serious need to balance the attention given to achieving conservation agreements with the effort that is put into concrete, follow up actions to ensure the associated commitments are fulfilled. Considering the precarious state of most elasmobranch species, science-based fishing and trade limits are among the most urgent needs. Such restrictions are essential for preventing population collapses and long-standing, negative ramifications that reverberate across ecosystems. Closing the divides described in this analysis — in line with the recommendations that follow — is critical to securing a brighter outlook for sharks and rays in the Atlantic and beyond.

Blue shark and mako shark. © Andy Murch

RECOMMENDATIONS

Bridge the Gaps

All fishing entities and stakeholders are encouraged to actively pursue increased priority and effectiveness of shark and ray conservation policies at national, regional, and international levels. The following actions are needed to improve compliance with existing safeguards, align domestic measures with international commitments, facilitate the recovery of threatened Atlantic elasmobranch populations, and improve the chances for long-term sustainability.

Governments — with support from conservationists, scientists, and fishing communities — should:

- improve the integration of marine fisheries and environmental agency activities;
- coordinate the fulfillment of shark and ray obligations across various treaties;
- strive for greater transparency and accountability with respect to implementation;
- submit accurate, complete, timely fisheries and trade data to relevant authorities;
- maximize participation in international agreements relevant to regional elasmobranchs;
- prioritize enforcement of marine conservation measures, including with respect to vessels operating under flags of convenience;
- request (when needed) and facilitate (wherever possible) technical and financial assistance for elasmobranch data reporting, policy development, and measure enforcement, particularly with respect to low-capacity countries; and
- pursue complementary species-specific safeguards through other bodies and treaties.

Needs specific to ICCAT include:

- Timely reporting by CPCs of all (targeted and incidental) elasmobranch catch data (including discards), as required;
- Additional data on fishing effort to better evaluate population trends;
- Identification of CPCs failing to report elasmobranch catches (landings and discards);
- Suspension of fishing rights for CPCs not meeting catch reporting requirements;
- Details from CPCs regarding domestic regulations for implementing all ICCAT shark measures as part of Shark Check Sheet responses;
- Compliance Committee guidance for CPCs on Shark Check Sheet responses with respect to:
  - CPCs without active ICCAT vessels, and
  - ICCAT-regulated species caught by artisanal/inshore fleets and non-pelagic gear;
- Elimination of exceptions to retention bans for hammerhead and silky sharks;
- Elimination of Mexico's exception to land 110 bigeye thresher sharks annually;
- Long-term extension and augmentation of the North Atlantic shortfin mako retention ban;
- Requirements for reporting thresher shark landings by species;
- Allocation of the South Atlantic blue shark TAC in line with 2023 stock assessment advice followed by adoption of broader, long-term harvest control strategy;
- New safeguards for unprotected:
  - mobula rays,
  - longfin makos,
  - common threshers, and
  - whale sharks;
- A fins-naturally-attached landing requirement, without exceptions;
- 100% observer coverage (human and/or electronic) for large-scale ICCAT vessels;
- Consideration of measures to enhance existing white, basking, and whale shark protections; and:
- Ratification of the revised ICCAT Convention (for CPCs that have not already done so).

Needs specific to CITES include:

- Timely reporting by Parties of required trade information, including *introduction from the sea* (IFS), for listed elasmobranch species;
- Robust NDFs that are linked to sustainable fishing limits and posted on the CITES website;
- A rigorous review of significant trade (RST) and prompt remedial action;
- Amendment of reporting guidelines to elicit elasmobranch trade reporting by ocean/population (to facilitate compliance monitoring with respect to both CITES and fisheries obligations);
- Additional Secretariat guidance regarding the proper application of trade (purpose) codes;
- Closer examination of the legal basis behind EU permitting exceptions associated with bilateral fishing agreements[23];
- Retraction of reservations on shark and ray listings; and
- Consideration of listings for skate, dogfish, and deep-sea shark species in trade.

