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AN OVERVIEW OF MAJOR

SHARK TRADERS CATCHERS AND SPECIES

Nicola Okes
Glenn Sant

TRAFFIC REPORT

An overview of major global shark* traders, catchers and species

TRAFFIC is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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** Throughout this report, unless otherwise specified, the term "sharks" refers to all species of sharks, skates, rays and chimaeras (Class Chondrichthyes).*

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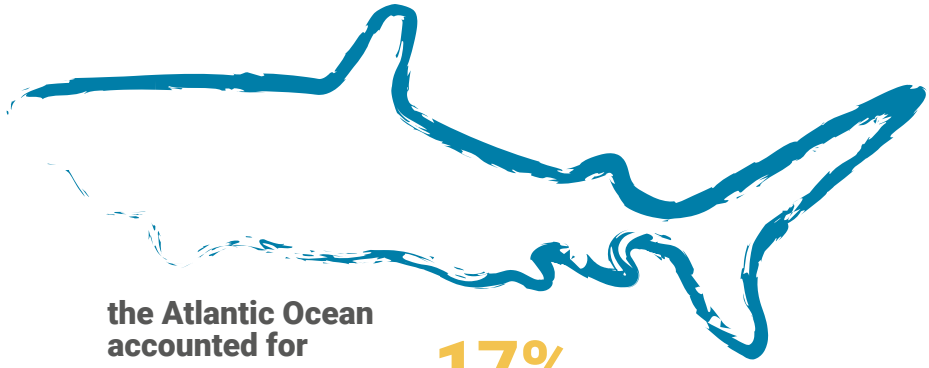
INTRODUCTION



between 2007–2017

Indonesia

was the top global shark catcher with a mean catch of 110,737 mt per year

the Atlantic Ocean accounted for

80%

of recent catches

17%

of shark and ray species listed as **Critically Endangered**

Globally, industrial and artisanal fleets supply markets in Asia for shark and ray fins, while the meat of the same captured sharks is increasingly being diverted along separate supply channels to meet demand in growing markets in Europe and South America (Dent and Clarke, 2015).

Sharks are particularly vulnerable to over-fishing due to their slow growth, relatively late age of maturity and low fecundity (Cortés, 2000). Due to their broad distribution, often migratory nature, and occurrence in a range of fisheries where they are caught as secondary catch, cohesive regional and international co-operation is necessary to manage shark fisheries appropriately. In recognition of this, numerous fisheries management measures have been implemented in recent years, as well as trade regulations: 14 shark and 27 ray species have been afforded greater protection through listing in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 2002 and the entire family Pristidae (Sawfish) is listed in Appendix I.

Due to their long lifespan, and despite improved management measures, approximately 17% of shark and ray species remain listed in the Critically Endangered, Endangered and Vulnerable categories of the IUCN's Red List of Threatened Species (Dulvy *et al.*, 2014a). A further 13% are listed as Near Threatened, and 47% as Data Deficient (Dulvy *et al.*, 2014a). Only 23% of shark and ray species are considered to be of Least Concern—the lowest percentage of all vertebrate groups (Dulvy *et al.*, 2014a; Hoffmann *et al.*, 2010).

Analysis of trends in catch, and those responsible for that catch, therefore, remains critically important in attempts to promote better management of sharks (Lack and Sant, 2009). Statistical data on landings and trade in shark and ray products are available for many decades from the FAO through FishStatJ (FAO, 2019). In order to understand the trade dynamics of international shark products, Lack and Sant (2006, 2009) have monitored the top 20 shark catchers* and examined the trends in catch, production and trade in shark and shark products from 1990–2003 (Lack and Sant, 2006) and 2000–2007 (Lack and Sant, 2009). This current study provides an update on these trends and focuses primarily on the most recent decade for which data are available (albeit with some FAO catch data still provisional): from 2007 to 2017. In addition to identifying the top 20 shark catchers, this paper provides an overview of the main trading fishing entities, with an emphasis on CITES listed species and others traded in significant quantities.

* Throughout this report, the terms "shark catcher" and "catcher" refer to catchers of all species of sharks, skates, rays and chimaeras (Class Chondrichthyes).

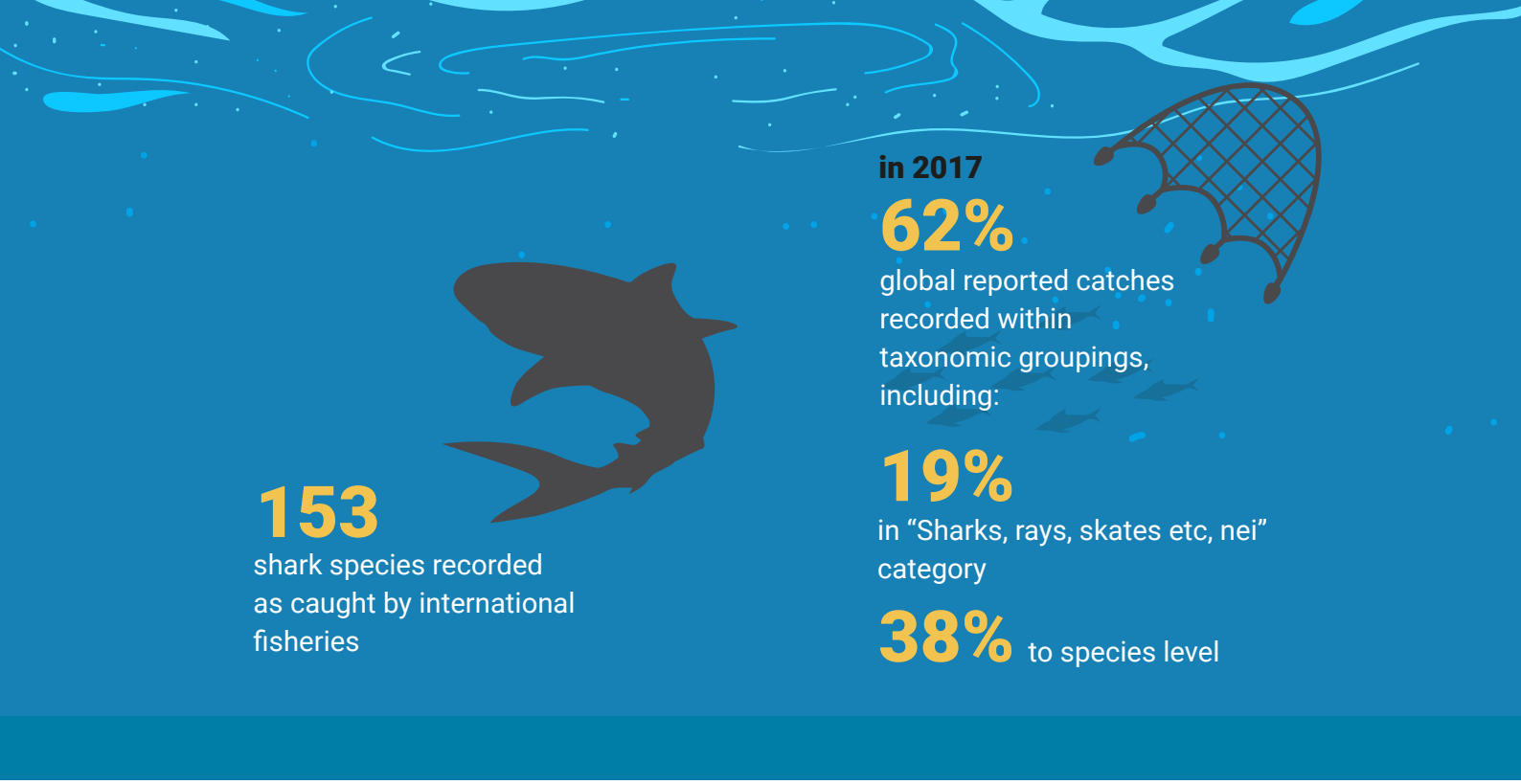
CATCH DATA

Catches of sharks, rays and chimaeras have been reported to FAO since 1950. The total rose steadily to a peak of 888,336 metric tonnes (mt) in 2000 and has been declining steadily since then by about 14%, to some 750,000 mt per year, ranging between 700 and 800,000 mt. It is not possible to suggest what has caused this trend as some catchers have increased their reported catches while others have declined. In the absence of fishing effort information for these data no conclusions can be drawn as to whether these changes are a result of overfishing or changes in reporting, fishing behaviour and management. The total average catch per year for the top 20 catchers for 2007-2017 was approximately 594,183 mt per year, which represents some 80% of the global reported catch averaged over that period. Nearly 80% of recent catches were reported from the Atlantic Ocean and adjacent seas (40%, with the largest from the Eastern Central, Southwest, Northeast and Northwest), the Pacific Ocean (33%, predominantly from the Western Central), and the Indian Ocean (27%). The top 20 shark catchers[1] for the period 2007–2017 are listed in Table 1, and mapped in Figure 1, with trends in catches illustrated in Figure 2. Indonesia, Spain and India remain the top three shark catchers, as in previous analyses (Lack and Sant, 2009; Dent and Clarke, 2015).

RANK	CATCHER	MEAN CATCH/YEAR, 2007–2017 (MT)	TOP 20 (2007–2011)	TOP 20 (2012–2017)
1	Indonesia	110,737	Yes	Yes
2	Spain	78,443	Yes	Yes
3	India	67,391	Yes	Yes
4	Mexico	39,992	Yes	Yes
5	United States	37,389	Yes	Yes
6	Argentina	33,414	Yes	Yes
7	Taiwan PoC	32,784	Yes	Yes
8	Malaysia	21,459	Yes	Yes
9	Brazil	19,877	Yes	Yes
10	Nigeria	19,008	Yes	Yes
11	New Zealand	17,396	Yes	Yes
12	Portugal	17,015	Yes	Yes
13	France	16,684	Yes	Yes
14	Japan	16,357	Yes	Yes
15	Pakistan	14,034	Yes	Yes
16	Iran (Islamic Rep.)	13,596	Yes	Yes
17	Peru	10,872	Yes	Yes
18	Korea (Rep. of)	10,504	Yes	Yes
19	Yemen	9,622	Yes	Yes
20	Ecuador	7,609	No, previously Thailand	Yes

Table 1: Top 20 shark catchers, 2007–2017. (Source: FAO FishStat 2019.)

[1] The term "catcher" refers to a country, territory or other political entity reporting catch data to FAO. For consistency the terms "importer," "exporter" and "re-exporter" have been used in the same way for reported trade data.



