



An assessment of shark by-catch  
and discards in EU fisheries







Oceanic whitetip by-catch and drying fins on purse seiner, Indian Ocean 1999

Executive Summary.....	2
1. Introduction.....	3
2. Overview of shark by-catch in Atlantic tuna fisheries.....	4
3. Shark by-catch in Atlantic purse seine tuna fisheries.....	6
4. Shark by-catch in EU gillnet fisheries.....	7
5. Shark by-catch in EU coastal fisheries.....	8
6. Shark by-catch in a West African EU trawl fishery.....	9
7. Shark by-catch in Mediterranean fisheries.....	10
8. Shark by-catch in the Indian and Pacific Oceans.....	12
9. Conclusions.....	13
References.....	15
Recommendations.....	18





## Executive Summary

Thresher shark by-catch, Cádiz, Spain 2006

- European Union (EU) fishing vessels catch sharks throughout the world's oceans. In addition to targeted fisheries for blue, mako, porbeagle and deep-sea sharks, large quantities of sharks are taken as accidental catch, or by-catch.
- This by-catch is often thrown back to the sea, known as discards. If landed, shark catches are seldom reported on a species-specific level, if reported at all.
- Statistical data on official catches and unreported by-catches is incomplete. Because of this, the actual blue shark catches in the Atlantic can be up to five times higher than the reported catches. For the shortfin mako, this figure may be 4.5 times higher.
- Unreported shark catches are problematic because the depletion of shark populations may go unnoticed for long periods of time.
- Shark by-catch is known to be high in Atlantic tuna fisheries. European Union vessels reported a total of 143,996 metric tons of shark catches in the Atlantic Ocean in 2004. Most of these catches are taken in purse seine fisheries, and shark by-catch in these fisheries can total up to 1,500 metric tons, all unreported.
- Some of the European Union fisheries taking sharks as targeted catch or by-catch are outstanding in the ways they waste marine life and contribute to the extinction of threatened species. This is especially true for the illegal Italian driftnetters operating in the Mediterranean and targeting grand pelagics, and for the large Dutch mega-trawlers, fishing off the West African coast.



## Introduction

Most of the pelagic (open water) sharks caught worldwide by European Union vessels come from the fisheries of modern Spanish and Portuguese surface longliner fleets which target them. In 2004, EU vessels reported 114,669 metric tons of shark and ray catches worldwide. More than 67 per cent of total shark catches in the Atlantic were taken in a surface longline fishery specialized in the capture of these animals.<sup>1</sup> In the Indian and Pacific Oceans, *all* shark catches that are reported by EU fleets are taken in this kind of fishery.<sup>2</sup> Another directed shark fishery is carried out by the gillnetting fleet, catching deep-sea sharks for their meat and livers. However, this picture alone is far from complete, as large quantities of elasmobranchs (sharks and related species such as rays) are accidentally caught (known as by-catch) in all types of fisheries.

“By-catch” is defined as “the unintentional or incidental capture of non-target species during fishing operations”.<sup>3</sup> Different types of fisheries take different species as by-catch at differing levels, depending on the type of fishing gear used, and the time, area and depth at which it is employed.<sup>4</sup> By-catch of non-target species is common in most fisheries, but by-catch of sharks is particularly problematic. These animals usually have slower growth rates than the target fish species, and can therefore be seriously depleted through excessive by-catches, even when the target fish species are within sustainable levels.<sup>5</sup>

Shark by-catch is often discarded or landed without being reported. “Discard” is that portion of a catch that is thrown back into the sea because it can not be marketed, or because landing is prohibited due to exceeding volume limits or quota regulations. Another common problem for shark catches is a lack of reporting on a species-specific level. This means that scientists are not able to analyse the true status of shark populations, and that products commercialised from shark parts cannot be adequately tracked.

European Union fleets operating around the world catch sharks as by-catch, either discarding it or landing it together with other catches. These fleets include modern and efficient French and Spanish purse seiners and longliners dedicated to catching tunas. Besides these tuna fisheries, there are several other EU fleets that accidentally catch sharks. Among them, the German, French and UK-flagged (but Spanish-owned) deep-sea gillnetting fleet; the illegal Italian driftnetters operating in the Mediterranean; the Maltese artisanal tuna longline fleet; the huge Dutch trawlers operating off the coast of West Africa; and numerous other deep-sea trawling, longling and gillnetting fleets from every country, which can have a high catch rate but which seldomly are registered or evaluated.

The “finning” of accidentally-caught sharks (the removal of the valuable fins and subsequent disposal of the bodies back to sea), especially on French longliners in the Indian Ocean and Spanish and French purse seiners in the Atlantic, was formerly common practice.<sup>6</sup> However, this practice is now prohibited for European Union vessels and in most waters worldwide.

Sharks are accidentally caught in many and very different gillnet, purse seine, longline and trawl fisheries, and from small artisanal boats to giant industrial vessels. This report focuses on a few examples to show the dimension of the problem.