Governments, with support from stakeholders, should also facilitate complementary action under other international agreements, particularly by ensuring that they:

- enact national measures to meet Convention on Migratory Species (CMS) obligations for strict protection of Appendix I-listed species, especially oceanic whitetip sharks and mobulid rays; and
- support efforts to protect threatened elasmobranchs under the Specially Protected Wildlife and Areas (SPAW) Protocol, especially with respect to oceanic whitetip sharks and sawfishes.

[23] As described in the shortfin mako section.

PRIORITY RECOMMENDATIONS BY SPECIES

Beyond implementing and strictly enforcing existing obligations, governments should strive to do the following to better protect CITES-listed species whose range includes the Atlantic Ocean and adjacent seas:

Oceanic whitetip	**Ensure priority review by CITES & ICCAT Committees of overexploitation & illegal activity**
Hammerheads	**End ICCAT ban exceptions, expand coastal fisheries protections & scrutinize trade**
Silky shark	**End ICCAT ban exceptions + amend CITES reporting procedures to include source ocean**
Bigeye thresher	**Ban retention globally based on top rank in ICCAT Ecological Risk Assessment**
Common thresher	**Establish precautionary catch limits while developing species-specific data & assessment**
Porbeagle shark	**Maintain low fishing pressure to facilitate rebuilding**
Shortfin mako shark	**Extend & augment time horizon for ICCAT North Atlantic ban + promote safeguards by other RFMOs**
Longfin mako shark	**Establish precautionary limits while developing species-specific data & assessments**
Blue shark	**Allocate ICCAT South Atlantic TAC + promote catch limits by other RFMOs**
White shark	**Prevent targeting + request update of CMS map to clarify range states**
Basking shark	**Prioritize reduction of net bycatch & ship strikes**
Mobula rays	**Adopt ICCAT retention ban & guidelines for minimizing bycatch mortality**
Rhino rays	**Boost range states' capacity for catch identification & restriction**
Sawfishes	**Promote expansion of national protections through CMS, SPAW & WECAFC**

Silky shark, Jardine de la Reina, Cuba. © Brett Lobwein/UWImages

Appendix I. Species-specific shark landings reported by ICCAT CPCs and associated converted CITES trade records

CITES converted volumes (in metric tons) are import and export records of fins, meat, and bodies that were reported in kilograms. Volumes of meat and fins reported to CITES in kilograms were converted to species-specific average adult weight (all in kilograms) and then to metric tons (for comparison to ICCAT landings (See Appendix III)). Volumes reported in bodies by weight were converted from kilograms to metric tons. For ease, no re-export records (those containing origin country, exporting country, and importing country) were included. ICCAT Task I dead discards were removed. CITES data was filtered for records using commercial (T) or no code. Source codes include Introduction from the Sea (X), Seizures/Confiscations (I), and specimens taken from the wild (W).

Species	Year	Exporting Country	ICCAT Total Quantity (t)	Importing Country	Converted Export Quantity Fins/Bodies Meat Only (t)	Converted Import Quantity Fins/Bodies/ Meat Only (t)	Term	Purpose Code	Source Code
Carcharhinus falciformis	2017	Costa Rica	113.58	Hong Kong SAR	28.53	NA	fins	T	W
				Mexico	22.10	NA	bodies		
Carcharhinus falciformis	2018	Costa Rica	103.39	Hong Kong SAR	NA	351.68	fins	T	W
				Mexico	NA	67.20	bodies	T	W
Carcharhinus falciformis	2018	Mexico	4.609	PR China	170.57	NA	fins	T	W
				Hong Kong SAR	NA	77.20	fins	T	W
				United States	NA	0.66	fins	T	I
Carcharhinus falciformis	2019	Costa Rica	98.84	Guatemala	NA	28.91	meat	T	W
				Guatemala	53.08	NA	meat		
				Hong Kong SAR	NA	800.67	fins	T	W
				Hong Kong SAR	898.83	NA	fins		
				Mexico	NA	460.39	bodies	T	W
				Mexico	450.10	NA	meat		
				Chinese Taipei	26.45	NA	meat		
Carcharhinus falciformis	2019	Mexico	7.51	PR China	633.16	NA	fins	T	W
				Hong Kong SAR	NA	452.95	fins	T	W
				United States	NA	1.36	fins	T	I
Carcharhinus falciformis	2020	Costa Rica	96.85	Hong Kong SAR	NA	943.60	fins	T	W
				Hong Kong SAR	1018.01	NA	fins		
				Mexico	NA	306	bodies	T	W
				Mexico	407.10	NA	meat		
				Chinese Taipei	26.45	NA	meat		
Carcharhinus falciformis	2020	Mexico	9.48	PR China	630.89	NA	fins	T	W
				Hong Kong SAR	22.57	539.06	fins	T	W
Carcharhinus falciformis	2021	Costa Rica	110.57	Guatemala	17.25	NA	meat	T	
				Hong Kong SAR	NA	1017.98	fins	T	W
				Hong Kong SAR	1087.77	NA	fins	T	
				Mexico	738.30	NA	meat	T	
Carcharhinus falciformis	2021	Mexico	8.509	Hong Kong SAR	NA	837.53	fins	T	W