153
shark species recorded as caught by international fisheries

in 2017

62%
global reported catches recorded within taxonomic groupings, including:

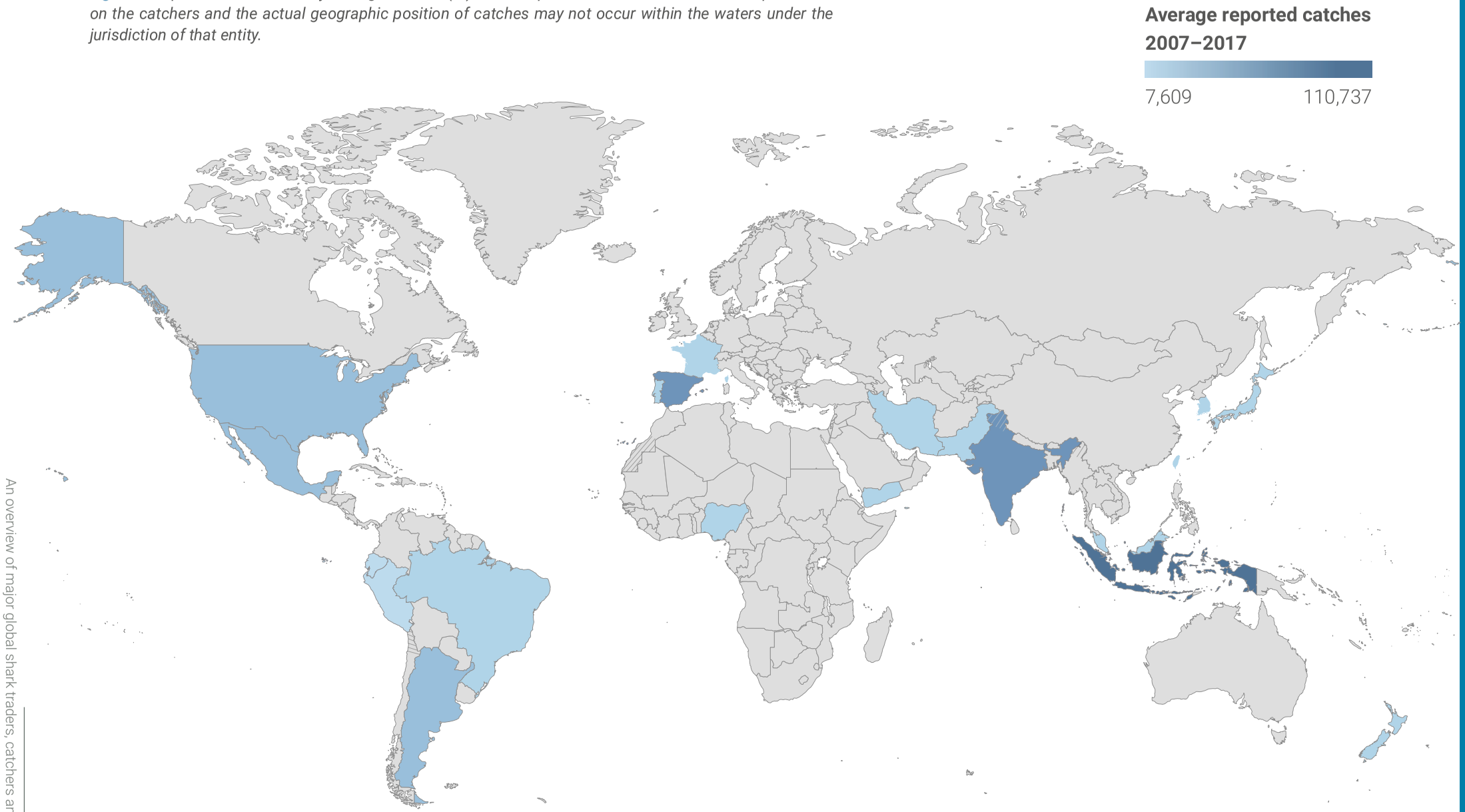
19%
in "Sharks, rays, skates etc, nei" category

38% to species level

Fischer *et al.*, (2012) identified 26 shark catchers reporting >1% of global catches each. The seven largest accounted for ~48% of global shark catches during 2000–2009 and, albeit in a different order, are the same top seven listed in Table 1. During the period from 2007 to 2017, however, these largest catchers' share of a smaller global reported catch had increased to 59%. Indonesia and Spain's reported catches had risen by about 4% and 5%, respectively, and increased catches reported by Mexico and the United States offset a minor decline by Taiwan Province of China (PoC). While increases in reported catch by Indonesia have been steady, Spain's reported catches show an overall increase but with a number of fluctuations. Two countries, Canada and the United Kingdom, had significantly reduced catches, due to more restrictive fisheries management measures. They now produce <1% of global catches. Reported catches by Thailand have also fallen significantly, from 2.6% of global reported catch to <1%. Conversely, Ecuador, Oman and Tanzania now report >1% of global catches. During 2000–2009, the 26 shark catchers reporting >1% of global catches were responsible for 85% of the total. By 2017, there were 24 entities reporting >1% of global catch, between them accouting for 91% of the total.

A total of 153 shark species and a further 28 taxonomic groupings of shark, ray and chimaera species were recorded as caught by international fisheries worldwide (FAO, 2019). Although landings may be recorded at species level within a catcher, the majority of catches are recorded in general shark groups and not to species level when aggregated for submission to the FAO (Cashion *et al.*, 2019). In 2008, 76% of all shark catches were recorded under groupings and only 24% at the species level. The most commonly used group was "sharks, rays, skates etc, nei", with 35% of all shark catches recorded in FishStat under this category. There has been a slight improvement over the last ten years (Cashion *et al.*, 2019), with more catches being recorded at the species level in some regions. In 2017, 62% of global reported catches were recorded within taxonomic groupings, including 19% under the category "Sharks, rays, skates etc, nei", and 38% at species level. A small number of catchers with large landings of marine fishes still do not report any of their catches of sharks and rays.

Figure 1: Top 20 shark catchers by average catches (m) over the period 2007–2017. Note: the map is based on the catchers and the actual geographic position of catches may not occur within the waters under the jurisdiction of that entity.



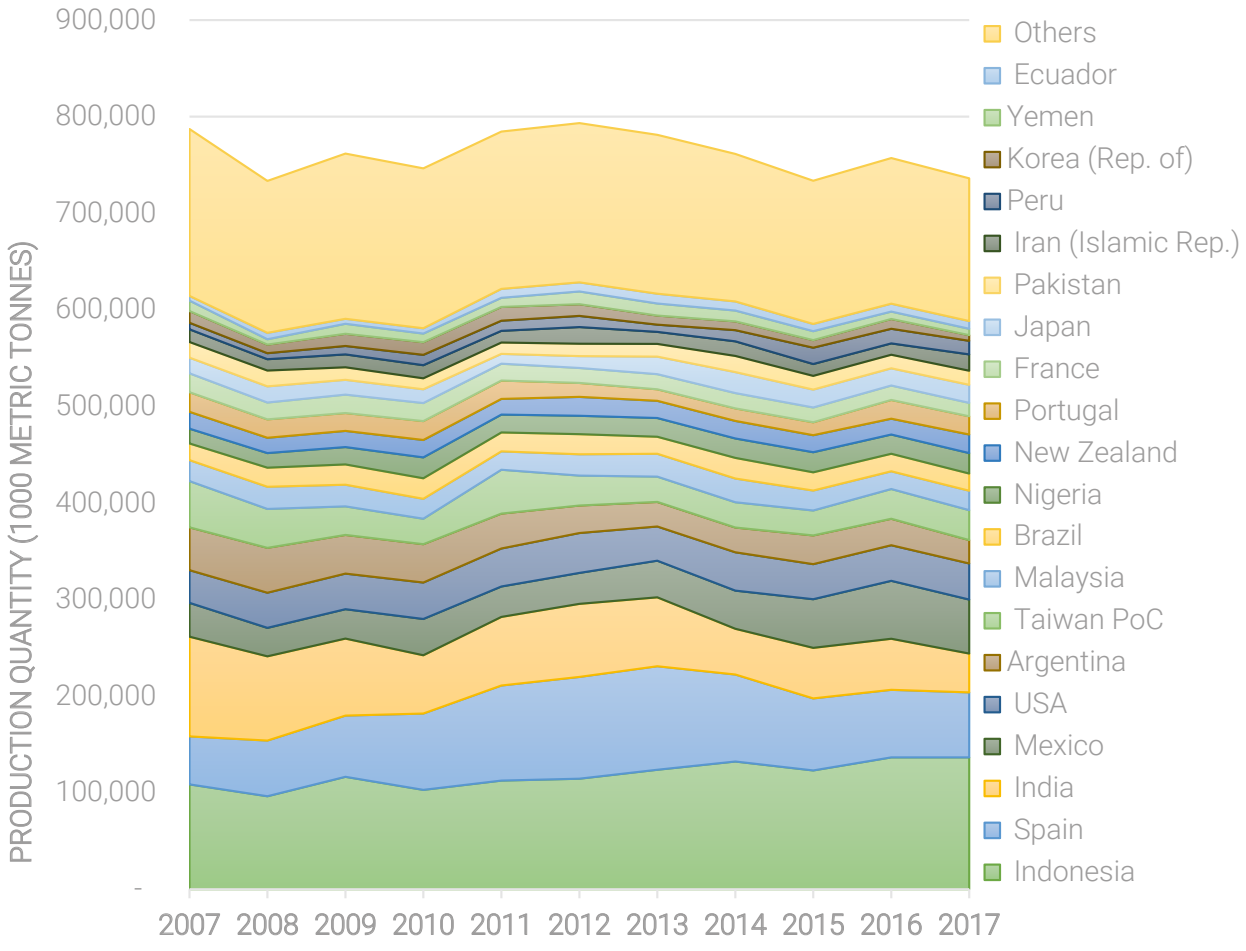
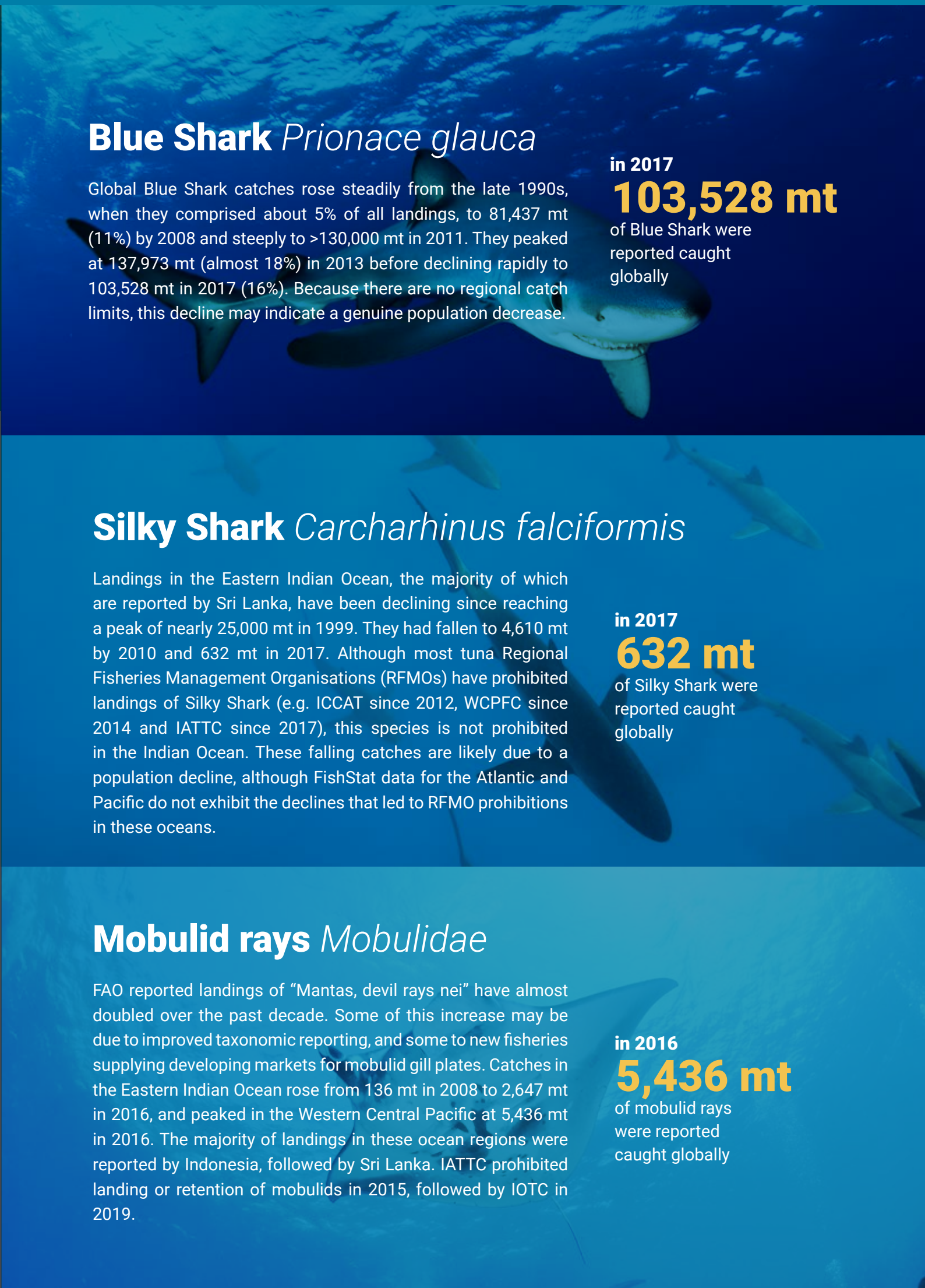


***Figure 2**: Catch trends in the top 20 shark fishing catchers, 2007–2017.*

Because a large proportion of the catch is recorded in broad taxonomic categories, it is difficult to identify many global-level taxon-specific trends in reported catches. However, changes in catch per grouping and species are tabled in Annex 1, with a few selected trends highlighted overleaf.



