# STATUS OF IOTC DATABASES FOR NON-IOTC SPECIES

*IOTC Secretariat*

## Abstract

*This document reviews the status of the information available on non-IOTC species in the databases at the IOTC Secretariat as of September 2008. It covers data on sharks, seabirds and sea turtles.*

## 1. OVERVIEW

This document summarises the standing of a range of information received for non-IOTC species, in accordance with:

**Sharks**

- IOTC Resolution 05/05 *Concerning the conservation of **SHARKS** caught in association with fisheries managed by IOTC*
    - *Paragraph 1: Contracting Parties, Cooperating non-Contracting Parties (CPCs) shall annually report data for catches of sharks, in accordance with IOTC data reporting procedures, including available historical data.*
- IOTC Resolution 08/01: ***Mandatory statistical requirements** for IOTC Members and Cooperating Non-Contracting Parties (CPC's)*
    - *Paragraph 3(end): These **provisions**[1], **applicable to** tuna and tuna-like species, shall also be applicable to the most commonly caught **shark species** and, where possible, to the less common shark species. CPC.s are also encouraged to record and provide data on **species other than sharks** and tunas taken as bycatch.*

**Seabirds**

- IOTC Recommendation 05/09 *On incidental mortality of **SEABIRDS***
    - *Paragraph 2: CPCs should be encouraged to **collect and voluntarily provide** Scientific Committee with all available information on interactions with seabirds, including **incidental catches in all fisheries under the purview of IOTC.***
- IOTC Resolution 08/03 *On reducing the incidental bycatch of **SEABIRDS** in **longline fisheries***
    - *Paragraph 7: CPCs shall provide to the Commission, as part of their annual reports, all available information on interactions with seabirds, including **bycatch by fishing vessels** carrying their flag or authorised to fish by them. This is to including **details of species** where available to enable the Scientific Committee to annually estimate seabird mortality in all fisheries within the IOTC area of competence.*

**Sea turtles**

- IOTC Recommendation 05/08 *On **SEA TURTLES***
    - *Paragraph 2: The Commission encourages CPCs to collect and voluntarily provide the Scientific Committee with all available information on interactions with sea turtles in fisheries targeting the species covered by the IOTC Agreement, including successful mitigation measures, **incidental catches** and other impacts on sea turtles in the IOTC Area, such as the deterioration of nesting sites and swallowing of marine debris.*

[1] Refers to nominal catches and catches and effort data

The document describes the progress achieved in relation to the collection and verification of data, identifies problem areas and proposes actions that could be undertaken to improve them.

A list of recommendations for the improvement in the standing of the data on non-IOTC species currently available at the secretariat is made for the consideration of the Working Party (next page).

The report covers the following areas:

- Overview
- Recommendations to improve the data available on non-IOTC species to IOTC
- Overview of IOTC fisheries and fisheries statistics for main shark species:
    - Main species of sharks caught on IOTC fisheries
    - Data available on the total catches of sharks in the Indian Ocean
    - Draft Executive Summaries on the status of main shark species
- Overview of IOTC fisheries and seabird by-catch levels
    - Main species and fisheries concerned
    - Status of data on seabird by-catches
- Overview of IOTC fisheries and sea turtle by-catch levels
    - Main species and fisheries concerned
    - Status of data on se turtle by-catches

***Major data categories covered by the report***

**Nominal catches** which are highly aggregated statistics for each species estimated per fleet, gear and year for a large area. If these data are not reported the Secretariat attempts to estimate a total catch although this is not possible in many cases. A range of sources is used for this purpose (including: partial catch and effort data; data in the FAO FishStat database; catches estimated by the IOTC from data collected through port sampling and data published through web pages or other means).

**Catch and effort data** which refer to the fine-scale data – usually from logbooks, and reported per fleet, year, gear, type of school, month, grid and species. Information on the use of fish aggregating devices (FADs) and supply vessels is also collected.

**Length frequency data:** individual body lengths of IOTC species per fleet, year, gear, type of school, quarter and 5 degrees square areas.

## 2. RECOMMENDATIONS TO IMPROVE THE DATA AVAILABLE TO IOTC

The following list of recommendations is provided by the Secretariat for the consideration of the WPEB. The recommendations include actions which the Secretariat considers would lead to a marked improvement in the standing of the data currently available at the Secretariat. In general, these recommendations are made over and above the existing obligations and technical specifications relating to the reporting of data.