Mako shark next to swordfish, La Réunion, France 2007

# Overview of shark by-catch in Atlantic tuna fisheries



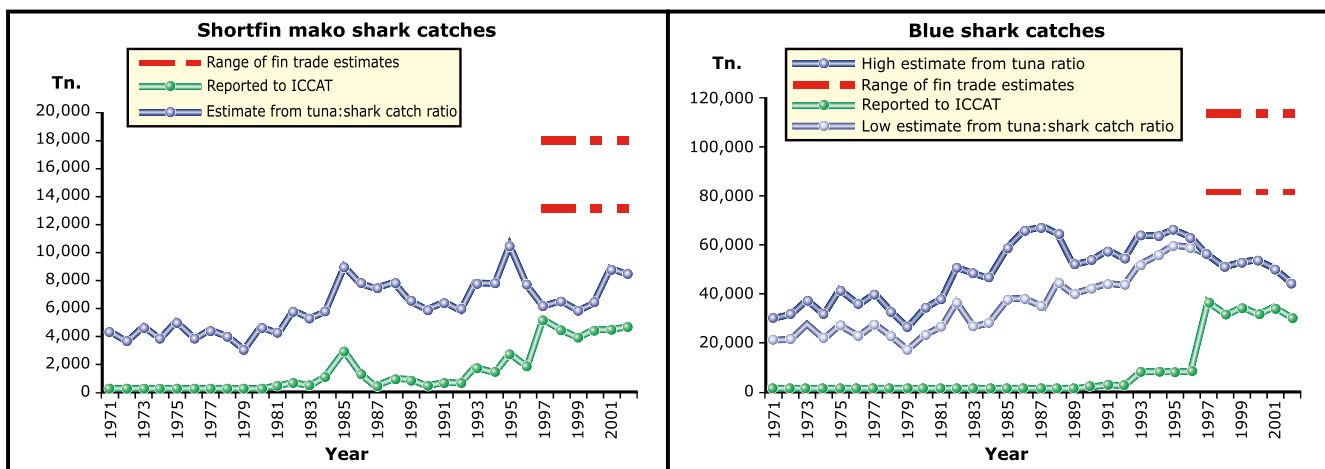
Shark tooth necklace, tuna by-catch, Carniçal, Madeira, Portugal 2006

The International Commission for the Conservation of Atlantic Tunas (ICCAT) is the international body responsible for managing tuna fisheries in the entire Atlantic Ocean, including the Exclusive Economic Zones (EEZ) of its contracting parties. In 2004, the ICCAT subcommittee on by-catches carried out an assessment on the state of blue shark (*Prionace glauca*) and mako shark (*Isurus spp.*) stocks in the Atlantic (see sidebar). It concluded that there are insufficient available catch data to make appropriate recommendations for these stocks.<sup>7</sup>

Nonreporting of elasmobranch by-catches is problematic, as the depletion of shark populations may go unnoticed for long periods of time. This is currently happening with several species of North Atlantic large-bodied skates.<sup>8</sup> Assessments and scientific estimations on the state of elasmobranch stocks thus cannot be reliable as long as reported catches do not represent reality.

There are several European Union tuna fleets, operating around the world, that produce a remarkable amount of shark by-catch. In the Atlantic, they are principally represented by the Spanish and French purse seiners; in the Mediterranean, by the tuna longliners (see Table 1). This high shark by-catch, in general, especially from the purse seine fleet, is not reported to ICCAT.

Shelley Clarke, a Hong Kong-based scientist, carried out investigations on Atlantic shark catches. Based on the amounts of shark fins traded on the Hong Kong market, she estimated that actual blue shark catches in the Atlantic are up to five times higher than what is reported. For the shortfin mako (*Isurus oxyrinchus*), this figure can be up to 4.5 times higher.<sup>9</sup>



**Figure 1:** Comparisons between Atlantic shortfin mako and blue shark catches reported to ICCAT, shark catches calculated from the estimations of tuna:shark catch ratios and shark catches extrapolated from fin trade studies.





## 2

## European Union fleets in Atlantic tuna fisheries

European Union vessels reported a total of 152,477 metric tons of tuna catches from various fisheries in the Atlantic Ocean in 2004. Shark by-catch occurs in all of these fisheries. Table 1, below, shows the 2004 European Union Atlantic tuna catches, divided by fleet and species, as reported to ICCAT.<sup>10</sup>

EU countries	Fisheries	Skipjack Tuna ( <i>Katsuwonus pelamis</i> )	Yellowfin Tuna ( <i>Thunnus albacares</i> )	Albacore Tuna ( <i>Thunnus alalunga</i> )	Bigeye Tuna ( <i>Thunnus obesus</i> )	Other tunas	Total tuna
Spain	<b>Total (metric tons)</b>	<b>38,725</b>	<b>21,415</b>	<b>15,461</b>	<b>8,251</b>	<b>3,205</b>	<b>87,057</b>
	Purse Seine	31,514	20,086		3,943		55,543
	Baitboat	7,207	1,292	7,893	3,778	1,746	21,916
	Troll and Line			7,477		112	7,589
	Longline	4	37	91	416	365	913
	Others					982	982
	Undeclared				114		114
France	<b>Total (metric tons)</b>	<b>21,879</b>	<b>23,949</b>	<b>2,537</b>	<b>2,926</b>	<b>739</b>	<b>52,030</b>
	Purse Seine	20,127	23,364	7	2,339	391	46,228
	Baitboat	1,752	585	11	587	57	2,992
	Longline			92		2	94
	Trawler			914		26	940
	Undeclared			1,513		263	1,776
Portugal	<b>Total (metric tons)</b>	<b>8,506</b>	<b>5</b>	<b>522</b>	<b>3,202</b>	<b>573</b>	<b>12,808</b>
	Purse Seine				9		9
	Baitboat		5	234	3,161	8	3,408
	Troll and Line	8,459					8,459
	Others	29		289	41	242	601
Ireland	<b>Total (metric tons)</b>	<b>14</b>		<b>175</b>		<b>392</b>	<b>581</b>
	Troll and Line			3			3
	Trawler	14		172		392	578
Total EU	<b>Total (metric tons)</b>	<b>69,110</b>	<b>45,369</b>	<b>18,521</b>	<b>14,379</b>	<b>4,517</b>	<b>152,477</b>
	Purse Seine	51,641	43,450	7	6,282	400	101,780
	Baitboat	8,959	1,882	8,138	7,526	1,811	28,316
	Troll and Line	8,459		7,480		112	16,051
	Longline	33	37	472	457	609	1,608
	Trawler	14		1,086		418	1,518
	Others	18				1,296	1,314
	Undeclared			1,513	114	263	1,890

Table 1: 2004 Atlantic tuna catches by country, fishery and species.