Blue Shark *Prionace glauca*

Global Blue Shark catches rose steadily from the late 1990s, when they comprised about 5% of all landings, to 81,437 mt (11%) by 2008 and steeply to >130,000 mt in 2011. They peaked at 137,973 mt (almost 18%) in 2013 before declining rapidly to 103,528 mt in 2017 (16%). Because there are no regional catch limits, this decline may indicate a genuine population decrease.

in 2017

103,528 mt

of Blue Shark were reported caught globally

Silky Shark *Carcharhinus falciformis*

Landings in the Eastern Indian Ocean, the majority of which are reported by Sri Lanka, have been declining since reaching a peak of nearly 25,000 mt in 1999. They had fallen to 4,610 mt by 2010 and 632 mt in 2017. Although most tuna Regional Fisheries Management Organisations (RFMOs) have prohibited landings of Silky Shark (e.g. ICCAT since 2012, WCPFC since 2014 and IATTC since 2017), this species is not prohibited in the Indian Ocean. These falling catches are likely due to a population decline, although FishStat data for the Atlantic and Pacific do not exhibit the declines that led to RFMO prohibitions in these oceans.

in 2017

632 mt

of Silky Shark were reported caught globally

Mobulid rays *Mobulidae*

FAO reported landings of “Mantas, devil rays nei” have almost doubled over the past decade. Some of this increase may be due to improved taxonomic reporting, and some to new fisheries supplying developing markets for mobulid gill plates. Catches in the Eastern Indian Ocean rose from 136 mt in 2008 to 2,647 mt in 2016, and peaked in the Western Central Pacific at 5,436 mt in 2016. The majority of landings in these ocean regions were reported by Indonesia, followed by Sri Lanka. IATTC prohibited landing or retention of mobulids in 2015, followed by IOTC in 2019.

in 2016

5,436 mt

of mobulid rays were reported caught globally

TRADE DATA

Overview: Shark catches are primarily exported as either meat (usually fresh or frozen) or fins (dried or frozen), and recorded using the World Customs Organization (WCO) Harmonised System (HS). Table 2 presents the HS codes for shark products in trade used to source country specific data from UN Comtrade (the UN International Trade Statistics Database). The trade dynamics and consumer markets for meat and fin products are quite different and are therefore summarised separately here. Since shark fin specific codes were only available from 2012 from UN Comtrade, data on shark fin trade was sourced from FAO (2018), and data on shark meat were sourced from UN Comtrade (2008–2017).

HS CODE	MEAT	HS CODE	FINS*
30265	Dogfish & other sharks, fresh/chilled (excluding fillets, other fish meat of 0304, livers & roes)	30292	Fish; fresh or chilled, shark fins
30281	Fish; fresh or chilled, dogfish & other sharks, (excl. fillets, livers, roes, & other fish meat of 0304)	30392	Fish; frozen, shark fins
30375	Dogfish & other sharks, frozen (excl. fillets, other fish meat of 0304, livers & roes)	30571	Fish; edible offal, shark fins
30381	Fish; frozen, dogfish & other sharks (excl. fillets, livers, roes, and other fish meat of 0304)	160418	Fish preparations; shark fins, prepared or preserved, whole or in pieces (but not minced)
30447	Fish fillets; fresh or chilled, dogfish and other sharks		
30456	Fish meat; excluding fillets, whether or not minced; fresh or chilled, dogfish & other sharks		
30488	Fish fillets; frozen, dogfish, other sharks, rays and skates (Rajidae)		
30496	Fish meat, excluding fillets, whether or not minced; frozen, dogfish and other sharks		

*Table 2: Shark product HS codes used in trade, 2008–2017 (UN Comtrade). *Fin specific codes available only from 2012.*

As noted by Dent and Clarke (2015), species data are only rarely identified in trade records for shark meat and never for shark fins. As a result, it has not been possible to identify shifts in utilisation between species, for example, when less-resilient species are fished down or enter management, and more-prolific, unrestricted species such as Blue Shark replace them in global markets. New research (Fields *et al*., 2018, Cardeñosa *et al*., 2017), however, will now allow species-specific trends to be monitored in the shark fin markets of Hong Kong SAR and mainland China.

Meat: An average of 90,000 mt of shark meat products were reported as imported over the period 2008–2017. Both quantities traded and reported total value[2] declined between 2011 and 2015 but increased in 2016 and 2017. The total value of annual shark meat imports peaked in 2011 and has since declined until levelling off from 2015. The average value of shark meat imports peaked in 2011 at USD3.1/kg, averaged USD2.7/kg between 2012 and 2016, and declined in 2017 to USD2.3/kg (Figure 3). Reported imports are consistently higher than reported exports, and the value per kg peaks in 2013 at USD3.76/kg before levelling off to similar values as reported by importers (Figure 3).

[2] These are the cost, insurance and freight (CIF) import and export values. CIF include the transaction value of the goods, the value of services to deliver goods to the border of the exporting entity and from there to the border of the importing entity.

The top 20 importers of shark meat account for 91% of the global average annual imports over the last ten years (2008–2017, Figure 4).

Europe and South America are the largest retail markets for shark meat, and the top 20 importers have remained stable over the last ten years with Brazil, Spain, Uruguay and Italy accounting for 57% of average global imports over this time. To identify emerging importers, we compared the top importers for the time period 2008–2012 and 2013–2017. Japan was amongst the top 20 importers of shark meat between 2008 and 2012 but dropped off in 2013–2017 and was replaced by Thailand who ranked 19th, importing an average of 687 mt in the last five years. The sources from which the top 20 importers reported imports (i.e. exporters) include Spain, Taiwan PoC, Portugal, Japan, Namibia, USA, Uruguay, China, Ecuador, and Indonesia. Figure 7 illustrates the major trade flows (>1000 mt) of shark meat recorded over the last five years (2013–2017). Several locations are both major importers and exporters (e.g., Spain, Uruguay, Portugal, Peru). It appears that Blue Shark may now be dominating meat markets in Japan, Spain, Taiwan PoC, and Uruguay, while Uruguay re-exports significant quantities to Brazil (Dent and Clarke, 2015).

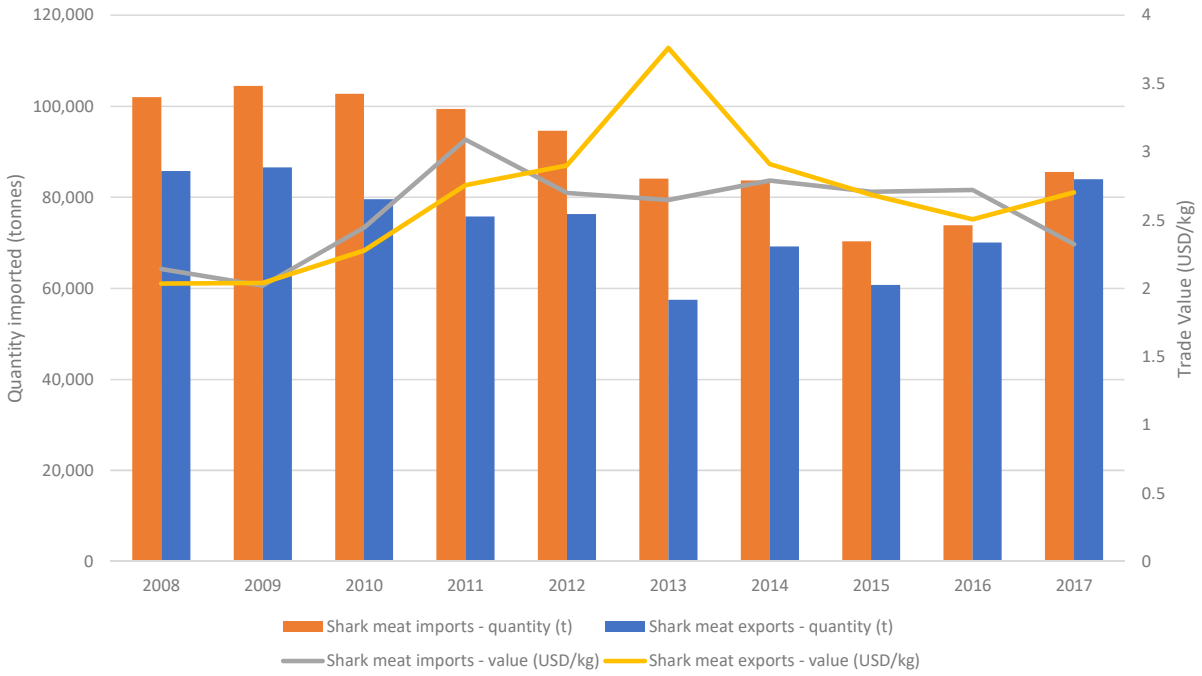


Figure 3: Global shark meat trade quantity (mt) and their value (USD/kg), 2008–2017. Source: UN Comtrade.