**1. Improve the certainty of fisheries statistics for SHARKS:**

- **Retained catches:**
    - Countries having fresh-tuna and/or deep-freezing longliners, notably Taiwan,China, Indonesia, Japan, China, Seychelles, Malaysia, South Korea and India, collecting catch and effort information for shark species (along with the collection of data on IOTC species), and reporting this information to the Secretariat.
    - Countries having fresh-tuna and/or deep-freezing longliners, notably Japan, Taiwan,China, Indonesia and South Korea estimating catch levels for main shark species, by species and year, for as long a period as possible and reporting the results of these estimates to the Secretariat.
    - Countries having longline fisheries targeting swordfish, notably Spain, reporting the available catches and effort information for sharks to the Secretariat, including all available historical data.
    - Countries having artisanal fisheries catching significant amounts of pelagic shark species, notably Sri Lanka. Pakistan and Iran, collecting and reporting the available catches and effort information for sharks to the Secretariat, including all available historical data.
    - Countries having industrial purse seine fisheries, notably the EC and the Seychelles, estimating catch levels for main shark species, by species and year, for as long a period as possible and reporting the results of these estimates to the Secretariat.
    - Countries having fisheries catching significant amounts of shark species promoting research in the area of shark identification, including identification of shark species in processed form or from their fins.
    - Countries having industrial fleets ensuring that logbook coverage is appropriate to produce acceptable levels of precision in their catch and effort statistics for sharks.
- **Discard levels:**
    - Countries having industrial fleets increasing their observer coverage to produce acceptable levels of precision in their estimates of discard levels.
    - Countries having fisheries using sharks for their fins, estimating levels of discards for sharks, if possible, by species.
    - Countries having industrial fleets, estimating discard levels for sharks by species and year for their historical catch series.
- **Size frequency data:**
    - Countries having industrial fleets catching significant amounts of sharks, notably longline fleets, collecting and reporting size frequency information for the main shark species caught by their fisheries, including all historical data available.

    - Countries having industrial fleets monitored through observers collecting size frequency data for main shark species.

- **Biological data**:
    - Countries having fisheries using sharks for their fins collecting information on the identification of shark species through shark fins and the ratios of fin-to-body weight for main shark species, if possible, through observers.
    - Countries having fisheries catching significant amounts of sharks, providing the basic data that would be used to establish length-weight keys, non-standard measurements-fork length keys and processed weight-live weight keys for these species.
    - Countries collecting biological information on sharks caught in their fisheries, preferably through observer programmes, and providing this information (including the raw data) to the Secretariat.

**2. Improve the certainty of statistics on incidental catches of SEABIRDS:**

- Countries having industrial longline fisheries operating in areas with high densities of seabirds, notably Taiwan,China, Japan, Indonesia and South Korea, using observers to collect data on incidental catches of seabirds, by species and fishing area, indicating the type of mitigation measure/s used in each case.
- Countries having longline fisheries estimating total bycatches of seabirds for their fisheries, per species and year, reporting these data to the Secretariat, including the precision of such estimates.
- Countries having longline fisheries to promote research on the effect of seabird bycatch mitigation measures used on their fleets and report the result of these studies to the Secretariat.

**3. Improve the certainty of statistics on incidental catches of SEA TURTLES:**

- Countries having industrial longline fisheries, notably Taiwan,China, Indonesia and Japan, using observers to collect data on incidental catches of sea turtles, by species and fishing area, including the condition of the sea turtle at release.
- Countries having industrial purse seine fisheries, notably the EC and Seychelles, using observers to collect data on incidental catches of sea turtles, by species and fishing area, including the condition of the sea turtle at release.
- Countries having industrial purse seine fisheries promoting research on interactions between Fish Aggregating Devices (FAD's) and sea turtles, including mortality rates by species, area and type of FAD's used, reporting these data to the Secretariat
- Countries having industrial fisheries estimating total bycatches of sea turtles for their fisheries (including sea turtle bycatches on FAD's), per species and year, reporting these data to the Secretariat, including survival rates and estimates of precision for those catches.
- Countries having industrial fisheries to promote research on the effect of sea turtle bycatch mitigation measures and report the result of these studies to the Secretariat.
- Countries having artisanal fisheries catching significant amounts of sea turtles, notably gillnet fisheries operating in the Arabian Sea and the gillnet/longline fishery of Sri Lanka, collecting and reporting data on the bycatches of sea turtles for their fisheries, per species and year.