Species	Year	Exporting Country	ICCAT Total Quantity (t)	Importing Country	Converted Export Quantity Fins/Bodies Meat Only (t)	Converted Import Quantity Fins/Bodies/ Meat Only (t)	Term	Purpose Code	Source Code
Carcharhinus longimanus	2019	Mexico	0.266	United States	NA	0.58	fins	T	I
Cetorhinus maximus	2005	Norway	220	Hong Kong SAR	NA	430.52	fins	T	W
				Hong Kong SAR	5.71	NA	meat	T	W
Cetorhinus maximus	2012	Norway	22.38	Hong Kong SAR	47.08	44.80	fins	T	W
Isurus oxyrinchus	2019	Japan	56.94	Chinese Taipei	57.50	NA	meat	T	W
Isurus oxyrinchus	2019	South Africa	110.17	Republic of Korea	161.47	NA	meat	T	W
Isurus oxyrinchus	2020	Japan	0.53	Chinese Taipei	263.64	NA	meat	T	W
				Viet Nam	0.11	NA	fins	T	W
Isurus oxyrinchus	2020	Mexico	2.19	PR China	362.64	NA	fins	T	W
				Hong Kong SAR	NA	190.26	fins	T	W
Isurus oxyrinchus	2020	Morocco	382.40	Spain	NA	56.72	bodies	T	W
				Spain	93.38	NA	meat	T	W
				Hong Kong SAR	488.93	126.26	fins	T	W
				Singapore	273.26	273.26	fins	T	W
				Senegal	38.39	NA	fins	T	W
Isurus oxyrinchus	2020	Namibia	945.13	China	5.95	NA	bodies	T	W
				Spain	51.21	NA	bodies	T	W
				Italy	49.21	NA	bodies	T	W
				Italy	NA	28.13	meat	T	W
				Democratic People's Republic of Korea	211.88	NA	bodies	T	W
				Republic of Korea	84.03	NA	bodies	T	W
				Republic of Korea	NA	391.21	meat	T	W
				Netherlands	50.73	NA	bodies	T	W
				Portugal	373.39	175.18	bodies	T	W
				Singapore	3.24	NA	bodies	T	W
				Singapore	8582.10	7932.21	fins	T	W
				Trinidad & Tobago	54.15	NA	bodies	T	W
				South Africa	49.89	NA	bodies	T	W
Isurus oxyrinchus	2020	South Africa	45.83	Republic of Korea	NA	3.10	meat	T	W
				Republic of Korea	NA	261.69	meat	T	W
Isurus oxyrinchus	2020	Spain	1668.91	Hong Kong SAR	NA	1272.45	fins	T	X
				Japan	81.06	NA	fins	T	X
				Republic of Korea	NA	72.16	bodies	T	W
				Republic of Korea	NA	22.70	bodies	T	X
				Republic of Korea	NA	134.71	meat	T	W