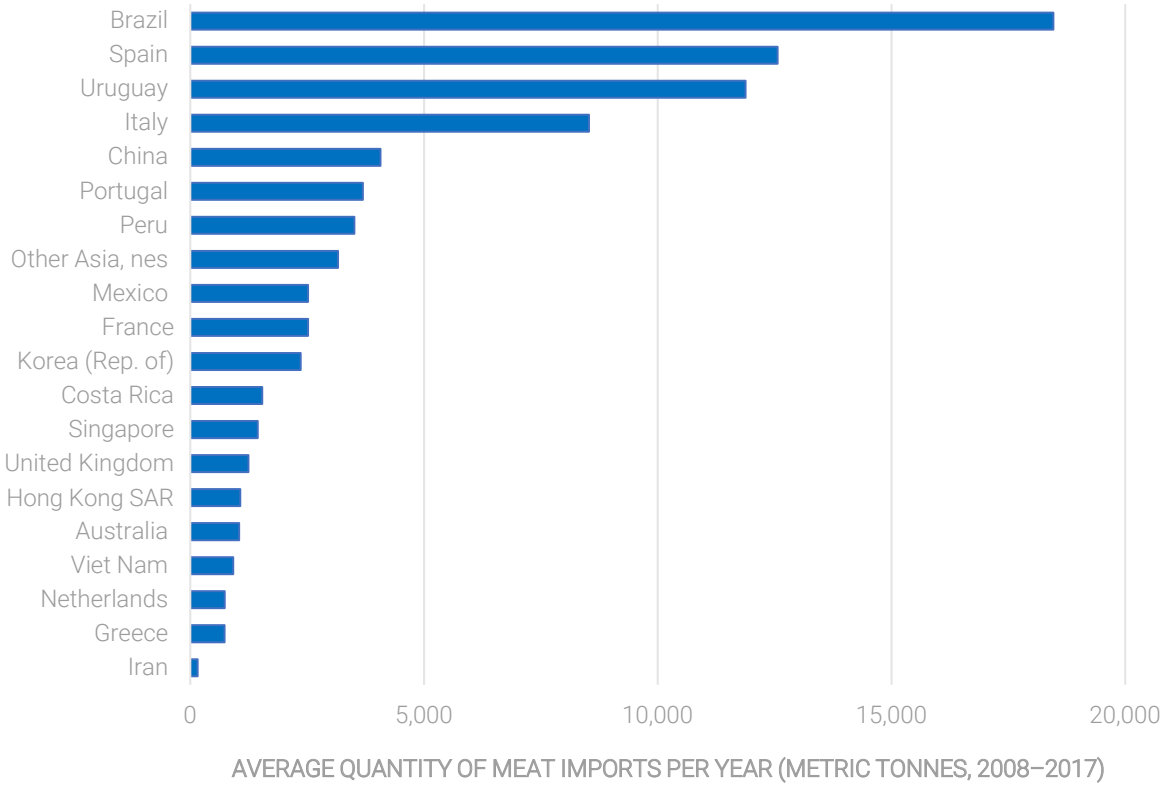


***Figure 4**: The top 20 importers of shark meat, 2008–2017.*

Fins: An average of 16,177 mt of shark fin products (with an average value of USD294 million per year) were reported as imported during 2000–2016 (Figure 5; FAO, 2018). Quantities traded and reported value have fluctuated over this time period, with the overall trend showing a decline. The majority of reported imports were traded as "Shark fins, dried, whether or not salted" (on average 50% of annual imports, 2000–2016), "Shark fins, salted and in brine but not dried or smoked" (average 21%) and "Shark fins, prepared or preserved" (average 19%). The unit value of imported unprocessed frozen or dried shark fin is much lower than that of re-exported processed fin.

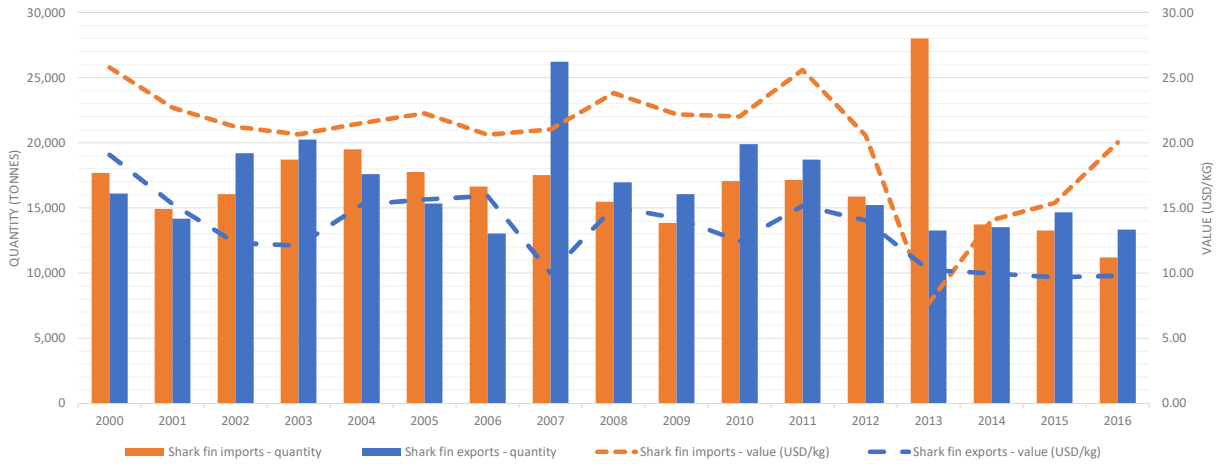


***Figure 5**: Global shark fin trade quantity (mt) and value (USD/kg) 2000–2016. Source: FAO (2018).*

The world's four largest importers of shark fin accounted for 90% of average annual global imports of fins during 2000–2016 (Figure 6), similar to the findings of Wu (2006). Hong Kong SAR is the largest, importing an average of 9,069 mt of shark fin a year over this period, followed by Malaysia (average 2,556 mt/year), China (1,868 mt/year) and Singapore (1,587 mt/year).

The trends in reported export quantities are similar to reported imports of shark meat, except in 2007 and 2013. In 2007, an unusually large total of shark fin was reported as exported (Figure 5). Closer inspection of the data reveals that this can be attributed to the first record in FishStat of reported exports of shark fin (under the description of "Shark fins, prepared or preserved") by Thailand (FAO, 2019b). Similarly, in 2013 imports of shark fin peaked at almost double the average imports of preceding years (Figure 5). In this instance, a closer inspection of the data shows an above average import of shark fin under the description of "Shark fins, prepared or preserved" by Malaysia (FAO, 2019). This coincided with a below average total value for this commodity type in 2013, resulting in the significant dip in shark fin import value per kg as indicated in Figure 5. The total value of annual shark fin imports peaked in 2000 and 2011, and has fluctuated largely since then. Similarly, the average value of shark fin imports per unit weight (USD/kg) peaked in 2000 at USD25/kg; levelled off at an average of USD22/kg between 2001 and 2010; peaked again in 2011 at USD25/kg before declining to a low of USD7/kg in 2013 (Figure 5). To identify any emerging shark fin traders in more recent years, we identified the top five importers since 2000 broken down into smaller 5–6 year time periods. Over the 2000–2005 and 2006–2010 periods, the top 5 were dominated by the same as the top 5 for the period 2000–2016, namely Hong Kong SAR, Malaysia, China, Singapore and Taiwan PoC (Figure 6). When looking at the period 2011–2016 alone, China drops out of the top 5 and is replaced by Myanmar who reported an average of 207 mt of all shark fin products per year over the last five years.

Fins moving between Hong Kong SAR and mainland China do not appear in trade statistics. Hong Kong imported fins largely from Singapore, Taiwan PoC, Spain, Peru, United Arab Emirates, and Indonesia, although Hong Kong Customs records report trade with an average of 83 nations annually (Shea and To, 2017). Singapore, which is a major trade hub (Boon, 2017) and not a fin producer, imported fins largely from Spain, Namibia, Uruguay, Taiwan PoC, and Indonesia (Figure 8, UN Comtrade).

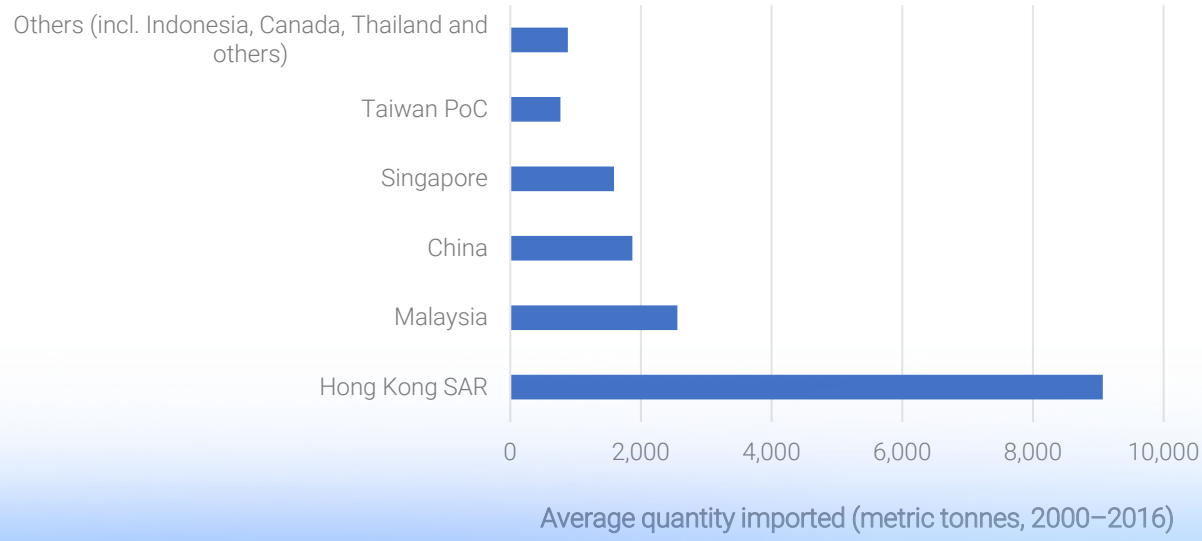


Figure 6: Major global importers of shark fin and their average annual reported imports (mt), 2000–2016. Source: FAO (2018).

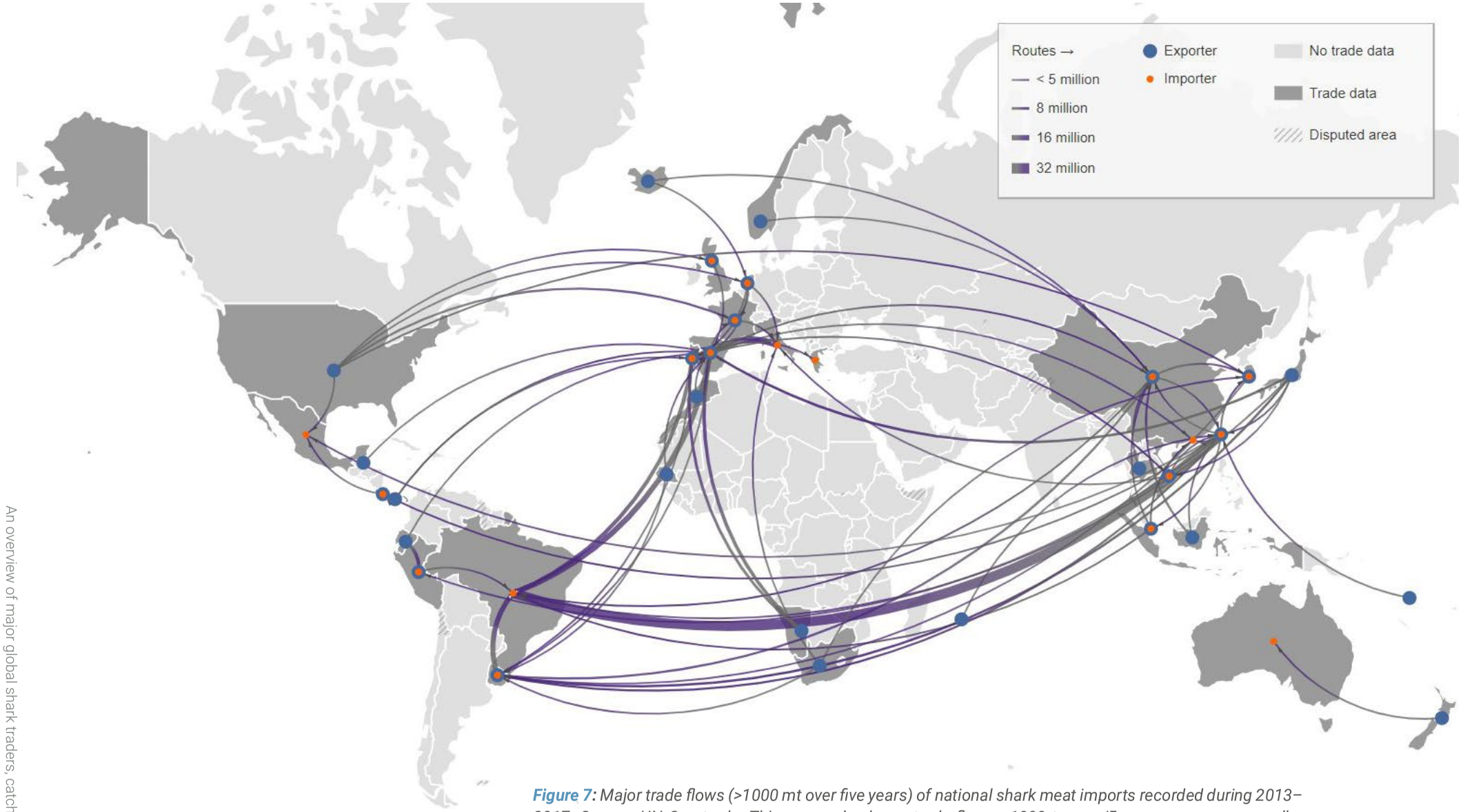


Figure 7: *Major trade flows (>1000 mt over five years) of national shark meat imports recorded during 2013–2017. Source: UN Comtrade. This map only shows trade flows >1000 tonnes/5 years; numerous smaller trade routes are not illustrated. Legend units are in kg.*