## 3. STATUS OF FISHERIES STATISTICS FOR SHARKS

### *Main species of sharks caught on IOTC fisheries*

Following standard international practice, the term shark is accepted to include both sharks and rays.

Table 1 below shows the main species of sharks caught on IOTC fisheries as identified by the WPEB in 2007[2].

***Table 1. Preliminary listing of Shark species of concern to IOTC***

| **Common name** | **Species** | Code | **Catch** | |
|---|---|---|---|---|
| Manta ray | *Manta birostris* | MAN | Med | |
| Whale shark | *Rhincodon typus* | RHN | Low | |
| Pelagic thresher | *Alopias pelagicus* | PTH | Low | |
| Bigeye thresher | *Alopias superciliosus* | BTH | Low | |
| Thresher | *Alopias vulpinus* | ALV | Low | |
| Shortfin mako | *Isurus oxyrinchus* | SMA | Med | |
| Longfin mako | *Isurus paucus* | LMA | Med | |
| Crocodile shark | *Pseudocarcharias kamoharai* | PSK | Med | |
| Silvertip shark | *Carcharhinus albimarginatus* | ALS | Low | |
| Silky shark | *Carcharhinus falciformis* | FAL | High | |
| Oceanic whitetip | *Carcharhinus longimanus* | OCS | Med | |
| Sandbar shark | *Carcharhinus plumbeus* | CCP | Low | |
| Tiger shark | *Galeocerdo cuvier* | TIG | Low | |
| Blue shark | *Prionace glauca* | BSH | High | |
| Scalloped hammerhead | *Sphyrna lewini* | SPL | Med | |

[2] IOTC-2007-WPEB-R, page 13.

Other species of sharks that have been reported as a bycatch of IOTC fisheries can be found on Table 2.

***Table 2. Other shark species caught on IOTC fisheries and presumed catch levels[3]***

| Code | English Name | Source | Catch* | French Name | Scientific Name |
|---|---|---|---|---|---|
| **AML** | Grey Reef Shark | IOTC | Low | Requin dagsit | *Carcharhinus amblyrhynchos* |
| **BLR** | Blacktip reef shark | IOTC | Low | Requin pointes noires | *Carcharhinus melanopterus* |
| **BRO** | Copper shark | IOTC | Low | Requin cuivre | *Carcharhinus brachyurus* |
| **DOP** | Shortnose spurdog | IOTC | Low | Aiguillat nez court | *Squalus megalops* |
| **DUS** | Dusky shark | IOTC | Low | Requin de sable | *Carcharhinus obscurus* |
| **GAG** | Tope shark | IOTC | Low | Requin-hâ | *Galeorhinus galeus* |
| **NTC** | Broadnose sevengill shark | IOTC | Low | Platnez | *Notorhynchus cepedianus* |
| **OXY** | Angular rough shark | IOTC | Low | Centrine commune | *Oxynotus centrina* |
| **POR** | Porbeagle | IOTC | Low | Requin-taupe commun | *Lamma nasus* |
| **SMD** | Smooth-hound | IOTC | Low | Emissole lisse | *Mustelus mustelus* |
| **SPZ** | Smooth hammerhead | IOTC | Low | Requin marteau commun | *Sphyrna zygaena* |
| **AGN** | Angelsharks, sand devils nei | FAO | Low | | *Squatina squatina* |
| | Lanternsharks nei | FAO | Low | | *Etmopterus spp* |
| | Sawsharks nei | FAO | Low | | *Pristiophorus spp* |
| **CCQ** | Spot-tail shark | IOTC[1] | Unknown | Requin queue tachet | *Carcharhinus sorrah* |
| **CCM** | Hardnose shark | IOTC[1] | Unknown | Requin nez rude | *Carcharhinus macloti* |
| **SLA** | Spadenose shark | IOTC[1] | Unknown | Requin épée | *Scoliodon laticaudus* |
| **CCD** | Whitecheek shark | IOTC[1] | Unknown | Requin joues blanches | *Carcharhinus dussumieri* |
| **CYT** | Ornate dogfish | FAO[2] | Unknown | Aiguillat élégant | *Centroscyllium ornatum* |
| **CEM** | Smallfin gulper shark | FAO[2] | Unknown | Squale-chagrin cagaou | *Centrophorus moluccensis* |
| **CPU** | Little gulper shark | FAO[2] | Unknown | Petit squale-chagrin | *Centrophorus uyato* |
| **SCK** | Kitefin shark | FAO[2] | Unknown | Squale liche | *Dalatias licha* |
| **ORI** | Slender bambooshark | FAO[2] | Unknown | Requin-chabot élégant | *Chiloscyllium indicum* |
| **ORR** | Grey bambooshark | FAO[2] | Unknown | Requin-chabot gris | *Chiloscyllium griseum* |
| **ORZ** | Tawny nurse shark | FAO[2] | Unknown | Requin nourrice fauve | *Nebrius ferrugineus* |
| **OSF** | Zebra shark | FAO[2] | Unknown | Requin zèbre | *Stegostoma fasciatum* |
| **ODH** | Bigeye sand tiger shark | FAO[2] | Unknown | Requin noronhai | *Odontaspis noronhai* |
| **RHA** | Milk shark | IOTC[3] | Unknown | Requin museau pointu | *Rhizoprionodon acutus* |
| **MTM** | Arabian smooth-hound | IOTC[3] | Unknown | Emissole d'Arabie | *Mustelus mosis* |
| **CLD** | Sliteye shark | IOTC[3] | Unknown | Requin sagrin | *Loxodon macrorhinus* |