Species	Year	Exporting Country	ICCAT Total Quantity (t)	Importing Country	Converted Export Quantity Fins/Bodies Meat Only (t)	Converted Import Quantity Fins/Bodies/ Meat Only (t)	Term	Purpose Code	Source Code
				Singapore	NA	1750.00	fins	T	W
Isurus oxyrinchus	2020	Chinese Taipei	52	Republic of Korea	NA	2.54	meat	T	W
				Republic of Korea	NA	63.35	bodies	T	W
				Republic of Korea	NA	1028.03	meat	T	W
Isurus oxyrinchus	2020	Trinidad & Tobago	1.23	United States	11.74	NA	meat	T	W
Isurus oxyrinchus	2021	Belize	3.76	Spain	NA	1.15	bodies	T	X
Isurus oxyrinchus	2021	Mexico	2.18	Hong Kong SAR	NA	643.80	fins	T	W
Isurus oxyrinchus	2021	Morocco	298.70	Hong Kong SAR	787.01	235.82	fins	T	W
				Singapore	384.20	384.20	fins	T	W
Isurus oxyrinchus	2021	Namibia	637.49	PR China	6.91	NA	bodies	T	W
				Spain	79.65	42.22	bodies	T	W
				Italy	224.31	NA	bodies	T	W
				Republic of Korea	180.33	NA	bodies	T	W
				Republic of Korea	NA	192.63	meat	T	W
				Netherlands	51.82	NA	bodies	T	W
				Portugal	168.58	NA	bodies	T	W
				Singapore	1.73	NA	bodies	T	W
				Singapore	4080.12	4139.73	fins	T	W
				Trinidad & Tobago	28.99	NA	bodies	T	W
Isurus oxyrinchus	2021	South Africa	69.53	Hong Kong SAR	NA	101.88	fins	T	W
				Republic of Korea	NA	22.86	meat	T	W
				Republic of Korea	NA	93.73	meat	T	W
				Singapore	NA	2391.89	fins	T	W
Isurus oxyrinchus	2021	Spain	649.60	Hong Kong SAR	NA	2314.87	fins	T	X
				Republic of Korea	NA	25.84	meat	T	W
				Singapore	NA	130.62	fins	T	W
				Singapore	NA	15030.56	fins	T	X
				Trinidad & Tobago	22.53	NA	bodies	T	W
Isurus oxyrinchus	2021	Chinese Taipei	35	Republic of Korea	NA	89.00	bodies	T	W
				Republic of Korea	NA	808.09	meat	T	W
Isurus paucus	2021	Spain	0.14	Singapore	NA	45.05	fins	T	X
Lamna nasus	2014	Japan	13.13	Spain	NA	29.14	meat	T	W
Lamna nasus	2014	Norway	4.64	Denmark	1.04	1.21	meat	T	W
Lamna nasus	2015	Canada	4.16	United States	0.1	NA	meat	T	W
Lamna nasus	2015	Norway	4.27	Denmark	1.08	0.91	meat	T	W
Lamna nasus	2016	Norway	6.33	Denmark	0.15	0.15	meat	T	W
Sphyrna lewini	2015	Costa Rica	2.25	Hong Kong SAR	41.05	35.74	fins	T	W
Sphyrna lewini	2017	El Salvador	0.00015	Hong Kong SAR	81.11	202.40	fins	T	W
Sphyrna zygaena	2015	Costa Rica	0.60	Hong Kong SAR	0.86	0.65	fins	T	W

Appendix II. Shark meat and fin volume conversion methods

Table 2a. Shark fin conversion factors.

Volumes of exported meat, fins, and bodies were reported to CITES in kilograms. Meat and fin volumes were converted to species-specific average adult weight (in kilograms); kilograms were then converted to metric tons for comparison to ICCAT landings. Volumes reported in bodies by weight were converted from kilograms to metric tons.