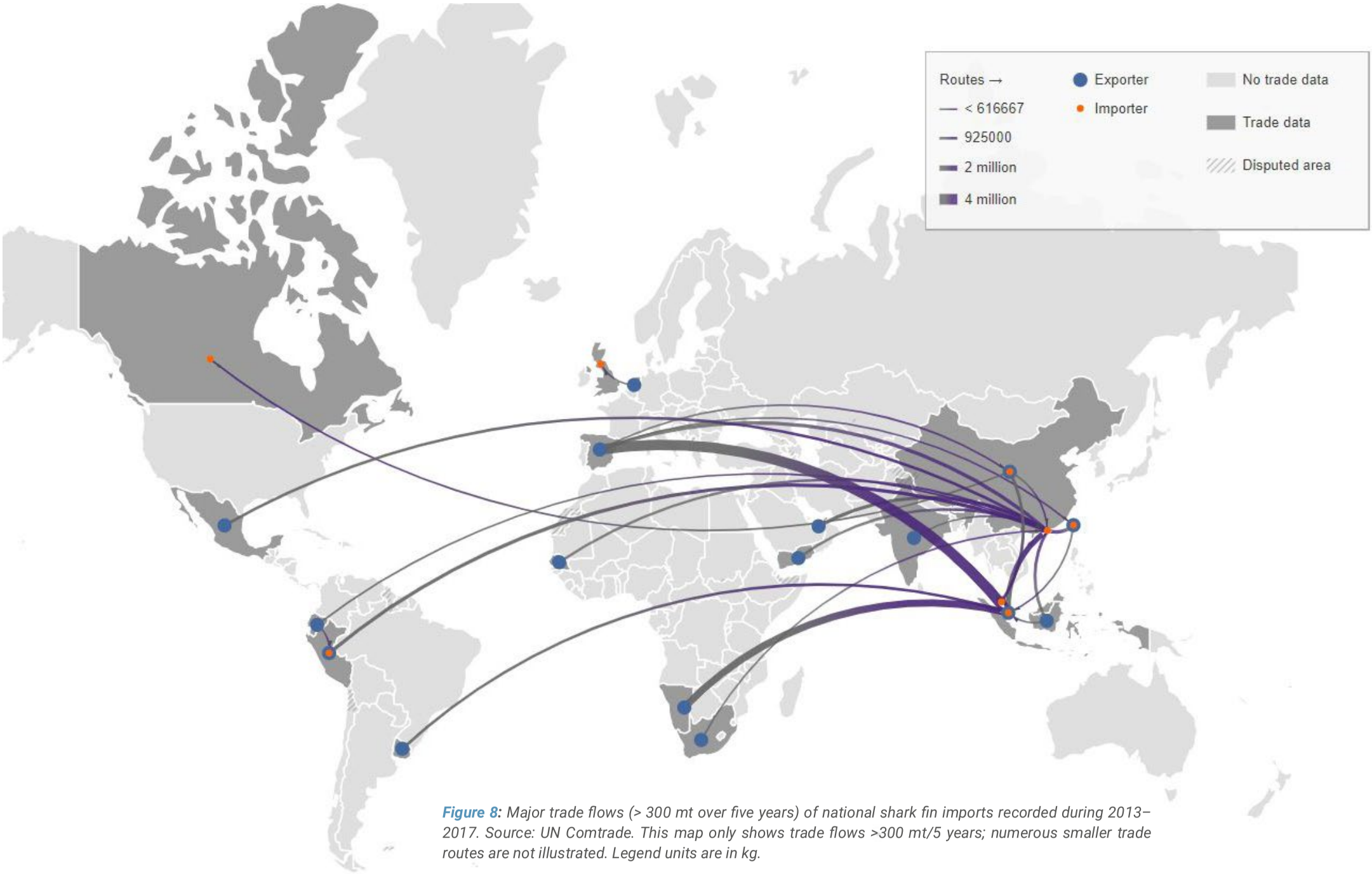


Figure 8: Major trade flows (> 300 mt over five years) of national shark fin imports recorded during 2013–2017. Source: UN Comtrade. This map only shows trade flows >300 mt/5 years; numerous smaller trade routes are not illustrated. Legend units are in kg.

Figure 8 presents the major trade flows of imports of shark fin recorded by importers over the last five years (UN Comtrade, 2013–2017). In order to highlight the largest importers and exporters, only trade flows exceeding 300 mt between 2013 and 2017 are shown. As well as being among the world's largest shark fin consumers, some of the major shark fin importers are important centres for processing dried and frozen fin imports, a proportion of which are subsequently re-exported in processed form all over the world.

Although trade statistics are not species-specific, genetic analyses have confirmed that 11 of the approximately 30 fin categories used by traders in Hong Kong SAR refer to a species or species group, including some CITES-listed species (Clarke *et al.*, 2006a, 2006b). These authors examined trader records from October 1999 to March 2001 and were able to estimate numbers of individual sharks supplying fins for the trade globally as well as the proportional contributions of 14 of the most commonly traded species. These taxa comprised about 46% of the auction volume for that ~18-month period.

It is not possible to repeat this study, but Fields *et al.,* (2018) and Cardeñosa *et al.*, (2017) developed new techniques that enable a much wider range of species to be identified from by-products of the fin processing industry, and these will allow future trends in abundance to be monitored. Furthermore, current genetic investigations using genomics are now able to identify such fine-scale population structure within a single species that samples may be identified to their ocean or stock of origin (e.g. Benavides *et al.*, 2011; Clarke *et al.,* 2015; Galván-Tirado *et al.,* 2013).

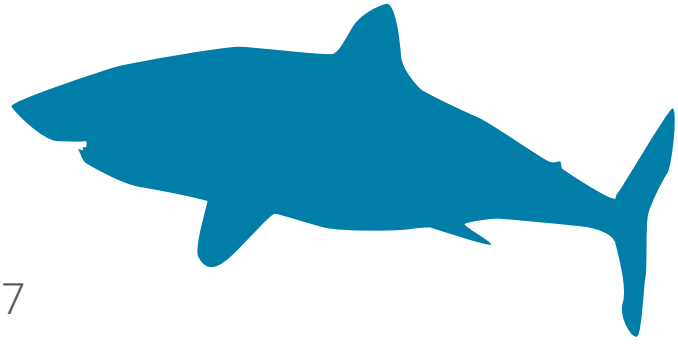
AN OVERVIEW OF CATCH AND TRADE IN

CITES-LISTED SPECIES

AND OTHER ABUNDANT SHARK TAXA

Most CITES-listed shark species are targeted primarily for trade in their fins. A few species, including Whale Shark *Rhincodon typus* (listed in Appendix II and effective in 2003), Porbeagle Shark *Lamna nasus* (2006) and Shortfin Mako *Isurus oxyrinchus* (2019) are more highly valued and targeted for meat, with their fins being a by-product. Many CITES species are globally distributed pelagics, caught throughout all oceans as either a target or secondary catch in longline, purse-seine and gillnet gear while species such as tuna, swordfish and other billfish are being targeted. Due to their broad distribution, often migratory nature, and occurrence in fisheries managed by the tuna RFMOs, management of these species falls under the remit of these RFMOs and some are subject to region-specific conservation and management measures (CMMs).

Thresher sharks
Genus *Alopias*

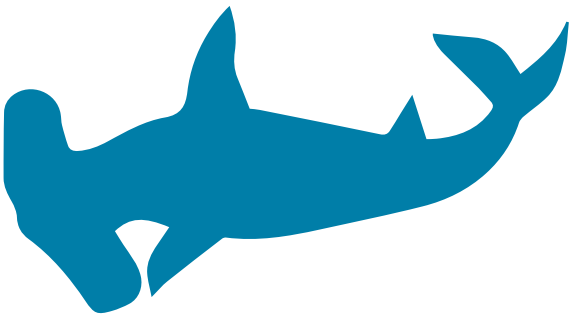


CITES Appendix II
CITES trade controls since 2017

Two of the three thresher shark species (Bigeye Thresher *Alopias supercilosus* and Common Thresher *A. vulpinus*); have a circumglobal distribution, while Pelagic Thresher *A.*

pelagicus is an Indo-Pacific species. All are caught by longline fisheries throughout their range, with some also captured in gillnets, and their meat and fins are utilised. These species are frequently reported by genus, as "Thresher sharks nei", which is applied to 77% of the thresher shark catches reported to FAO. It is therefore very difficult to determine the relative abundance of each species in regional catches. During the last ten years (2008–2017), Pelagic Threshers were only reported to species level in the Southeast Pacific, landed by Ecuador (representing 21% of global catches for the genus), although other range States also land this species. Bigeye Threshers were reported primarily in the Southeast Pacific, also landed by Ecuador, followed by Mexico in the Western Central Atlantic and Brazil in the Southwest Atlantic (FAO, 2018). Common Threshers were reported from the Northeast Atlantic, landed by France; and in the Northwest Atlantic, Western Central Atlantic and Eastern Central Pacific, landed by the United States. All three species are traded primarily for their high value fins and fetch high prices in market destinations such as Indonesia, Singapore and Japan (Dent and Clarke, 2015), although there are also markets for their relatively high value meat, which has driven some historic, primarily domestic, fisheries (e.g. on the Pacific coast of the United States).