As shown in Table 1, more than 70 per cent of the tuna catches in the Atlantic are taken by purse seine vessels, with the highest tuna catches reported from the Spanish fleet, followed by the French fleet. The second largest fishery catching tunas in the Atlantic is the live bait fleet. Spain possesses the largest live bait fleet, followed by Portugal and then France. A total of 24 per cent of Atlantic tuna catches are made by this type of vessel.

In general, shark by-catch in tuna fisheries is considered high by scientists and can put certain stocks in danger. Figures can only be found from a limited number of scientific observer studies and reports. Data from observers on board vessels or in fish markets reveal that the species most commonly caught as by-catch include 12 species of skates and rays, 11 species of pelagic sharks and 46 species of coastal sharks.<sup>11</sup>



Tuna baitboat unloading, Dakar, Senegal 2007

### Misreporting of shark catches

The misreporting of shark catch data, or a total lack thereof, is a common problem in the shark assessments carried out by Regional Fisheries Management Organisations.

In 2004, the ICCAT sub-committee on by-catches reviewed catch information from the Atlantic Ocean for thresher sharks (*Alopias* spp.) and oceanic whitetip sharks (*Carcharhinus longimanus*), and concluded that data on these less abundant species are virtually non-existent.

The ICCAT assessment for sharks stated: "This review was undertaken and the Sub-Committee on By-catches cannot rule out the possibility that the current shortfin mako shark biomass in the North Atlantic is below the biomass that can support MSY [the maximum sustainable yield]. Should the Commission wish to improve the status of this stock, measures to reduce fishing mortality should be taken. Shortfin mako sharks are taken in a broad range of fisheries, both as targeted catch and as by-catch, and our knowledge of overall catch levels is inadequate. As such, there is no basis for recommending catch limits for this stock."

This, however, presents a loophole for ICCAT-EU Member States in complying with the EU Common Fisheries Policy (CFP). In 2003, as part of the revised EU CFP, a precautionary approach was agreed to be the guiding principle to prevent overfishing. However, as the ICCAT sub-committee for by-catches did not recommend fishing quotas, EU fleets are catching sharks without limits in ICCAT waters, in a very non-precautionary approach.

# 3

## Shark by-catch in Atlantic purse seine tuna fisheries



Schematic of a purse seiner (FAO)

### Tuna purse seine fisheries

Purse seiners are the main and most effective vessels in catching aggregating species near the surface, such as tuna.

A purse seiner is a fishing vessel that uses nets that hang vertically in the water; the two ends are drawn together to enclose the tuna. European Union purse seiners can be very large vessels, up to 120 metres long, and target tuna throughout the world's oceans.

The most important part of the fishing operation includes searching for the tuna shoals and assessing the size and direction of their movements. To assist in this, sometimes lookout points are arranged on the masts of the ships, and on large vessels there may even be observation towers and helicopter landing decks.

Tuna usually swim in schools and tend to gather under any kind of large object, often whale sharks. Therefore, whale sharks are often typical by-catch in purse seine fisheries.

French purse seiner, Dakar, Senegal 2007



A mostly French and Spanish purse seine tuna fleet has been operating in the eastern tropical Atlantic Ocean (Gulf of Guinea and off the coast of West Africa) for decades. From 1997 to 1999, an EU observer programme was carried out on board these French and Spanish vessels. Results indicated that sharks and rays represented 51 per cent of the by-catch. If these ratios are applied to recent tuna catches in the Atlantic by this fleet, shark by-catch can be estimated at around 1,064 metric tons a year.<sup>12</sup>

The main shark species observed taken as by-catch in these fisheries are the hammerhead shark (*Sphyrna* spp.), silky shark (*Carcharhinus falciformis*) and oceanic whitetip shark (*Carcharhinus longimanus*). The observer programme revealed that 90 per cent of silky sharks and 67 per cent of other shark species were kept for their fins and marketed by the African crews. Of the sharks that were released, the mortality rate was estimated between 33 and 66 per cent.<sup>13</sup> (Whether by-catch can be released alive depends on the fishery practices of the vessel.)

Another on board observer programme, carried out on purse seine vessels by the Spanish Institute of Oceanography (Instituto Español de Oceanografía, or IEO), shows a different by-catch rate for sharks. The results of this study revealed a higher *total* by-catch in the Spanish tuna purse seine fishery between 2001 and 2004,<sup>14</sup> and while the shark portion of this by-catch (excluding rays) was much lower compared to the previous study, it still represents a significant portion of the total catch. The fleet's annual catch totalled between 60,000 and 70,000 metric tons, and the estimated annual shark catch was between 20 and 140 metric tons.<sup>15</sup>

The IEO observers found that most of the sharks taken as by-catch in the Atlantic purse seine fishery are silky sharks, followed by oceanic whitetips, hammerheads, and whale sharks (*Rhincodon typus*). Whale sharks and hammerhead sharks are considered threatened with extinction according to the World Conservation Union (IUCN) Red List of Threatened Species. During the study, less than 25 per cent of the sharks could be released alive, and nearly 50 per cent were "partially conserved" on board the purse seiners. As mentioned above, shark finning was formerly common practice on board purse seine vessels-- the valuable shark fins were removed while the rest of the body was discarded. However, in an attempt to protect sharks, this practice was prohibited for all EU vessels in 2003.