* The accumulated catches for 1950-2007 make up 10% or more out of the total catches of sharks recorded (High), between 5-10% (Medium) or less than 5% (Low).

Note that most of the catches of sharks are not available per species and when available per species they are not considered to be an unbiased sample of the catch in the Indian Ocean

1. IOTC-2007-WPEB-13 (Sharks of India)
2. FAO: Case studies of the management of elasmobranch fisheries
3. IOTC: Information collected in Yemen by the IOTC/OFCF Project

[3] Note that the list is not exhaustive; the catches of sharks are not reported by species for most fisheries making it difficult to assess the individual species that make the aggregates

### *Data available on the total catches of sharks in the Indian Ocean*

The collection and reporting of catches of sharks caught in association with species managed by the IOTC (tuna and tuna-like species) has been very uneven overtime. The information on the by-catches of sharks gathered in the IOTC database is thought, for this reason, to be very incomplete. The catches of sharks, when reported, are thought to represent simply the catches of these species that are retained on board. They refer, in many cases, to dressed weights and no indication is given on the type of processing that the different specimens underwent. The weights or numbers of sharks for which only the fins were kept on board are rarely recorded in the vessels' logbooks. This makes it really difficult any attempt to estimate the total catches of sharks in the Indian Ocean.

**Catches by species**: The main problem areas identified for sharks are indicated below:

- **Some catch data not available**: several countries were not collecting fishery statistics, especially in years prior to the early 1970's, and others have not reported catches of sharks to IOTC (Figures 1-2). It is thought that important catches of sharks might have gone unrecorded in several countries. The catches recorded in other cases might not represent the total catches of sharks but simply the amounts retained on board (e.g. dressed weights instead of live weights). The catches of sharks for which only the fins are kept on board or of sharks usually discarded, because of their size or condition, are seldom, if ever, recorded.