Hammerhead sharks
Genus *Sphyrna*

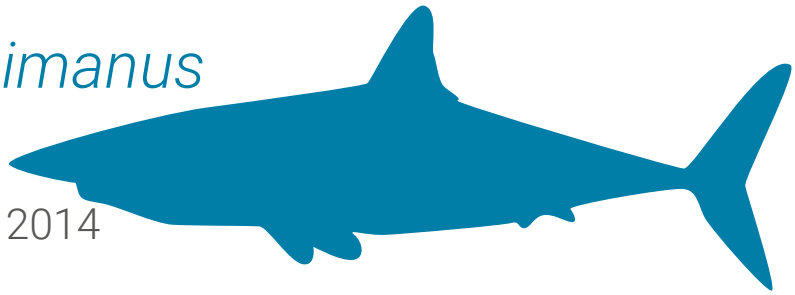


CITES Appendix II
CITES trade controls since 2014

The three large species of hammerhead sharks (Scalloped Hammerhead *Sphyrna lewini*, Great Hammerhead *S. mokarran* and Smooth Hammerhead *S. zygaena*) are also traded primarily for their fins and are amongst the preferred species for shark fin soup (Dent and Clarke, 2015). Scalloped and Great hammerheads are found worldwide in coastal temperate and tropical waters. The Smooth Hammerhead is found in similar coastal and open ocean temperate and tropical waters, but has a wider range extending into higher latitudes than the other large hammerhead species. All three are caught in both targeted fisheries (longline, gillnet, handline and trolling) and to a lesser extent as secondary catch in purse seine fisheries. As for the threshers, these species are frequently reported by genus, as "Hammerhead sharks nei", which is applied to 94% of the catch reported to FAO. Unlike the threshers, this category includes some unlisted species of smaller-bodied hammerhead shark, likely in very low volumes. According to catch statistics (FAO, 2019), Great Hammerheads (which were first reported to FAO in 2013) are reported in the lowest numbers of the three listed species and are caught predominantly by the United States in both the Northwest and Western Central Atlantic. Scalloped Hammerheads are reported predominantly by Mauritania in the Eastern Central Atlantic; Brazil in the Southwest Atlantic; Ecuador in the Southeast Pacific and the United States in the Western Central Atlantic, although this species is an important catch in a much larger number of range states. The majority of Smooth Hammerheads are reported from fisheries in the Eastern Central Atlantic, landed by Morocco, Spain and Portugal; and in the Southeast Pacific, landed by Ecuador.

Oceanic Whitetip

Carcharhinus longimanus



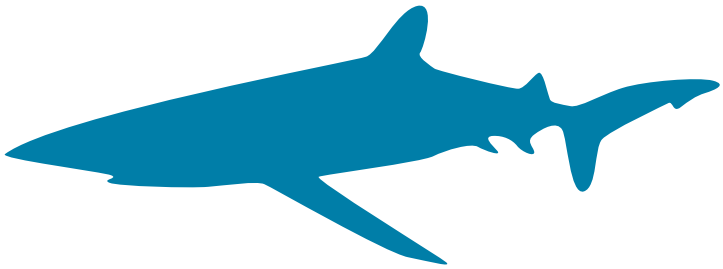
CITES Appendix II

CITES trade controls since 2014

The Oceanic Whitetip is found in epipelagic tropical and subtropical waters worldwide and caught as secondary catch in longline and purse seine fisheries throughout its range but has been greatly depleted in recent decades. Retention of Oceanic Whitetip is now prohibited by all the tuna RFMOs (IATTC in 2011, ICCAT in 2010, IOTC in 2013, and WCPFC in 2011), with the collection of data on discards and live release mandated. Landings reported to the FAO showed an average of 458 mt landed per year (2008–2017; FAO 2019) although with the adoption of the tuna RFMO prohibitions and the CITES Appendix II listing during 2010–2014, this has decreased in recent years to 65 mt in 2016 and 62 mt in 2017. Prior to the tuna RFMO prohibitions and CITES listing, Brazil consistently reported landings from the Southwest Atlantic. The majority of catch in more recent years was reported from the Eastern Indian Ocean, landed by Sri Lanka, and the Western Indian Ocean, landed by the Islamic Republic of Iran (FAO, 2019).

Blue Shark

Prionace glauca

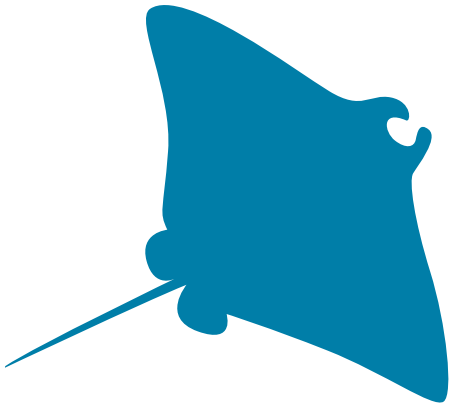


not a CITES-listed species

Blue Shark is a wide-ranging, circumglobal species, found in tropical, subtropical and temperate waters worldwide. They are reported as being landed by top catchers including Spain, Portugal, Brazil, Taiwan PoC, Namibia, Indonesia, and Mexico in the Atlantic, Indian, and Pacific Oceans. Although they are rarely targeted by commercial fisheries they are a major retained secondary catch of longline and driftnet fisheries, particularly from nations with high-seas fleets. They are primarily traded as fins, and are amongst the most abundant in international trade—ranked the number 1 most common species found in the fin trade market in Hong Kong SAR (Fields *et al.*, 2017; Cardeñosa *et al.*, 2017). Meat is popular in Spanish markets although this species is generally not preferred due to the strong taste. Current management measures include a non-binding resolution for catch recording and data submission by ICCAT members, and required catch monitoring, recording and reporting by members of IOTC since 2018. Blue Shark is currently listed on the IUCN Red List of Threatened Species as Near Threatened globally and in European waters (Stevens, 2009), and as Critically Endangered in the Mediterranean (Sims *et al.*, 2016). Currently, the Blue Shark is also listed in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Mantas and devilrays

Genus *Mobula*



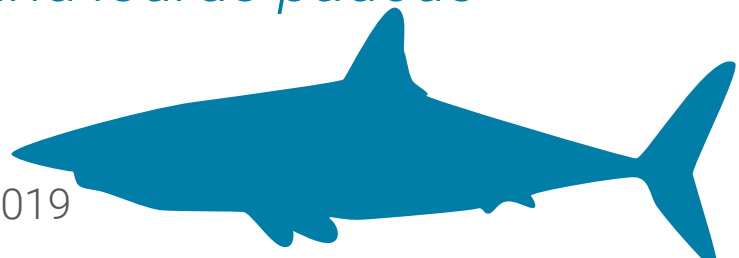
CITES Appendix II

CITES trade controls for Mantas since 2014 and since 2017 for Devil rays

A new emerging trade in mobulid ray species was recognised in 2013 (IUCN/TRAFFIC, 2013; Dulvy *et al*., 2014). CITES Appendix II came into effect for the mantas in 2014, and the other members of the genus *Mobula* in 2017. Mobulids were traditionally utilised for their meat, but the largest species are now targeted specifically for their gill plates, which are marketed as a medicinal product in Asian communities (Ward-Paige *et al*., 2013). Mobulid rays are found worldwide in tropical and temperate waters and caught in targeted fisheries as well as incidental catch in a variety of gear types, including harpooning, netting, trawling, purse seine, gillnets and longlines. The two *Manta* species (now reclassified as *Mobula*) and nine other species of *Mobula* rays are difficult to identify and distinguish without an identification guide and are not recorded to species level in catch and trade data. The FAO currently records catches for 30 ray species at species level, including the Giant Manta Ray *Mobula birostris*, and eight groupings of species that include rays—one of which is for the mobulid rays "Mantas, devil rays nei" (FAO, 2019). Catches for this category have increased over the period 2008–2017, with an average catch of 4,462 mt per year. The majority of catches in recent years were from the Western Central Pacific, landed by Indonesia; and the Eastern Indian Ocean, landed by Indonesia and Sri Lanka. IATTC has prohibited the landing or retention of mobulids on board since 2015, and IOTC adopted a similar resolution in 2019.

Shortfin and Longfin Mako

Isurus oxyrinchus and *Isurus paucus*



CITES Appendix II

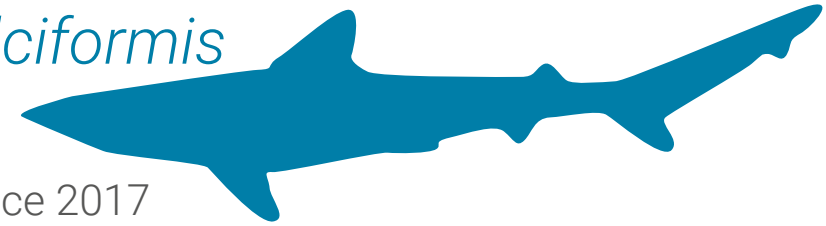
CITES trade controls since 2019

Mako sharks occur globally in temperate and tropical oceans, and are highly migratory in nature. Shortfin Mako is caught throughout all oceans by over 20 catchers. It is commonly caught as secondary catch in tuna and billfish longline and driftnet fisheries, particularly in high-seas fisheries, and is an important coastal recreational species. It is valued for its meat as well as fins and skin and was ranked as the 5th most common species in the fin trade in Hong Kong SAR (Fields *et al*., 2017). Oil is extracted for vitamins and fins for shark-fin soup, and jaws and teeth are also sold as ornaments and trophies. Current management measures implemented by RFMOs include: a non-binding resolution for the North Atlantic stock whereby live release with exemptions is required for ICCAT members (BYC 17-08;

2017), and GFCM prohibits the retention of Shortfin Mako until data have been received by the ICCAT Secretariat (35/2011/7; 2011). Longfin Mako is reported as caught by fewer catchers, mainly Portugal and Spain in the Pacific and Atlantic Oceans. It is caught as secondary catch in tropical pelagic longline fisheries for tuna, swordfish and sharks and in other oceanic fisheries, which operate throughout their range. The products utilised include fresh, frozen, and dried or salted meat for human consumption. Fins are of high relative value compared to the carcass, and are known to enter the international fin trade (Reardon *et al*., 2006). Both Shortfin and Longfin makos are listed on the IUCN Red List of Threatened Species as Near Threatened globally (Rigby *et al*., 2019a, b) and in 2019 were included in CITES Appendix II.

Silky Shark

Carcharhinus falciformis



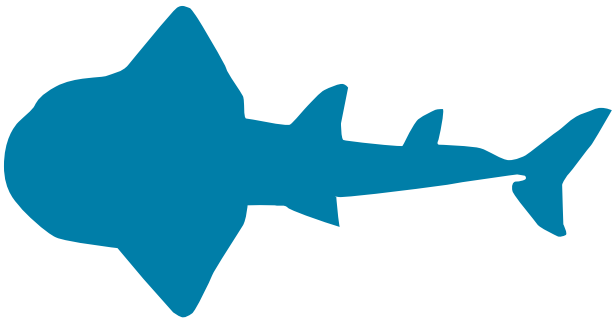
CITES Appendix II

CITES trade controls since 2017

Silky Shark has a circumglobal distribution. It is caught in targeted fisheries and is a common incidental catch in coastal longline and gillnet fisheries, and in oceanic longline and purse seine fisheries. Over the last ten years, the majority of reported catches of Silky Shark were reported landed in the Eastern Indian Ocean by Sri Lanka; Costa Rica in the Eastern Central Pacific; and the Islamic Republic of Iran in the Western Indian Ocean (FAO, 2019). The retention of Silky Sharks is now prohibited in many oceanic pelagic fisheries outside the Indian Ocean (IATTC 2016, ICCAT 2011, WCPFC 2013). Silky Shark is still traded for both its meat and fins, the latter considered high value and the species is the second most commonly traded in the fin trade (Fields *et al*., 2017; Cardeñosa *et al*., 2017).