## Shark by-catch in EU gillnet fisheries

# 4

The European Union deep-sea gillnet fishery in the Northeast Atlantic Ocean is one of the most destructive EU fisheries. Prior to restrictive measures placed on this fishery in December 2006, more than 6,000 kilometres of fixed gillnets ("rasco" or anglerfish nets) were deployed in NE Atlantic waters to catch anglerfish, hake, king crab and deep-sea sharks. The poor selectivity of these nets, together with the length of time they were left in the water, meant that many of the specimens caught were rotten or damaged when brought on board. Up to 71 per cent of the anglerfish catch regularly had to be discarded.<sup>16</sup>



Crates of sharks (gutted, beheaded and de-fined) at freshmarket, Cádiz, Spain. 2006

Segment	Vessels	GRT* average
Shark net UK	9	260
Shark net Germany	1	258
Monkfish net Germany	5	257
Monkfish net France	1	256
Monkfish net UK	7	257
Gillnet Spain	9	148
Gillnet Ireland	1	126
Gillnet France	33	137
Gillnet UK	3	148
<b>TOTAL</b>	<b>69</b>	<b>180</b>

\* GRT: Gross Registered Tonnage

**Table 2:** Distribution of vessels involved in deepsea fisheries in the Northeast Atlantic.<sup>17</sup>

Deep-sea gillnet fisheries continue to operate in EU waters of the NE Atlantic to the north and west of Great Britain and Ireland, down to a depth of 600 metres. These fisheries continue to be poorly managed and extremely wasteful, and the few controls on-board and in-harbour have allowed for continued overexploitation of vulnerable deep-sea sharks, often caught for their valuable livers. These deep-sea sharks, including the leafscale gulper or false "siki" shark (*Centrophorus squamosus*), the Portuguese dogfish or "siki" shark (*Centroscyllium coelolepis*) and the kitefin shark (*Dalatias licha*), continue to suffer from excessive Total Allowable Catches (TACs) and by-catches in these fisheries.

Shark livers from deep-sea sharks are used to produce squalene, an oil product with commercial use in the cosmetics industry. Sometimes the caudal fins, and more recently the pectoral fins, are removed from the sharks to be stored separately from the bodies. This is done by some Spanish owned (but UK- and German-registered) vessels, which have special permits to remove fins on board and land fins and bodies separately. These fleets' excessive deep-sea shark catches, particularly those of Portuguese dogfish and leafscale gulper sharks, have contributed to the depletion of these stocks currently on the verge of collapse.

# 5

## Shark by-catch in EU coastal fisheries

Coastal fisheries are comprised of both artisanal and industrial fisheries and occur in mostly all European Union countries. These fisheries use a wide variety of fishing gears, including nets, longlines, traps, etc., and target both demersal (sea bottom) and pelagic species. Demersal fisheries target a variety of stocks (for example, gadoids and flat fishes), and take various skates, rays and sharks living on or near the sea bottom as by-catch. These by-catches, including small-bodied dogfishes, houndsharks and catsharks, may be commercialised or discarded. Larger fish tend to be landed whole either for human consumption or use as bait in pot fisheries. The tope shark (*Galeorhinus galeus*), widely consumed in Spain, is also often taken in these fisheries and has been suggested as a potential species to be harvested for use in the international fin market. Larger specimens of this species are also taken in pelagic fisheries, including longlines.<sup>18</sup>

Tope sharks, Ponta Delgada, The Azores, Portugal 2006





## Shark by-catch in a West African EU trawl fishery

# 6

Between 40 and 70 foreign trawlers operate nearly all year off Mauritania, Northwest Africa, through access agreements and private arrangements. Among them, five to ten European (Dutch) pelagic trawl vessels with freezers operate in this area. These boats, specialised in catching sardinella, sardine, and horse mackerel, are amongst the largest fishing vessels in the world, with a capacity to catch and freeze between 9,000 and 18,000 metric tons of fish. In the Mauritanian EEZ (200 nautical miles), these vessels operate within miles of each other and are often accompanied by dozens of Russian, Lithuanian, and Icelandic trawlers, all together catching more than 500,000 metric tons of small pelagic fish per year, and thereby overexploiting the Northwest African shelf.

A report recently published by Dutch scientists describes the by-catch on these megatrawlers<sup>19</sup>. The huge nets, with rectangular openings of up to 90 metres long by 50 metres wide, catch dolphins, sharks, seabirds and marine turtles in addition to the targeted catch. The shark by-catch of these European megatrawlers can reach 1,000–2,000 sharks annually. The majority are hammerheads, followed by makos (*Isurus* spp.), threshers (*Alopias* spp.) and blue sharks (*Prionace glauca*).

The Dutch investigation also indicates an annual removal of between 120 and 620 mature manta rays (*Manta birostris*). Mantas are pelagic species inhabiting tropical waters and, as each mature female produces only one pup every two or three years, rapid population declines have been observed where targeted manta fishing takes place. The study concludes that the annual catch rate of manta rays by European trawlers is considered to be unsustainable.