**Figure 1:** Catches of pelagic sharks recorded in the IOTC nominal catches database versus the total catches of tuna and tuna-like species recorded for fleets presumed to catch pelagic sharks and the catches of tuna and tuna-like species recorded for fleets for which catches of pelagic sharks are available (1950-2007)

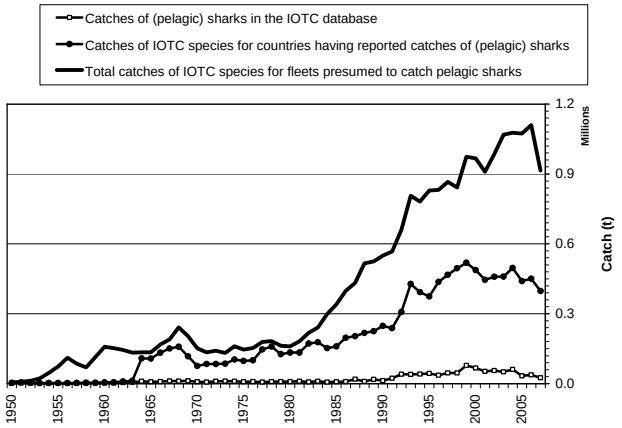
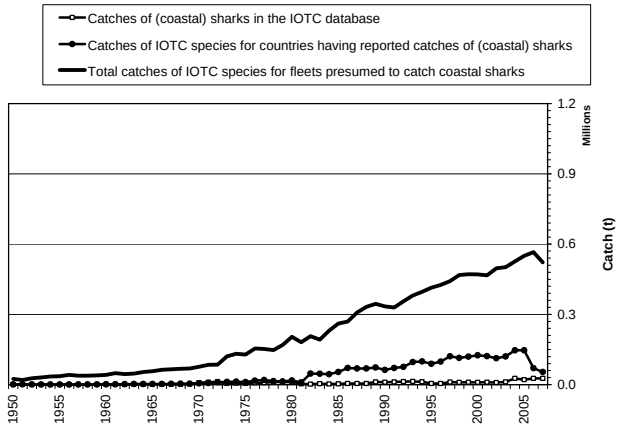



**Figure 2:** Catches of coastal sharks recorded in the IOTC nominal catches database versus the total catches of tuna and tuna-like species recorded for fleets presumed to catch coastal sharks and the catches of tuna and tuna-like species recorded for fleets for which catches of coastal sharks are available (1950-2007)




The selection of fleets presumed to catch a majority of pelagic shark species versus those presumed to catch mostly coastal shark species was done by using the data in the IOTC database for fleets reporting catches of sharks by species or according to the presumed area of operation for fleets not reporting catches of sharks per species or not reporting catches of sharks at all

- **Poor resolution of catch data:** The catches of sharks are usually not recorded per species and/or gear (Figure 3-4). Be it sharks caught on the high seas or in coastal areas the amount of species that may occur in these areas is usually high. The estimation of catches per species is highly compromised in these cases due to the paucity of the data available. The miss-identification of shark species is also common. The identification of sharks in port is usually compromised by the way in which the different species of sharks are processed. The identification of shark species unloaded as shark carcasses, shark fins or

other shark products is difficult due to the little information available: the majority of the information available on the identification of sharks refers to complete specimens.

The main consequence of this is that, at the moment, the catches of sharks available cannot be used to estimate total catches of sharks in the Indian Ocean, not even for the species for which the catches are partially available.

**Figure 3:** Proportion of the catches of pelagic sharks that are recorded per species in the IOTC nominal catches database *versus* those recorded in aggregated form (1950-2007) (The total catches of pelagic sharks recorded per year are also shown (blue line, left axis))

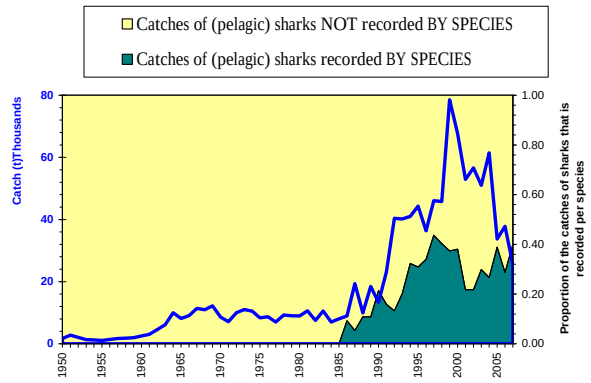
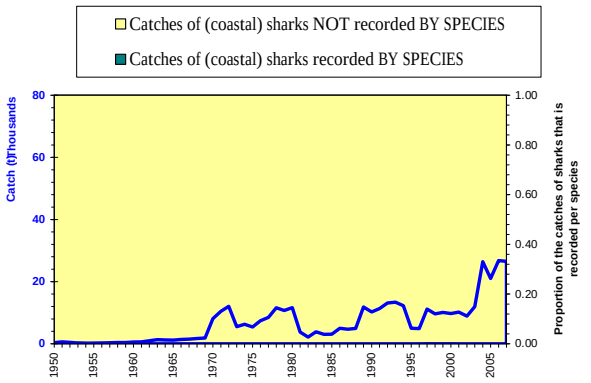