Wedgefishes

Rhinidae



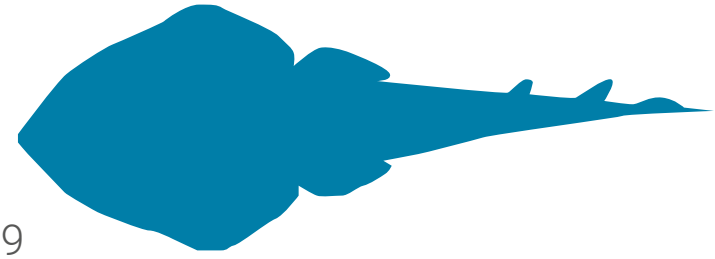
CITES Appendix II

CITES trade controls since 2019

Recent awareness over the susceptibility of wedgefishes to over-exploitation has highlighted the need for their improved management and conservation (Dulvy *et al*., 2014; Moore, 2017). The family Rhinidae (commonly referred to as wedgefishes) consists of 10 species, and is the third most threatened species of chondrichthyans globally with 9 of the 10 wedgefish species in the family classified as "Critically Endangered"' on the IUCN Red List (Dulvy *et al*., 2014). Two species in particular, *Rhynchobatus australiae* and *R. djiddensis* are considered especially vulnerable. These species typically occur in inshore habitats on the continental shelf including shallow bays, estuaries and coastal

coral reefs, mainly in the Indian and Pacific Oceans (Compagno & Last 1999). They are caught by artisanal and commercial fisheries both as target species and as secondary catch in demersal trawl, net, and longline fisheries (Jabado, 2018). Wedgefish fins are considered amongst the best quality and highest value in the shark fin trade (Dent and Clarke, 2015) and are increasingly being found fetching high prices on markets in Hong Kong SAR and Singapore (Wainwright *et al*., 2018; Fields *et al*., 2017). As they are primarily coastal species, international management through RFMO regulations is limited, but in 2019 trade was regulated through the inclusion of all ten species within CITES Appendix II.

Giant guitarfishes
Genus Glaugostegus



CITES Appendix II
CITES trade controls since 2019

The genus *Glaugostegus* comprises six species of giant guitarfishes, classified as Critically Endangered and threatened by unmanaged and unregulated fisheries and trade (Kyne *et al*., 2019a). Two species: *Glaugostegus cemiculus* and *G. granulatus* are known to be targeted in West Africa, Northwest Indian Ocean, and South Asia (Jabado, 2018). They occur mainly in shallow coastal waters and are caught in many gear types, including trawls, gillnets, seine nets, and hook and line (Kyne *et al*., 2019b). Similar to wedgefishes, they are largely traded for their high value fins and are known to occur in markets in Hong Kong SAR (Fields *et al*., 2017). To regulate trade, the six species of guitarfish were included within CITES Appendix II in 2019.

RISK OF **OVEREXPLOITATION (M-RISK)**

In 2014, in order to facilitate efforts to improve management of shark catches, a rapid risk management framework suitable for marine taxa **(M-Risk)** was developed and applied to species of shark with medium to high intrinsic vulnerability (Oldfield *et al*., 2012; Sant *et al*., 2012; Lack *et al*., 2014). The assessment combined information on three elements for each shark species—stock status, species-specific management and generic management—in order to determine an overall score representing the shark species' or stock/s' overall risk of overexploitation due to inadequate management (Lack *et al*., 2014). This process can be used to prioritise shark species of greatest concern and identify where improvement or implementation of new management measures is most needed. Preliminary analyses covered 173 shark management units (or shark stocks) for 46 species (see Annex 1 for the species assessed). Of those, 150 were assessed as having a high management risk and 23 as having a medium management risk (Lack *et al*., 2014). The assessment allows for the identification of additional management interventions for priority species and is a valuable tool for monitoring the effectiveness of management measures in the future.

CONCLUSIONS
AND RECOMMENDATIONS

Over the course of the last two decades, there have been notable shifts in the top 20 catchers as described in Lack and Sant (2006, 2009). The shifts in trade of commodities are more dynamic now between importers and exporters and it is accordingly less easy to predict the trade routes the supply chains followed at any given time.

This emphasises the need for better recording of catch and trade data and the need for more "real time" monitoring of such trade to ensure dramatic changes in the targeting of particular species are not occurring in the absence of suitable management and adherence to management arrangements where they occur. In order to improve the reliability of shark catch and trade data and their use to support adequate management for sharks, there is an urgent need to implement the following recommendations, particularly by the top 20 catchers and traders.[3]

[3] TRAFFIC has a large back catalogue of shark trade publications from 1996 to the present day and these recommendations draw on the findings of this current publication and our previous reviews. https://www.traffic.org/publications/search/fish/

1 REAL-TIME **DATA COLLECTION**

Improved real time collection of accurate catch and trade information to allow for the "early warning" of changes that may reflect or affect the conservation status of shark species;

2 **TRACEABILITY** SYSTEMS

The introduction of suitable traceability systems for shark products noting the recent guidance adopted by the CITES Parties around definitions and information management for the traceability of wildlife products (CoP18 Doc 42 Rev.1)[4] and the practical experience of shark product traceability systems such as the one being trialled by TRAFFIC through a project entitled SharkTrack[5];

3 UNILATERAL USE OF **WCO CODES**

The use of existing WCO codes for import and export, the amendment of those codes to add specificity to species and product information and their short term unilateral adoption given the length of time between WCO code updates;

4 ADOPTION OF **NPOAS**

The adoption and proper implementation of NPOAs by shark catchers with particular attention to the collection and reporting of catch and trade;

5 **EXISTING** MEASURES

The introduction and implementation of existing measures for sharks and their products by catchers and traders through:

- ✓ **CITES**;
- ✓ **Regional and Free Trade Agreements** such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)[6] which includes restrictions around the trade in sharks and their products;
- ✓ **Regional Fisheries Bodies** and Regional Fisheries Management Organisations;
- ✓ **The Agreement on Port State Measures** (PSMA); and
- ✓ **The Guidelines for Responsible Fish Trade** (FAO)[7].

6 **RESTRICTED** TRADE

The use of trade measures either through trade conventions or unilaterally to ensure traders are not importing species considered at a high risk of overexploitation (for example using the method developed by TRAFFIC (Lack *et al.*, 2014) to restrict trade in high risk species).

[4] At CITES CoP18 Committee II recommended the adoption of Decisions of the Parties as amended from CoP18 Doc. 42 (Rev. 1). This was then adopted in Plenary at CoP18.
[5] https://www.traffic.org/what-we-do/species/sharks-and-rays/
[6] A free trade agreement between Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, Peru, New Zealand, Singapore and Viet Nam.
[7] http://www.fao.org/3/a-i0590e.pdf

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ANNEX 1

Capture production by species and groups of species in mt, 2008–2017.
Source: FAO (2019) FishStat. Those species marked with an asterisk were assessed with regards to their management risk (Lack et al., 2014).*

SPECIES / GROUPING	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SPECIES										
Blue Shark*	81,437	89,216	110,182	132,604	135,647	137,973	120,530	103,471	110,173	103,528
Picked Dogfish*	13,785	15,637	13,186	15,516	18,080	13,234	17,008	15,721	17,867	16,966
Shortfin Mako*	7,921	11,694	11,813	14,192	13,562	13,111	14,608	11,757	12,865	11,851
Small-spotted Catshark	5,805	6,124	6,463	6,568	6,162	7,119	6,776	7,637	8,225	7,474
Narrownose Smooth-hound	10,893	9,476	8,264	6,867	6,062	4,572	4,538	4,420	4,014	3,142
White-spotted Wedgefish	3,645	9,002	3,498	4,241	3,097	3,492	7,483	3,540	20,458	707
Silky Shark*	3,387	4,700	8,728	7,987	6,464	6,818	5,179	4,713	3,935	3,585
Thornback Ray	2,200	3,588	4,378	4,663	5,305	5,576	5,409	5,370	5,516	5,927
Tope Shark	5,259	5,328	5,233	4,724	4,452	4,330	4,360	4,308	4,069	4,013
Little Skate	3,702	3,836	4,214	4,511	4,987	5,008	4,235	3,619	3,220	2,925
Argentine Angelshark	5,453	5,276	5,534	4,568	3,726	3,066	3,217	2,989	2,957	2,425
Cuckoo Ray	436	4,309	5,419	4,892	3,850	3,266	3,479	3,562	3,131	3,014
Pelagic Thresher*	4,583	...	...	...	...	6,680	5,839	4,795	4,601	4,366
Milk Shark	...	...	516	634	3,017	3,295	4,050	4,161	3,025	7,660
Plownose Chimaera	3,659	3,805	2,700	2,904	2,183	1,533	1,336	3,123	2,500	1,820
Gummy Shark	3,249	2,653	2,365	2,325	2,150	2,299	2,229	2,324	2,650	2,677
Southern Stingray	26	25	26	542	1,943	3,141	2,641	3,107	6,734	6,094
Blonde Ray	821	1,323	2,028	2,223	2,300	2,321	2,498	2,549	2,390	2,332
New Zealand Rough Skate	1,641	1,922	1,962	1,714	1,609	2,080	1,960	1,532	1,554	1,984
Dark Ghost Shark	1,779	1,993	2,229	2,184	2,300	1,584	1,641	1,326	1,348	1,443
Spotted Ray	625	1,527	1,497	1,877	1,887	1,678	1,623	1,510	1,553	1,606
Ghost Shark	1,510	1,650	1,610	1,421	1,484	1,651	1,370	1,416	1,457	1,575
Spotted Estuary Smooth-hound	1,225	1,244	1,318	1,277	1,332	1,324	1,364	1,394	1,425	1,527
Starry Ray	639	711	1,039	1,360	1,880	1,752	1,643	1,246	1,213	664
Spottail Shark	...	...	...	...	707	896	1,163	997	818	7,163
Lusitanian Cownose Ray	...	...	1,166	1,125	2,911	1,129	1,596	1,569	796	1,104
Kitefin Shark*	1,288	257	282	198	155	1,207	2,057	1,952	2,412	1,232

SPECIES/GROUPING	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Smooth-hound	274	314	512	1,820	1,063	1,396	1,093	1,187	1,272	1,358
Pacific Angelshark*	930	882	1,116	813	778	924	984	1,093	905	1,236
Dusky Smooth-hound	811	1,231	1,747	1,264	1,006	950	831	664	451	540
Blackmouth Catshark	229	443	418	375	88	480	1,599	1,719	1,363	1,329
Nursehound*	601	713	709	792	564	707	629	826	1,099	995
Cape Elephantfish	585	623	859	765	781	660	632	1,010	600	1,007
Yellownose Skate	...	1,331	1,459	714	817	628	432	562	549	264
New Zealand Smooth Skate	681	525	573	565	573	580	645	657	706	866
Oceanic Whitetip Shark*	297	1,058	1,085	534	519	287	260	410	65	62
Atlantic Sharpnose Shark	310	359	304	299	253	406	422	508	479	514
Rabbit Fish	134	189	288	403	453	551	479	295	309	351
Night Shark	...	...	...	...	...	...	1,237	1,190	911	-
Lowfin Gulper Shark*	302	438	271	590	655	559	...	...	...	-
Porbeagle*	897	737	270	157	232	143	103	107	61	92
Shagreen Ray	19	321	434	358	323	316	264	260	192	252
Blacktip Shark	226	187	179	353	391	260	267	148	237	193
Leafscale Gulper Shark	550	453	382	215	183	120	184	97	114	113
Whitecheek Shark	...	...	...	...	354	438	577	499	409	-
Smooth Hammerhead*	380	132	61	167	294	483	183	280	200	93
Thresher*	359	327	250	169	171	187	216	174	169	196
Sandy Ray	46	165	240	252	251	239	249	245	252	254
Small-eyed Ray	88	224	334	270	298	223	229	209	97	192
Birdbeak Dogfish	233	207	147	136	83	138	245	246	366	327
Bigeye Thresher*	227	104	27	27	87	440	403	248	245	267
Nurse Shark*	168	155	188	257	248	266	240	212	85	115
Giant Guitarfish	60	104	98	135	187	215	174	241	295	332
Pacific Guitarfish	114	79	47	85	780	147	296	2	162	93
Scalloped Hammerhead*	158	109	336	212	265	237	56	129	97	159
Longnosed Skate	35	84	20	49	44	42	145	419	393	448
Blue Skate	196	205	158	176	154	96	139	146	123	171
Blackchin Guitarfish	...	...	161	119	46	97	170	241	153	242

SPECIES/GROUPING	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Rio Skate	...	237	417	221	108	89	24	9	15	0,0
Blacknose Shark	68	60	19	20	27	22	26	30	412	414
Japanese Topeshark	...	...	589	488	...	...	...	...	-	-
Smallnose Fanskate	...	187	424	84	96	54	85	67	17	27
Portuguese Dogfish	688	160	120	1	1	52	5	3	4	4
Angelshark*	52	76	97	11	125	50	125	183	175	132
Longnose Spurdog	19	14	21	...	...	220	261	109	218	146
Spiny Butterfly Ray	7	9	152	49	60	75	196	69	88	272
Tiger Shark*	72	77	49	114	76	33	87	67	76	96
White Skate	1	87	83	64	27	28	18	91	108	223
Spotted Eagle Ray	...	...	...	...	...	...	...	...	358	370
Eyespot Skate	...	73	288	43	35	16	29	18	139	78
Smooth Butterfly Ray	...	...	...	...	...	...	...	...	331	340
Knifetooth Dogfish*	253	171	221	4	3	1	1	0,0	...	0,0
Bull Shark*	76	86	60	136	41	32	30	28	70	72
Copper Shark*	41	86	112	40	77	31	67	48	57	60
Mediterranean Starry Ray	...	3	6	8	6	38	34	168	151	203
Big Skate	0,0	1	-	0,0	4	21	41	35	312	196
Whiteleg Skate	56	187	56	29	107	33	55	17	33	25
Caribbean Sharpnose Shark	...	...	...	...	...	...	...	...	263	297
Draughtsboard Shark	36	48	64	91	121	74	33	31	15	18
Undulate Ray	3	26	12	22	8	3	22	69	133	218
Sandbar Shark*	50	105	90	68	15	34	0,0	68	...	73
Longfin mako*	2	0,0	2	0,0	2	20	64	42	41	287
Atlantic Weasel Shark	...	...	14	17	6	1	25	54	66	248
Sharpnose Stingray	29	36	37	35	34	42	40	53	63	60
Common Eagle Ray	15	37	22	67	23	32	39	46	42	55
Greenland Shark	46	31	49	18	17	6	24	13	47	119
Barbeled Houndshark	...	...	111	82	17	24	2	72	50	0,0
Bluntnose Sixgill Shark*	5	35	33	22	26	64	34	53	36	50
Broadnose Skate	...	182	0,0	42	25	11	41	57	-	-

SPECIES/GROUPING	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Velvet Belly	5	5	16	8	15	21	49	32	63	133
Gulper Shark*	205	41	8	9	11	5	7	14	9	20
Common Guitarfish	...	90	69	44	44	0,0	1	3	2	27
Spinner Shark	-	18	13	40	8	25	32	30	54	40
Lemon Shark*	27	48	25	39	29	13	12	18	28	20
Brown Ray	...	...	...	...	...	...	2	56	74	121
Cownose Ray	34	-	80	128	2	6	-	-	-	-
Longtail Stingray	45	...	...	...	...	1	1	...	1	185
Angular Roughshark*	63	76	50	19	3	4	2	2	2	4
Brazilian Sharpnose Shark	...	...	...	...	...	...	...	...	106	119
Arrowhead Dogfish	...	0,0	3	2	7	1	...	9	108	90
Black Dogfish*	5	95	81	1	2	0,0	25	4	4	-
Giant Manta	10	...	...	...	...	...	...	...	...	201
Smalltail Shark*	...	...	...	...	...	...	...	...	103	104
Finetooth Shark	15	41	9	32	11	56	4	5	3	11
Broadnose Sevengill Shark*	23	27	25	17	20	13	18	13	9	5
Eaton's Skate	8	8	14	5	2	36	22	5	21	45
Kerguelen Sandpaper Skate	10	1	0,0	16	0,0	55	55	7	9	13
Starry Smooth-hound	8	15	7	8	30	19	16	19	20	16
Longnose Velvet Dogfish	42	33	9	0,0	1	21	14	9	16	11
Great White Shark*	...	...	18	92	11	25	7	...	...	...
Great Hammerhead	...	...	...	...	...	17	7	27	51	44
Bonnethead	39	34	6	17	13	14	-	4	1	4
Spotback Skate	...	25	60	4	4	5	8	5	16	-
Chola Guitarfish	4	...	26	3	10	12	38	15	12	...
Bignose Fanskate	...	53	39	0,0	1	-	-	-	-	1
Common Stingray	3	6	12	9	11	7	10	13	6	7
Sailray	...	...	...	...	15	13	8	30	...	4
Norwegian Skate	52	5	-	-	-	-	-	-	-	0,0
Patagonian Skate	...	20	12	...	24	-	-	-	-	-
Arctic Skate	...	1	3	2	2	2	2	23	6	12

SPECIES/GROUPING	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Basking Shark*	12	7	0,0	2	22	0,0	0,0	0,0	0,0	0,0
Brown Smooth-hound	8	2	3	...	...	10	1	...	3	11
California Butterfly Ray	35	...	...	...	...	...	...	...	...	...
Leopard Shark	3	2	3	2	3	1	3	4	5	4
Pacific Sleeper Shark*	-	1	1	2	-	5	-	8	5	7
Mouse Catshark	-	7	5	5	1	4	4	2	-	0,0
Slender Smooth-hound	-	-	-	1	2	0,0	1	11	6	3
Antarctic Starry Skate	4	6	5	3	0,0	1	0,0	0,0	2	0,0
Great Lanternshark	20	-	-	-	-	0,0	-	-	-	-
Devil Fish	1	3	4	5	0,0	1	-	0,0	0,0	0,0
Sharptooth Houndshark	-	2	-	3	-	1	1	1	1	2
Murray's Skate	1	2	1	1	0,0	2	2	0,0	0,0	1
Sharpnose Sevengill Shark	2	2	2	0,0	-	0,0	2	-	-	-
Sand Tiger Shark*	0,0	5	1	0,0	1	0,0	...	...	...	...
Silver Chimaera	-	-	-	-	1	0,0	0,0	1	5	-
Bramble Shark*	...	2	1	0,0	1	0,0	...	...	-	-
Plunket Shark	...	...	...	...	...	...	1	3	-	-
Round Ray	1	1	1	-	1	-	0,0	-	-	-
Little Sleeper Shark*	...	...	0,0	3	0,0	0,0	0,0	0,0	0,0	0,0
Roughtail Stingray	...	...	...	...	...	...	...	2	-	-
Madeiran Ray	-	1	-	-	-	-	-	-	-	-
Pelagic Stingray	...	...	...	...	1	-	-	-	-	-
Roughskin Dogfish	-	-	-	-	-	1	-	-	-	-
Sailfin Roughshark*	-	-	-	-	1	-	-	-	-	-
Crocodile Shark*	...	...	...	...	...	...	...	...	...	...
Dark-belly Skate	-	-	-	-	-	-	-	-	-	-
Dusky Catshark	-	-	-	-	-	-	-	-	-	-
Dusky Shark*	...	0 0	...	...	...	...	...	...	...	...
McCain's Skate	0 0	0 0	...	0 0	0 0	-	-	0 0	-	-
Spotted Ratfish	-	-	0 0	-	0 0	0 0	-	0 0	0 0	-
Straightnose Rabbitfish	-	-	-	-	-	-	-	0 0	0 0	-
Whip Stingray	...	...	...	...	...	...	...	...	...	...
Total by species	**176,082**	**199,694**	**222,083**	**245,486**	**250,590**	**253,853**	**244,978**	**220,007**	**247,336**	**226,213**

SPECIES/GROUPING	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GROUPING										
Sharks, rays, skates, etc. nei	259,786	248,199	226,519	245,469	250,036	251,726	216,212	222,377	219,380	208,275
Rays, stingrays, mantas nei	125,699	129,082	124,757	120,863	128,262	116,842	124,314	157,782	155,409	122922
Stingrays, butterfly rays nei	35,795	45,285	37,807	40,510	47,255	44,673	49,425	26,786	30,865	12,586
Requiem sharks nei	40,260	40,152	35,789	34,530	39,727	35,618	40,428	29,561	26,640	16,376
Rays and skates nei	41,325	29,075	24,854	21,443	19,619	15,958	17,594	16,218	16,295	16,819
Smooth-hounds nei	10,271	13,250	12,637	13,534	10,762	11,059	12,627	14,818	13,294	13,408
Thresher sharks nei	6,189	12,283	18,423	22,420	13,551	14,763	12,882	5,138	4,794	4,886
Dogfish sharks nei	5,771	13,618	10,446	7,528	9,049	8,810	8,670	7,183	8,458	5,757
Various sharks nei	11,971	11,099	12,040	11,075	1,881	2,817	4,494	3,188	2,327	2,249
Hammerhead sharks, etc. nei	4,946	4,635	6,617	6,509	4,410	4,474	5,987	7,066	10,362	7,868
Eagle rays nei	3,953	4,849	4,314	4,379	4,203	6,460	9,078	8,220	6,493	6,115
Mantas, devil rays nei	4,309	2,414	2,447	3,731	5,935	6,318	4,651	4,803	8,083	1,932
Guitarfishes, etc. nei	1,580	2,274	1,864	1,926	1,777	2,516	5,041	5,089	2,784	1,335
Mackerel sharks, porbeagles nei	1,072	1,272	1,079	1,119	1,240	1,283	1,407	1,193	1,161	153
Ratfishes nei	1,287	1,186	1,141	723	739	815	841	844	796	1,038
Catsharks, nursehounds nei	652	1,002	937	992	878	570	499	539	579	599
Dogfishes and hounds nei	921	821	901	921	932	852	853	922	28	61
Catsharks, etc. nei	700	499	412	466	1,734	514	532	522	660	623
S.Am. freshwater stingrays nei	...	...	...	743	749	755	910	896	865	838
Sawsharks nei	384	374	310	367	266	314	285	290	268	310
Sawfishes	50	201	463	94	57	313	17	405	271	1,131
Angelsharks, sand devils nei	288	178	247	186	202	262	187	142	434	440
Lanternsharks nei	34	65	63	40	36	91	267	250	175	299
Chimaeras, etc. nei	95	122	104	99	92	116	114	123	115	115
Torpedo rays	81	96	106	110	70	77	78	79	67	83
Mako sharks	13	33	13	23	21	17	10	24	29	19
Bathyraja rays nei	-	-	-	-	-	-	0,0	2	2	7
Elephantfishes, etc. nei	-	-	-	-	-	-	-	-	-	-
Stingrays nei	...	...	...	...	...	...	...	...	...	...
Total by group	**557,432**	**562,064**	**524,290**	**539,800**	**543,483**	**528,013**	**517,403**	**514,460**	**510,634**	**303,322**

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