The Dutch scientists have shown that by-catch mortality for this fishery can be reduced 40 per cent to 100 per cent with the use of more selective fishing gear, such as a filter grid system equipped with a tunnel to allow non-target species to escape.<sup>20</sup>



Loading a mako in the freshmarket in Ponta Delgada, Sao Miguel Island, Azores, Portugal 2006



# 7 Shark by-catch in Mediterranean fisheries



Filleting of blue shark by-catch, Valetta, Malta 2006

Sharks comprise a large component of the by-catch in the longline, driftnet and purse seine fisheries operating in the coastal and off-shore waters of the Mediterranean Sea. In 2005, European Union vessels reported to the United Nations Food and Agriculture Organization (FAO) a total of nearly 33,000 metric tons of tuna and swordfish catches in the Mediterranean. However, the real volume of catches is actually estimated to be between 45,000 and 55,000 metric tons.

Surface longline fisheries that target tuna and swordfish in the Mediterranean also catch blue sharks, violet stingrays (*Pteroplatytrygon violacea*), common threshers (*Alopias vulpinus*), shortfin makos (*Isurus oxyrinchus*), porbeagles (*Lamna nasus*), smooth hammerheads (*Sphyrna zygaena*), sixgills (*Hexanchus griseus*), requiem sharks (*Carcharinus* spp.) and devil rays (*Mobula mobular*).<sup>21</sup>

Purse seiners also have elasmobranch by-catch. In 2003, French scientists collected by-catch information on board French purse seiners targeting bluefin tuna in the Mediterranean Sea, and found that sharks and stingrays were amongst the by-catch.<sup>22</sup>

Juvenile ray and dogsharks at fishmarket, Mazara del Vallo, Italy 2006





Box of dogsharks at auction, Valetta, Malta 2006

Driftnet fishing has been widely condemned by the international community: in 2002 it was banned by the European Union in EU waters and on the high seas, and in 2005 the General Fisheries Commission for the Mediterranean (GFCM) banned its use in international waters of this sea. Despite these measures, illegal driftnetting still occurs in the Mediterranean. In 2005 and 2006, Oceana carried out investigations and documented 71 illegal driftnetters carrying out or preparing fishing activities. The elasmobranch species frequently taken with driftnets include blue shark, common thresher, shortfin mako, porbeagle shark, requiem shark, basking shark (*Cetorhinus maximus*), hammerhead shark, devil ray and pelagic stingray.<sup>23</sup>

Other fisheries that also accidentally catch elasmobranchs in the Mediterranean are those using fixed nets, deepsea longlines, and trawl gear. In the northern Adriatic Sea, gillnet fisheries take smoothhounds (*Mustelus mustelus*), spurdog (*Squalus acanthias*), greater spotted catshark (*Scyliorhinus stellaris*), eagle ray (*Myliobatis aquila*) and tope shark. Starry ray (*Raja radiata*) is commonly caught in trawl fisheries, especially along the Tyrrhenian coasts. Bottom trawl fisheries operating on the continental shelf and slope of the Alboran Sea capture various elasmobranchs, including catsharks and skates. Trammel nets positioned near the bottom may also catch larger species of sharks; great white shark (*Carcharodon carcharias*) catches from this gear have even been reported off Malta and Sicily.<sup>24</sup> Finally, deep-water Mediterranean trawl and bottom longline fisheries frequently take blackmouth catshark (*Galeus melastomus*), smallspotted catshark (*Scyliorhinus canicula*), gulper shark (*Centrophorus granulosus*), Portuguese dogfish (*C. coelolepis*), kitefin shark (*Dalatias licha*), velvet belly (*Etmopterus spinax*), and longnose spurdog (*Squalus blainville*) as by-catch.<sup>25</sup>



Blue shark fillet, Valetta, Malta 2006

Sharpnose sevengill shark partly filleted, Valetta, Malta 2006





## 8

# Shark by-catch in the Indian and Pacific Oceans



Juvenile oceanic whitetips in freshhold, La Réunion, France 2007

## Interview with fisherman, La Réunion (France)

*What have you caught?*  
Swordfish and tuna.

*Anything else?*  
Some marlin, sailfish and shark.

*How many sharks have you caught?*  
On this trip, six days, only two oceanic whitetips and a mako. The total catch was 1.5 metric tons, so that is not much.

*No blue sharks?*  
We catch them, but discard them straight away.

*Why do you discard them?*  
There is no market for blue shark meat.

*How many do you catch then?*  
I don't know, but a lot.

*Are they alive when you throw them back?*  
Some of them, but most are already dead.

*How many do you throw back alive?*  
At the very most, up to 40 per cent are thrown back alive. In some cases, none of them are alive. So usually, most of them are dead.

*Don't you cut off the fins to make some profit?*  
No, that's not possible. That's forbidden; you can go to jail for that. Controls are really rigorous around here. It's not worth it.

Juvenile oceanic whitetips next to tuna, La Réunion, France 2007



## Indian Ocean

Two Spanish fleets are operating in the Indian Ocean: a purse seine fleet targeting tropical tuna (yellowfin, skipjack and bigeye) and a longline fleet targeting sharks and swordfish. In 2005, a total of 20 purse seiners and 23 longliners were operating in this area.<sup>26</sup>

In 2003 and 2004, Spanish scientists carried out investigations on board some of these Spanish purse seiners. During 236 fishing days over the two years, a total tuna catch of 8,202 metric tons was observed with 80 metric tons of shark by-catch.<sup>27</sup> However, in 2005, official statistics reveal that this fleet's total tuna catch was 182,562 metric tons<sup>28</sup>, correlating to nearly 1,780 metric tons of shark by-catch.