Species	Average adult weight (kg)	Fin to Round Mass Ratio (%)	Wet fin weight per shark (kg)	Wet to dry fin mass ratio	Dry fin weight per shark (kg)	Percent of adult weight that is dried fins (%)	Conversion factor of adult weight from dried fins
Carcharhinus falciformis	190[ii]	5.64[iv]	10.7	0.59[iii]	6.3	3.32	30.16
Carcharhinus longimanus[i]	92	7.34	6.8	0.59	4.0	4.35	23.00
Cetorhinus maximus[i]	2,200	3.01	66.2	0.43	28.3	1.29	77.74
Isurus oxyrinchus	278[ii]	1.68[iv]	4.7	0.41[v]	1.9	0.68	146.32
Isurus paucus	278[ii]*	1.68[iv]*	4.7	0.41[v]*	1.9	0.68	146.32
Lamna nasus[i]	127	2.20	2.8	0.41	1.1	0.87	115.45
Sphyrna lewini[i]	84	2.13	1.8	0.40	0.7	0.83	120.00
Sphyrna mokarran[i]	450	1.96	8.8	0.40	3.5	0.77	128.57

[i] Information from Pavitt (2021); [ii] Source: AnAge (Available from: https://genomics.senescence.info/species/); *Information for I. oxyrinchus as species-specific information was unavailable. [iii] Source: as reviewed by Biery and Pauly (2012). Information is for the family Carcharhinidae. [iv] Source: as reviewed in Hindmarsh (2007) for WCPFC. [v] Source: as reviewed by Biery and Pauly (2012).

Table 2b. Shark meat conversion factors.

Volumes of exported meat, fins, and bodies were reported to CITES in kilograms. Meat and fin volumes were converted to species-specific average adult weight (all in kilograms). Kilograms were then converted to metric tons for comparison with ICCAT landings.

Species	Average adult weight (kg)	Dressed to round weight ratio (%)	Average dressed weight per shark (kg)	Conversion factor of adult weight from dressed meat
Carcharhinus falciformis	190[ii]	87[iv]	165.3	1.15
Cetorhinus maximus[ii]	2,200	50	1,100.0	2.00
Isurus oxyrinchus	278[ii]	87[iii]	241.9	1.15
Lamna nasus[ii]	127	82	104.1	1.22

All dressed to round weight ratios were for 'fresh/chilled, gutted' DW/RW(%). [i] Information from Pavitt (2021); [ii] Source: AnAge (Available from: https://genomics.senescence.info/species/); [iii] Source: Hareide et al. (2007). [iv] Source: Séret et al. (2012).

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Appendix III. Countries reporting commercial shark trade to CITES from the high seas (globally)

Relevant source codes: "W" = taken from the wild, "X" = taken in "the marine environment not under the jurisdiction of any State" (Introduction from the Sea), "O" = Pre-convention specimens. All records below were reported with purpose code "T" (commercial). All importer volumes were reported as "NA."