**Figure 4:** Proportion of the catches of coastal sharks that are recorded per species in the IOTC nominal catches database *versus* those recorded in aggregated form (1950-2007) (The total catches of coastal sharks recorded per year are also shown (blue line, left axis))




**<u>Catches by gear type</u>**: The catches of sharks that are not recorded by gear do not represent a high proportion of the total catches recorded for these species, especially in recent years (Figures 5-6).

**Figure 5:** Proportion of the catches of pelagic sharks that are recorded per gear in the IOTC nominal catches database versus those recorded in aggregated form (1950-2007) (The total catches of pelagic sharks recorded per year are also shown (white line, left axis))

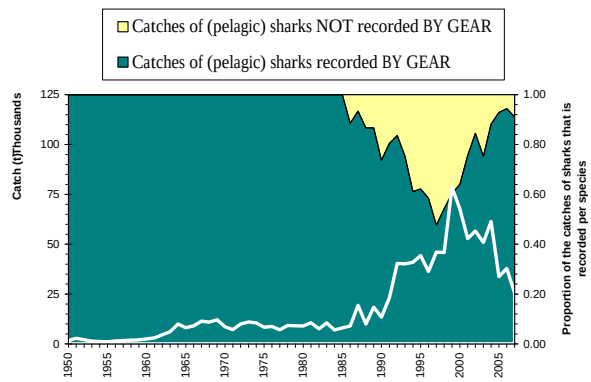
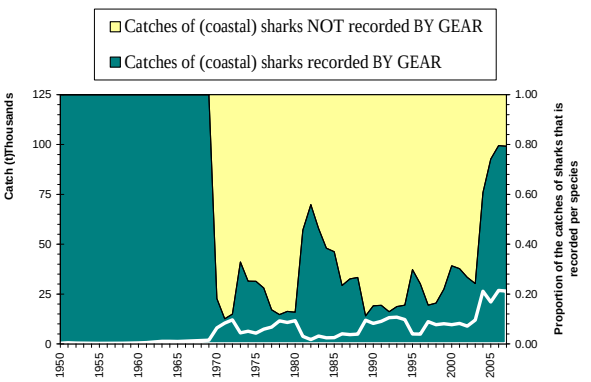



**Figure 6:** Proportion of the catches of coastal sharks that are recorded per gear in the IOTC nominal catches database versus those recorded in aggregated form (1950-2007) (The total catches of coastal sharks recorded per year are also shown (white line, left axis))




Industrial longliners, gillnets, and, to a lesser extent, industrial purse seiners and other artisanal gears operated in the Indian Ocean are thought to be harvesting important amounts of pelagic sharks.

- **(Deep-)freezing tuna longliners** and **fresh-tuna longliners**: The catches of sharks recorded make up a small proportion of the catches of tuna and tuna-like species recorded for these fleets. The catches of sharks are, nevertheless, thought to be very incomplete.

The implementation of catch monitoring schemes in different ports of landing of fresh-tuna longliners in recent years4 has improved the estimates of catches of sharks for these fleets. The catches estimated, however, do not represent the total catches of sharks for this fishery due to the high amount of sharks discarded for which only the fins are kept on board. The skippers of the longliners do seldom allow that the enumerators take samples of shark fins during the unloading.