According to Spanish scientists, Spanish longliners in the Indian Ocean catch swordfish and sharks equally. In 2004, Spanish longliners reported around 5,000 metric tons of shark catches here. They state: "The group of species considered as by-catch of the swordfish surface longline fishery in the Indian Ocean between 2001 and 2004 accounted for 49% of the total catch landed in weight".<sup>29</sup> Sharks make up the great majority of this group "considered as by-catch", and in effect are not merely a by-catch, but rather a targeted catch.

The French also operate a purse seine fleet and a longline fleet in the Indian Ocean. An observer programme on board these French purse seine vessels revealed a significantly lower shark by-catch compared to that of the Spanish fleet, partly due to the fact that whale sharks, a typical by-catch for the French purse seiners, escaped the nets alive. By-catch in the French purse seine fishery represented less than one per cent of the total catch (by weight), and included mainly triggerfish, rainbow runner and wahoo. Elasmobranches (except whale sharks) represented nearly 12 per cent of this by-catch (by weight), and was mainly comprised of silky sharks and skates.<sup>30</sup>

The French longliner fleet, based in La Réunion, consists of 36 industrial vessels. These longliners target swordfish and tuna and take sharks as by-catch. In 2005, the fleet landed 1,204 metric tons of swordfish, 1,952 metric tons of tuna, 218 metric tons of marlin and other fish and 67 metric tons of sharks. These shark landings represent around two per cent of total landings. However, although these numbers appear low, a large portion of shark catches are discarded (see sidebar), and the real shark catches may be much higher than scientists' data. The real total French longliner shark catch is unknown.<sup>31</sup>

## Pacific Ocean

There are five Spanish purse seiners targeting tuna in the Pacific Ocean and 26 longliners targeting sharks and swordfish.

There is no recent information available on the shark by-catch of this Spanish purse seine fishery, but in 2004, approximately 32,039 metric tons of tuna was caught, and shark by-catch nevertheless occurs.

The Spanish longline fleet in the Pacific Ocean targets sharks and swordfish. In 2004, a research report presented this fleet's catches. Vessels caught a total of 6,211 metric tons of swordfish, 6,049 metric tons of shark, 403 metric tons of tuna and 530 metric tons of other species.<sup>32</sup>





## Conclusions

# 9



Shark by-catch at auction, Valencia, Spain 2006

### **Effective management measures for by-catch reduction must be introduced.**

Major shark by-catches occur in several industrial European Union fisheries: in Spanish, Portuguese, and French purse seine fisheries for tuna; in surface and bottom longline fisheries for tuna, swordfish, and other large pelagic species; in industrial and artisanal gillnet fisheries; and, in trawl fisheries. The revised 2002 Common Fisheries Policy calls for appropriate measures to protect and conserve living marine resources, provide for their sustainable exploitation, and reduce the impact of fishing activities on marine ecosystems in general. To comply with this requirement, Oceana recommends the implementation of measures regarding: improvement of fishing gear to increase selectivity (for example, mesh size, gear length and soak time); closed areas and/or periods to prohibit or restrict fishing activities so that shark spawning and nursery areas are protected; and, fixed fishery-specific limits for by-catch as close to zero as possible. Oceana asserts that any species whose catch exceeds this by-catch limit must be considered a target species and thus regulated with a fisheries management plan, catch limits and quotas.

### **Shark discards must be eliminated.**

In European Union fisheries, it is estimated that for every five kilos of fish that reach port, one kilo is thrown back to sea as discards. The elimination of this practice is crucial for ecosystem conservation. Discards represent a significant portion of catches, which are ultimately wasted and lead to the decline of vulnerable marine populations. Furthermore, discards represent an unknown portion of the total biomass which is extracted from the sea; this hinders the implementation of effective management measures for sustainable fisheries. This situation is worrisome to the European Commission, which published an official Communication to the Council and European Parliament [COM (2007) 136] setting out a proposal for an EU policy to eliminate discards in European Fisheries. Sharks are often included in discards, and those caught in industrial fisheries, like purse seines, deep-sea gillnets, longlines, and trawlers, are never reported. Oceana urges the European Union to establish and enforce a ban on discards, including area closures when by-catch

# Conclusions

rates are too high. Exceptions should be made for protected elasmobranch species (sharks, rays and skates) caught as by-catch that have a chance to survive-- these must be released back into the water. (Those unauthorized species that are caught dead must be landed, but their commercialization prohibited.) As part of these by-catch regulations, efficient monitoring and control measures must be implemented so that shark catches are reported on a species-specific level once landed, enabling accurate estimates of fisheries mortality and facilitating management. Ultimately, the progressive elimination of discards will only be effective if technical measures are implemented to increase fishing gears selectivity (maximum length, mesh size, fishing time) on a fishery-by-fishery basis.

**The capture of commercially exploited shark species by EU vessels must be regulated under the Common Fisheries Policy, with management plans that include fishing limits and quotas.**

In Council Regulation (EC) No 2371/2002 of 20 December, 2002, the European Union agreed a revised "Common Fisheries Policy Framework Regulation" which states that catch and/or effort limits should be established for commercial fish stocks. Despite the fact that sharks have been commercialized for decades, this policy has not been applied to shark fisheries. Oceana recommends that all sharks targeted by European Union fisheries (for example, blue and mako sharks in the Atlantic longline fishery) be recognized as commercially exploited species. Pursuant to the Common Fisheries Policy, catches must thus be controlled and regulated with management or recovery plans that: establish targets and measures for the sustainable exploitation of stocks; set catch limits and quotas; fix the number and type of fishing vessels authorized to catch them; and, limit fishing effort. For stocks that are already overexploited, recovery plans must be established.