Species	Year	High Seas Importer	Quantity from High Seas	Unit	Re-Exporting Country	Importing Country	Term	Source Code
Isurus oxyrinchus	2021	Belize	1,147	kg	NA	NA	meat	X
Sphyrna lewini	2018	Republic of Korea	14,301	kg	NA	NA	bodies	W
Carcharhinus falciformis	2018	Republic of Korea	2,261	kg	NA	NA	bodies	W
Alopias pelagicus	2018	Republic of Korea	870	kg	NA	NA	bodies	W
Alopias vulpinus	2018	Republic of Korea	685	kg	NA	NA	bodies	W
Isurus oxyrinchus	2021	Portugal	451,181	kg	NA	NA	bodies	X
Isurus oxyrinchus	2020	Portugal	106,835.04	kg	NA	NA	bodies	X
Isurus oxyrinchus	2020	Portugal	13,765		NA	NA	bodies	X
Isurus oxyrinchus	2020	Portugal	4,545	specimens	NA	NA	bodies	X
Isurus paucus	2021	Portugal	615	kg	NA	NA	bodies	X
Isurus paucus	2020	Portugal	318.86	kg	NA	NA	bodies	X
Isurus paucus	2020	Portugal	83		NA	NA	bodies	X
Isurus oxyrinchus	2019	Portugal	57		NA	NA	bodies	O
Isurus paucus	2019	Portugal	22		NA	NA	bodies	O
Isurus paucus	2020	Portugal	21	specimens	NA	NA	bodies	X
Isurus oxyrinchus	2020	Spain	2,338,884.74	kg	NA	NA	bodies	X
Isurus oxyrinchus	2021	Spain	2,216,896.51	kg	NA	NA	bodies	X
Isurus oxyrinchus	2020	Spain	467,107.26	kg	NA	NA	bodies	O
Isurus oxyrinchus	2021	Spain	50,198	kg	NA	NA	bodies	W
Isurus oxyrinchus	2020	Spain	20,373		NA	NA	bodies	X
Isurus oxyrinchus	2019	Spain	12,615	kg	NA	NA	bodies	O
Isurus paucus	2020	Spain	8,274	kg	NA	NA	bodies	X
Carcharhinus falciformis	2021	Spain	4,048	kg	NA	NA	bodies	X
Isurus paucus	2020	Spain	2,841	kg	NA	NA	bodies	O
Isurus paucus	2019	Spain	905	kg	NA	NA	bodies	O
Isurus paucus	2021	Spain	105	kg	NA	NA	bodies	X
Isurus oxyrinchus	2021	Spain	9,694	kg	NA	NA	fins	X
Isurus oxyrinchus	2020	Spain	112,343	kg	NA	Republic of Korea	bodies	X
Isurus oxyrinchus	2021	Spain	89,074.10	kg	NA	Singapore	fins	X
Isurus oxyrinchus	2020	Spain	70,529	kg	NA	Republic of Korea	bodies	O
Isurus oxyrinchus	2020	Spain	49,789	kg	NA	Republic of Korea	bodies	W
Isurus oxyrinchus	2019	Spain	48,632	kg	NA	Republic of Korea	bodies	O

Species	Year	High Seas Importer	Quantity from High Seas	Unit	Re-Exporting Country	Importing Country	Term	Source Code
Isurus oxyrinchus	2020	Spain	35,998.60	kg	NA	Singapore	fins	X
Isurus oxyrinchus	2021	Spain	22620.30	kg	NA	Hong Kong	fins	X
Isurus oxyrinchus	2020	Spain	21,868.70	kg	NA	Singapore	fins	O
Isurus oxyrinchus	2020	Spain	21,039	kg	NA	Trinidad & Tobago	bodies	X
Isurus oxyrinchus	2021	Spain	10,730	kg	NA	Republic of Korea	bodies	X
Isurus oxyrinchus	2019	Spain	9,959.35	kg	NA	Hong Kong	fins	O
Isurus oxyrinchus	2020	Spain	9,161.97	kg	NA	Hong Kong	fins	X
Isurus oxyrinchus	2021	Spain	7,950	kg	NA	Japan	fins	W
Isurus oxyrinchus	2020	Spain	5,329.54	kg	NA	Hong Kong	bodies	X
Isurus oxyrinchus	2020	Spain	4,657.13	kg	NA	Hong Kong	fins	O
Isurus oxyrinchus	2020	Spain	3,912	kg	NA	Trinidad & Tobago	bodies	O
Isurus oxyrinchus	2019	Spain	2,827.82	kg	NA	Hong Kong	meat	O
Isurus oxyrinchus	2021	Spain	2,442	kg	NA	Trinidad & Tobago	bodies	W
Isurus oxyrinchus	2021	Spain	2,304	kg	NA	Japan	fins	X
Isurus oxyrinchus	2021	Spain	2,261	kg	NA	Trinidad & Tobago	bodies	X
Isurus oxyrinchus	2020	Spain	1,017.23	kg	NA	Hong Kong	meat	O
Isurus paucus	2021	Spain	232	kg	NA	Singapore	fins	X
Isurus oxyrinchus	2021	Spain	163	kg	NA	Singapore	fins	O
Carcharhinus falciformis	2021	Spain	138.3	kg	NA	Singapore	fins	X
Isurus oxyrinchus	2019	Spain	135.5	kg	NA	Singapore	fins	O
Isurus oxyrinchus	2021	Spain	124	kg	NA	Hong Kong	fins	O
Isurus paucus	2021	Spain	86	kg	NA	Singapore	fins	O
Isurus paucus	2020	Spain	84.7	kg	NA	Singapore	fins	O
Isurus paucus	2021	Spain	62.2	kg	NA	Hong Kong	fins	X
Isurus paucus	2020	Spain	57.3	kg	NA	Singapore	fins	X
Isurus oxyrinchus	2021	Ecuador	11741	kg	Spain	Ecuador	bodies	X
Isurus oxyrinchus	2021	Spain	18,449.83	kg	Singapore	Chinese Taipei	fins	X
Isurus oxyrinchus	2020	Spain	3,946.50	kg	Japan	Hong Kong	fins	X
Isurus oxyrinchus	2021	Spain	2,123.40	kg	Japan	Hong Kong	fins	X
Isurus oxyrinchus	2021	Spain	1,547.20	kg	Singapore	Hong Kong	fins	X
Isurus paucus	2021	Spain	133.20	kg	Singapore	Chinese Taipei	fins	X
Isurus oxyrinchus	2021	Spain	20	kg	Singapore	Republic of Korea	fins	X