- **Freezing(fresh) swordfish longliners**: The amounts of sharks caught by longliners targeting swordfish in the Indian Ocean have been constantly increasing since the mid-90's. The catches of sharks recorded for these fleets are thought more realistic than those recorded for other longline fisheries. The high catches are thought to be due to:
    - Gear configuration: The vessels targeting swordfish use surface longlines and set the lines at dusk or during the night. Many pelagic sharks are thought to be abundant at these depths and most active during dusk or night hours.
    - Area fished: The fleets targeting swordfish have been deploying most of the fishing effort in the Southwest Indian Ocean, in the vicinity of South Africa, South Madagascar, Reunion and Mauritius. High amounts of sharks are thought to occur in these areas.
    - Changes in the relative amounts of swordfish and sharks in the catches: The catch rates of swordfish have been decreasing in some areas, probably due to localised depletion. It is thought that this depletion might be the consequence of a relative increase in the catches of sharks and other species by longliners operating in these areas.
    - Changes in the target species due to bans on imports of swordfish products: Major importers of swordfish (e.g. EC, USA) have issued bans at different times on the imports of swordfish products due to the high amounts of metals (e.g. mercury, cadmium) found in the specimens caught in some areas. It is known that some of the fleets targeting swordfish shifted targeting to sharks at the time the bans were implemented.
- **Industrial tuna purse seiners:** There are no catches of sharks recorded in the IOTC database, although they are known to occur, mainly in the case of sets by purse seiners on schools that are associated with fish aggregating devices or other natural or artificial logs. The sharks caught by purse seiners are usually discarded, only the fins kept on board.
- **Pole and line fisheries:** There are no catches of sharks recorded for the pole and line fisheries of Maldives and India in the IOTC database. The amounts of sharks caught by these fisheries, if any, are not thought significant.
- **Gillnet/longline fishery of Sri Lanka:** Between 1,200 and 1,500 vessels (average size of 12 m) operating gillnets and longlines in combination have been harvesting important amounts of pelagic sharks since the mid 80's. The longlines are believed to be responsible for most of the catches of sharks. The proportion that the catches of sharks make out of the catches of tuna and tuna-like species is thought reliable. The total amounts of sharks recorded since the mid-90's are thought, however, higher than the real catches for this fishery. This is based on the preliminary results of the catch monitoring programme carried out in Sri Lanka (NARA-IOTC-OFCF): the catches estimated from the new data tend to indicate that the catches estimated in the past are too high.
- **Gillnet fisheries:** The amounts of sharks that are caught by some fleets using gillnets are thought high. The species of sharks caught are thought to vary significantly depending on the area of operation of the gillnets:

[4] The IOTC-OFCF (Overseas Fisheries Cooperation Foundation of Japan) Project implemented programmes in cooperation with local institutions in Thailand and Indonesia

  - Gillnets operated in areas having low concentrations of pelagic sharks: The gillnet fisheries of most coastal countries operate these gears in coastal waters. The abundance of pelagic sharks in these areas is thought low.
  - Gillnets operated in areas having high concentrations of pelagic sharks: Gillnets operated in Sri Lanka, Indonesia and Yemen (waters around Socotra), in spite of being set in coastal areas, are thought to be catching significant amounts of pelagic sharks.
  - Gillnets operated on the high seas: Vessels from Taiwan,China were using drifting gillnets from 1982 to 1992, the year in which the use of this gear was banned worldwide. The catches of pelagic sharks were very high during that period. Some artisanal fleets have been operating gillnets on the high seas in recent years being the catches of sharks for those thought high (e.g. Iran and Pakistan).

- **Hand line and troll line fisheries:** The majority of hand line and troll line fisheries in the Indian Ocean operate these gears in coastal waters. The amounts of pelagic sharks caught are thought, for this reason, low. The amount that other species of sharks make out of the catches of tuna and tuna-like species might change depending on the area fished and time of the day.

## 4. OVERVIEW OF IOTC FISHERIES AND SEABIRD BYCATCH LEVELS

### *Main species and fisheries concerned*

The main species of seabirds likely to be bycatch of IOTC fisheries are presented in Table 3 below[5].