# References

## 1\_ Introduction

- 1\_ ICCAT statistical database, 02.03.2007. Task I web.
- 2\_ Oceana report, 2007. Hunted for fins, how EU fleets target threatened sharks in the world oceans - without management.
- 3\_ Fordham S., 2006. Shark alert, Revealing Europe's impact on shark populations, Shark Alliance.
- 4\_ SCRS/2004/014 Col. Vol. Sci. Pap. ICCAT, 58(3): 799-890, 2005. Report of the 2004 inter-sessional meeting of the ICCAT subcommittee on by-catches: shark stock assessment (Tokyo, Japan, 14-18 June 2004).
- 5\_ Musick, A.J., Burgess, G., Cailliet, G., Camhi, M. & Fordham, S. 2000. Management of Sharks and Their Relatives (Elasmobranchii). AFS Policy Statement. Fisheries, 25 (3): 9-13.
- 6\_ IOTC, ICCAT, Several observer reports.

## 2\_ Overview of shark by-catch in Atlantic tuna fisheries

- 7\_ SCRS/2004/014 Col. Vol. Sci. Pap. ICCAT, 58(3): 799-890, 2005. Report of the 2004 inter-sessional meeting of the ICCAT subcommittee on by-catches: shark stock assessment (Tokyo, Japan, 14-18 June 2004).
- 8\_ Musick, A.J., Burgess, G., Cailliet, G., Camhi, M. & Fordham, S. 2000. Management of Sharks and Their Relatives (Elasmobranchii). AFS Policy Statement. Fisheries, 25 (3): 9-13.
- 9\_ Clarke S., 2004. Report of the 2004 inter-sessional meeting of the ICCAT subcommittee on by-catches: shark stock assessment (Tokyo, Japan, 14-18 June 2004). SCRS/2004/014 Col. Vol. Sci. Pap. ICCAT, 58(3): 799-890, 2005.
- 10\_ ICCAT statistical database, 02.03.2007. Task I web.
- 11\_ ICCAT, 2006. Information sheet on by-catch species taken in ICCAT fisheries. International Commission for the Conservation of Atlantic Tunas website available at: <http://www.iccat.es/bycatchspp.htm>. Last downloaded August 22, 2006.

## 3\_ Shark by-catch in Atlantic purse seine tuna fisheries

- 12\_ Hareide, N.R., J. Carlson, M. Clarke, S. Clarke, J. Ellis, S. Fordham, S. Fowler, M. Pinho, C. Raymakers, F. Serena, B. Seret, and S. Polti., 2007. European Shark Fisheries: a preliminary investigation into fisheries, conversion factors, trade products, markets and management measures. European Elasmobranch Association.
- 13\_ Hareide, N.R., J. Carlson, M. Clarke, S. Clarke, J. Ellis, S. Fordham, S. Fowler, M. Pinho, C. Raymakers, F. Serena, B. Seret, and S. Polti., 2007. European Shark Fisheries: a preliminary investigation into fisheries, conversion factors, trade products, markets and management measures. European Elasmobranch Association.
- 14\_ Delgado de Molina A., Sarralde R., Pallarés P., Carlos Santana J., Delgado de Molina R. y Ariz J., 2005. Estimación de capturas de las especies accidentales y de los descartes en la pesquería de cerco de Túnidos tropicales en el Océano Atlántico Oriental, entre 2001 y 2004. SCRS /2004 /181 Col. Vol. Sci. Pap. ICCAT, 58(1): 385-404, 2005.
- 15\_ Sarralde R., Ariz J., Delgado de Molina A., Pallarés P. and Santana J.C., 2005. Datos sobre la actividad de la flota atunera Española de cerco y barcos de apoyo pescando en el Océano Atlántico, obtenidos por observadores desde 2001 a 2004. SCRS/2004/179 Col. Vol. Sci. Pap. ICCAT, 58(1): 359-371.

## 4\_ Shark by-catch in EU gillnet fisheries

- 16\_ Oceana report, Northeast Atlantic Deep-sea Gillnet Fishery Management Oceana's Recommendations for Permanent Measures December 2006.
- 17\_ Franquesa R. and Abel M., 2006. Secretaría General de Pesca Marítima, "Assessment of the new regulation Socio-economic Impact on Community Fishing Vessels of Static Deepsea Gillnets", June 2006. Study developed in collaboration with the Association for the Defense of the Fishing Sector on the compilation of information.



# References

## 5\_ Shark by-catch in EU coastal fisheries

- 18\_ Hareide, N.R., J. Carlson, M. Clarke, S. Clarke, J. Ellis, S. Fordham, S. Fowler, M. Pinho, C. Raymakers, F. Serena, B. Seret, and S. Polti., 2007. European Shark Fisheries: a preliminary investigation into fisheries, conversion factors, trade products, markets and management measures. European Elasmobranch Association.

## 6\_ Shark by-catch in a West African EU trawl fishery

- 19\_ Zeeberg J.J., Corten A., de Graaf E., 2006. By-catch and release of pelagic megafauna in industrial trawler fisheries off Northwest Africa. Fisheries Research Volume 78, Issues 2-3, 186-195 pp.
- 20\_ Zeeberg J.J., Corten A., de Graaf E., 2006. By-catch and release of pelagic megafauna in industrial trawler fisheries off Northwest Africa. Fisheries Research Volume 78, Issues 2-3, 186-195 pp.

## 7\_ Shark by-catch in Mediterranean fisheries

- 21\_ a. Fleming F. & Papageorgiou P.A. 1997, Shark Fisheries and trade in Europe, TRAFFIC Europe.  
b. Muñoz-Chapulí R., Ramos F. & García-Garrido C.M., 1984. *Squalus megalops* (McLeay, 1882) en el Mediterráneo. Notas sobre su diagnosis, sistemática y distribución. Bull. Soc. Cat. Ictio. Herp., 9: 16-21.  
c. Kabasakal, H. 1998, Sharks and rays fisheries in Turkey. Shark News, 11:14.  
d. Hemida F. 1998, The shark and the Skate Fishery in the Algerian Basin: Biological Technological Aspects, Shark News, 12:14.  
e. De Metro G., Cacucci M., Deflorio M., Desantis S. & Santamaria N., 2000, Incidence of the large pelagic Fishing on the shark catches, Biol. Mar. Medit., 7 (1): 334-335.  
f. Garibaldi F. & Orsi Relini L., 2000, Summer abundance size and feeding habits of the blue shark, *Prionace glauca*, in the pelagic sanctuary of the Ligurian Sea. Biol. Mar. Medit., 7 (1): 324-333.
- 22\_ Fromentin J.M., Farrugio H., 2005. Results of the 2003 observer program onboard the french purse seiner targeting Atlantic Bluefin tuna in the Mediterranean Sea. SCRS/2004/091 Col. Vol. Sci. Pap. ICCAT, 58(2): 779-782, 2005.
- 23\_ De Metro G., Cacucci M., Deflorio M., Desantis S. and Santamaria N., 1999. Incidenza della pesca dei grandi pelagici sulle catture di squali. Biol. Mar. Medit., 7(1): 334-345.
- 24\_ Fergusson I.K., 1996. Distribution and autoecology of the white shark in the Eastern North Atlantic Ocean and the Mediterranean Sea. In: Great White Shark: The biology of *Carcharodon carcharias* (Kimley A.P. & D.G. Ainley, eds.), pp. 321-345. San Diego: Academic Press.
- 25\_ Hareide, N.R. et al. 2007, European shark fisheries: a preliminary investigation into fisheries, conversion factors, trade products, markets and management measures, EEA 2007.

## 8\_ Shark by-catch in the Indian and Pacific Oceans

- 26\_ IOTC-2006-SC-INF07, National Report 2005, UE-SPAIN Instituto Español de Oceanografía.
- 27\_ IOTC-2006-SC-INF07, National Report 2005, UE-SPAIN Instituto Español de Oceanografía.
- 28\_ IOTC-2006-SC-INF07, National Report 2005, UE-SPAIN Instituto Español de Oceanografía.
- 29\_ J. Mejuto et. al. e.g. An overview of research activities on swordfish (*Xiphias Gladius*) and the by-catch species, caught by the Spanish longline fleet in the Indian Ocean. (Visión general de las actividades de investigación sobre especies de pez espada (*Xiphias Gladius*) y de captura incidental, capturadas por la flota palangrera española en el océano Índico). IOTC 2006-WPB-11.
- 30\_ Report of the Second Session of the IOTC Working Party on By-catch, 2006. Analysis of data obtained from observer programmes conducted in 2005 and 2006 in the Indian Ocean on board French purse seiner. IOTC-2006-WPBy-06.
- 31\_ Pianet R. et Grizel H., 2005. UE-France - Rapport National 2005. IOTC-2006-SC-INF20.
- 32\_ WCPFC-SC-2005. Fisheries report of EU-Spain for the Year 2004. Research Program on Tuna and Tuna-like species. Instituto Español de Oceanografía.



Plaza de España - Leganitos, 47  
28013 Madrid (España)  
Tel.: + 34 911 440 880  
Fax: + 34 911 440 890  
europe@oceana.org  
www.oceana.org

Rue Montoyer, 39  
1000 Brussels (Belgium)  
Tel.: + 32 (0) 2 513 22 42  
Fax: + 32 (0) 2 513 22 46  
europe@oceana.org

2501 M Street, NW, Suite 300  
Washington, D.C, 20037-1311 (USA)  
Tel.: + 1 (202) 833 3900  
Fax: + 1 (202) 833 2070  
info@oceana.org

175 South Franklin Street - Suite 418  
Juneau, Alaska 99801 (USA)  
Tel.: + 1 (907) 586 40 50  
Fax: + 1(907) 586 49 44  
northpacific@oceana.org

Avenida General Bustamante, 24, Departamento 2C  
750-0776 Providencia, Santiago (Chile)  
Tel.: + 56 2 795 7140  
Fax: + 56 2 795 7146

© OCEANA, August 2007

**Photos:** © OCEANA

**Cover:** © OCEANA/ LX

**Design and layout:** NEO Estudio Gráfico, S.L.

**Printer:** Imprenta Roal

**Photo montage:** Pentados, S.A.

# Oceana's Recommendations for Effective Shark Management in the European Union

- 1 • Sharks must be landed with their fins attached.
- 2 • The capture of commercially exploited shark species by EU vessels must be regulated under the Common Fisheries Policy, with fishing limits and quotas.
- 3 • Shark fisheries must be controlled wherever the EU fleet operates - in European waters and worldwide.
- 4 • Migratory shark species exploited on the high seas must be regulated with catch limits and quotas by the relevant Regional Fisheries Management Organisations.
- 5 • Effective management measures for by-catch reduction must be introduced.
- 6 • Shark discards must be eliminated.
- 7 • Vessels taking sharks must have independent observer coverage on board.
- 8 • Distinct trade statistics for shark species (meat, fins and shark liver oil), differentiated by species.
- 9 • Endangered shark species must be added to international conventions and national legislation that limit or prevent catches and trade.
- 10 • A European Plan of Action for Sharks must be implemented.