Appendix IV. IUCN Red List status for CITES-listed Atlantic elasmobranchs

Common Name	*Bigeye Thresher*	*Common Thresher*	*Silky Shark*	*Oceanic Whitetip Shark*	*White Shark*	*Basking Shark*	*Blackchin Guitarfish*
Scientific Name	*Alopias supercilious*	*Alopias vulpinus*	*Carcharhinus falciformis*	*Carcharhinus longimanus*	*Carcharodon carcharias*	*Cetorhinus maximus*	*Glaucostegus cemiculus*
Red List Classification	Vulnerable	Vulnerable	Vulnerable	Critically Endangered	Vulnerable	Endangered	Critically Endangered

Common Name	*Shortfin Mako*	*Longfin Mako*	*Oceanic Manta Ray*	*Atlantic Pygmy Devil Ray*	*Spinetail Devil Ray*	*Sicklefin Devil Ray*	*Bentfin Devil Ray*
Scientific Name	*Isurus oxyrinchus*	*Isurus paucus*	*Mobula birostris*	*Mobula hypostoma*	*Mobula mobular*	*Mobula tarapacana*	*Mobula thurstoni*
Red List Classification	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered	Endangered

Common Name	*Blue Shark*	*Porbeagle*	*Smalltooth Sawfish*	*Largetooth Sawfish*	*Whale Shark*	*Common Guitarfish*	*Whitespotted Wedgefish*
Scientific Name	*Prionace glauca*	*Lamna nasus*	*Pristis pectinata*	*Pristis pristis*	*Rhincodon typus*	*Rhinobatos rhinobatos*	*Rhynchobatus djiddensis*
Red List Classification	Vulnerable	Vulnerable	Critically Endangered	Critically Endangered	Endangered	Critically Endangered	Critically Endangered

Common Name	*African Wedgefish*	*False Shark Ray*	*Scalloped Hammerhead*	*Great Hammerhead*	*Smalleye Hammerhead*	*Smooth Hammerhead*	*Bonnethead*
Scientific Name	*Rhynchobatus luebberti*	*Rhynchorhina mauritaniensis*	*Sphyrna lewini*	*Sphyrna mokarran*	*Sphyrna tudes*	*Sphyrna zygaena*	*Sphyrna tiburo*
Red List Classification	Critically Endangered	Critically Endangered	Critically Endangered	Critically Endangered	Critically Endangered	Vulnerable	Endangered

The Shark League of the Atlantic and Mediterranean was formed with support from the Shark Conservation Fund to advance responsible regional shark and ray conservation policies. Shark Advocates International, Ecology Action Centre, Shark Trust, and PADI AWARE Foundation are the coalition's founding members.

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SHARK ADVOCATES INTERNATIONAL
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Ecology Action Centre
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