***Table 3. Main species of seabirds likely to be incidentally caught on longline operations***

| English Name | Status* | Scientific Name |
|---|---|---|
| Amsterdam Albatross | Critically Endangered | *Diomedea amsterdamensis* |
| Antipodean Albatross | Vulnerable | *Diomedea antipodensis* |
| Black-browed Albatross | Endangered | *Thalassarche melanophrys* |
| Buller's Albatross | Vulnerable | *Thalassarche bulleri* |
| Campbell Albatross | Vulnerable | *Thalassarche impavida* |
| Chatham Albatross | Critically Endangered | *Thalassarche eremite* |
| Grey-headed Albatross | Vulnerable | *Thalassarche chrysostoma* |
| Light-mantled Albatross | Near Threatened | *Phoebetria palpebrata* |
| Northern Royal Albatross | Endangered | *Diomedea sanfordi* |
| Southern Royal Albatross | Vulnerable | *Diomedea epomophora* |
| Salvin's Albatross | Vulnerable | *Thalassarche salvini* |
| Shy Albatross | Near Threatened | *Thalassarche cauta* |
| White-capped Albatross | Near Threatened | *Thalassarche steadi* |
| Sooty Albatross | Endangered | *Phoebetria fusca* |
| Tristan Albatross | Endangered | *Diomedea dabbenena* |
| Wandering Albatross | Vulnerable | *Diomedea exulans* |
| Atlantic Yellow-nosed Albatross | Endangered | *Thalassarche chlororhynchos* |
| Indian Yellow-nosed Albatross | Endangered | *Thalassarche carteri* |
| Northern Giant Petrel | Near Threatened | *Macronectes halli* |
| Southern Giant Petrel | Vulnerable | *Macronectes giganteus* |
| White-chinned Petrel | Vulnerable | *Procellaria aequinoctialis* |
| Westland Petrel | Vulnerable | *Procellaria westlandica* |
| Short-tailed Shearwater | Least Concern | *Puffinus tenuirostris* |
| Sooty Shearwater | Near Threatened | *Puffinus griseus* |

*****Source IUCN 2006, BirdLife International 2004b.

[5] As in IOTC-2007-WPEB-22, appendix 2, page 24. Paper submitted on behalf of the Agreement for the Conservation of Albatrosses and Petrels (ACAP)

The interaction between seabirds and IOTC fisheries is likely to be significant only in Southern waters (below 30 degrees South), an area where most of the effort is exerted by longliners. Incidental catches are, for this reason, likely to be of importance only for longline fleets having vessels operating in these areas (Taiwan,China, Japan, South Korea, the EC and Indonesia).

### *Status of data on seabird by-catches*

To date, the IOTC Secretariat has not received any reports from members or cooperating parties on the total amounts of seabirds caught incidentally by their vessels.

The only information available on the incidental catches of seabirds by tuna and/or tuna-like fisheries in the Indian Ocean come from observer programmes. The information available is still very preliminary due to the low number of observers that collected it.

Some information on the incidental catches of seabirds by some longline fleets operating in the Southern Indian Ocean is also available with the Secretariat. The data available were provided by the CCSBT and will be completed with more recent information in the future.

The paucity of the information available makes it really difficult any attempt to estimate levels of seabird bycatches by species.

## 5. OVERVIEW OF IOTC FISHERIES AND SEA TURTLE BYCATCH LEVELS

### *Main species and fisheries concerned*

The main species of sea turtles likely to be bycatch of IOTC fisheries are presented in Table 4 below.

***Table 4. Main species of Indian Ocean sea turtles***[6]

| English Name | Scientific Name |
|---|---|
| Loggerhead turtle | *Caretta caretta* |
| Olive ridley turtle | *Lepidochelys olivacea* |
| Green turtle | *Chelonia mydas* |
| Hawksbill turtle | *Eretmochelys imbricata* |
| Leatherback turtle | *Dermochelys coriacea* |
| Flatback turtle | *Natator depressus* |

The interaction between sea turtles and IOTC fisheries is likely to be significant only in tropical areas, involving both industrial and artisanal fisheries, notably for:

- Industrial purse seine fisheries using fish aggregating devices (EC, Seychelles, Iran, Thailand)
- Gillnet fisheries operating in coastal waters or on the high seas (Sri Lanka, Iran, Pakistan)
- Industrial longline fisheries operating in tropical areas (Taiwan,China, Japan, Indonesia, Seychelles, India):

Both loggerhead and leatherback turtles are caught incidentally on IOTC fisheries, in higher numbers than the other species.

### *Status of data on sea turtle by-catches*

To date, the IOTC Secretariat has not received any reports from members or cooperating parties on the total amounts of sea turtles caught incidentally by their vessels the only information available coming, as in the above case, from observer programmes.

The paucity of the information available makes it really difficult any attempt to estimate levels of se turtle bycatches by species.

[6] Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia