GUIDELINES FOR THE REPORTING OF FISHERIES STATISTICS TO THE IOTC

IOTC Secretariat[1]

MAIN PURPOSE OF THE GUIDELINES

The present Guidelines are addressed to IOTC Members, Co-operating Non Contracting Parties (CPC's) and other Parties fishing IOTC species in the Indian Ocean, its main objective being to facilitate the reporting of fisheries data to the IOTC. The Guidelines are based on the IOTC data requirements currently in place. These Guidelines will be updated as new data collection measures are implemented or those existing modified.

OVERVIEW

The guidelines cover the following areas:

- Main purpose of the Guidelines
- Overview
- IOTC data reporting standards
- Other International Agreements calling for the provision of data on highly migratory species
- Scope: Fleets, area, type of fisheries and species covered
- Data sources, data handling and coverage rate
- Timeliness of data submission and historical revisions to datasets
- Estimate of annual catches
- Fishing craft statistics
- Catches-and-effort
- Size frequency data
- Socio-economic data (in prep.)
- Use of IOTC Forms (in prep.)

Major data categories covered by the Guidelines

Annual catches (IOTC Form 1) which are highly aggregated statistics for each species estimated per fleet, gear and year for a large area. Includes retained catches and discards.

Fishing craft statistics (IOTC Form 2) which refer to the number of crafts operated per fleet, type of ship, gear and year.

Catch and effort data (IOTC Form 3) 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 requested.

Length frequency data (IOTC Form 4) which refer to individual body lengths of IOTC species per fleet, year, gear, type of school, month and 5 degrees square areas.

Socio-economic data (IOTC Form 7) which refer to a range of socio-economic indicators (e.g. number of fishermen, fish prices by species, etc.) by IOTC country, year or month for countries having IOTC fisheries in the Indian Ocean.

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IOTC DATA REPORTING STANDARDS

The **Agreement for the Establishment of the Indian Ocean Tuna Commission** states:

> ***Article V. Objectives, Functions and Responsibilities of the Commission***
>
> *"1. The Commission shall promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks."*
>
> *"2. In order to achieve these objectives, the Commission shall have the following functions and responsibilities, in accordance with the principles expressed in the relevant provisions of the United Nations Convention on the Law of the Sea:"*
>
> > *"(a)* ***to keep under review the conditions and trends of the stocks and to gather, analyse and disseminate scientific information, catch and effort statistics and other data relevant to the conservation and management of the stocks and to fisheries based on the stocks covered by this Agreement****;"*
> >
> > *"(d)* ***to keep under review the economic and social aspects of the fisheries based on the stocks covered by this Agreement bearing in mind, in particular, the interests of developing coastal states****;"*
>
> ***Article XI. Information***
>
> ***"1. The Members of the Commission shall, on the request of the Commission, provide such available and accessible statistical and other data and information as the Commission may require for the purposes of this Agreement. The Commission shall decide the scope and form of such statistics and the intervals at which they shall be provided. The Commission shall also endeavour to obtain fishing statistics from fishing States or entities which are not Members of the Commission."***

Measures adopted by the IOTC calling for the collection and exchange of fisheries data

Since its inception, the Indian Ocean Tuna Commission has adopted several measures that call for IOTC CPC's to report fisheries data to the Commission, in particular:

- IOTC Resolution 08/01 (which superseded R01/05 (*ibid.* R98/01)): ***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's): Defines IOTC's data reporting procedures for* ***IOTC SPECIES*** *and* ***non-target, associated and dependent species****.* (Full text is shown in Appendix I.)
- 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 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.*

- 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.*

The main types of data requested by the IOTC and the reporting deadlines that apply in each case are summarized in Table 1 (next page).

In addition to the above measures the Commission adopted in 1998 IOTC Resolution 98/02 ***Data confidentiality policy and procedures*** which establishes the criteria that apply to the release of the fisheries data reported to the IOTC. (Full text is shown in Appendix II.)*:*

- *Paragraph 2. Catch-and-effort and length-frequency data grouped by 5° longitude by 5° latitude by month for longline and 1° longitude by 1° latitude by month for surface fisheries stratified by fishing nation are considered to be in the public domain, provided that the catch of no individual vessel can be identified within a time/area stratum. In cases when an individual vessel can be identified, the data will be aggregated by time, area or flag to preclude such identification, and will then be in the public domain.*
- *Paragraph 3. Catch-and-effort and length-frequency data grouped at a finer level of time-area stratification will only be released with written authorisation from the sources of the data. Each data release will require the specific permission of the Secretary.*

OTHER INTERNATIONAL AGREEMENTS CALLING FOR THE PROVISION OF DATA ON HIGHLY MIGRATORY SPECIES

Both the United Nations Convention on the Law of the Sea (10 December 1982) and the United Nations Fish Stock Agreement (4 August 1995) call for countries having fleets that operate on the high seas to collate fisheries statistics for those fleets and to exchange this information on a regular basis through competent regional organizations. Provisions for data gathering can also be found in the FAO Code of Conduct for Responsible Fisheries (Rome, 1995). The sections of the above texts that relate to the collection and exchange of fisheries data can be found in Appendix III.

The Accession or Ratification of the UNCLOS and/or the FSA by any State involves the commitment of such State to comply with the provisions of such Agreement, in particular its participation in the work of Regional Fisheries Management Organizations (RFMO's such as the IOTC) and the provision of fisheries data according to the agreed standards.

Table 2 (page 5) shows the Parties having/presumed to have fisheries for IOTC species in the IOTC Area of Competence. The status of each Party concerning IOTC Membership, the "United Nations Convention on the Law of the Sea" (UNCLOS) and of the "Agreement for the Implementation of the provisions of the Convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks" (FSA) is also provided.

Table 1: Types of fisheries statistics requested by the IOTC and reporting deadlines

Dataset	Types of Data	Description	IOTC Form	Species Group	Management Measures /Agreements	Type of Report	Report To / Reporting Deadline
Annual Catches	Nominal Catches	Estimates of total annual retained catches in live weight by IOTC Area, species and type of fishery	Form 1RC	IOTC Species	R-08/01	Obligatory	Sec LL: 30/06 (P) LL: 30/12 (F) OT: 30/06 (F)
				Sharks	R-08/01; R-05/05	Obligatory	
				Other species	R-08/01	Voluntary	
	Discards	Estimates of discard levels (dead individuals) in live weight (or number) by IOTC Area, species and type of fishery	Form 1DI	IOTC Species	R-08/01	Obligatory	
				Sharks	R-08/01; R-05/05	Obligatory	
				Seabirds	R-08/01; R-08/03; Rc-05/09	Obligatory	SC; LL only Timely
				Sea Turtles	R-08/01; Rc-05/08	Voluntary	Sec
				Other Species	R-08/01	Voluntary	
Active crafts	Numbers of Craft	Total number of fishing crafts operated by type of fishery, type of craft and craft size by year	Form 2FC	Fisheries targeting IOTC Species	FSA-Annex I, Article 4	Voluntary	Sec
Catch and Effort	Surface Fisheries	Catch by species in live weight and fishing effort by type of fishery by 1° grid area and month strata (extrapolated to annual catch)	Form 3CE	IOTC Species	R-08/01	Obligatory	Sec LL: 30/06 (P) LL: 30/12 (F) OT: 30/06 (F)
				Sharks	R-08/01; R-05/05	Obligatory	
				Other bycatch	R-08/01	Voluntary	
	Longline Fisheries	Catch by species in number or live weight and effort in number of hooks set by 5° grid area and month strata (extrapolated to annual catch)	Form 3CE	IOTC Species	R-08/01	Obligatory	
				Sharks	R-08/01; R-05/05	Obligatory	
				Other bycatch	R-08/01	Voluntary	
		Catch by species in number or live weight and effort in number of hooks set by 1° grid area and month strata (extrapolated to annual catch)	Form 3CE	IOTC Species	R-08/01	Voluntary	SC Timely*
				Sharks	R-08/01; R-05/05	Voluntary	
	Coastal Fisheries	Catch by species and fishing effort by type of fishery and geographic area	Form 3AR	IOTC Species	R-08/01	Obligatory	Sec LL: 30/06 (P) LL: 30/12 (F) OT: 30/06 (F)
				Sharks	R-08/01; R-05/05	Obligatory	
				Other bycatch	R-08/01	Voluntary	
	Supply vessels	Number and characteristics of supply vessels and number of days-at-sea by type of supply vessel by 1° grid area and month	Form 3SU	Not applicable	R-08/01	Obligatory	
	FAD	Total number and type of Fish Aggregating Devices (FAD) set by purse seiners and supply vessels by quarter by fleet	Form 3FA	Not applicable	R-08/01	Obligatory	
Size Data	Fish lengths	Length data by species by type of fishery by 5° grid area by month	Form 4SF	IOTC Species	R-08/01	Obligatory	
				Sharks	R-05/05	Obligatory	
Socio-Economic Data	Fish Prices	Average prices of fish per type of fish product (preservation, processing), weight units, type of currency, month and market	Form 7PR	Main IOTC species	A-Article5 paragraph 2(d)	Voluntary	Sec
	Country Indicators	Set of indicators per type of indicator and year (e.g. GDP, OECD status, number of fishermen, contribution of fisheries to GDP, etc.)	Form 7IN	Not applicable		Voluntary	Sec

Management Measures / Agreements: IOTC Resolution (**R**); IOTC Recommendation (**Rc**); IOTC Agreement (**A**); UN Fish Stocks Agreement (**FSA**)

Report To / Reporting Deadline: Longline fisheries (**LL**) Preliminary statistics (**P**) or Final statistics (**F**); Other fisheries (**OT**) Final statistics (**F**)
Shall (reporting is compulsory) /may (reporting is voluntary) be reported to the IOTC through the IOTC Secretariat (**Sec**) or through the Scientific Committee (**SC**)

***** Data for the exclusive use of IOTC scientists, subject to the approval of the data owners and bound by IOTC confidentiality policy (Resolution 98/02); should be provided for scientific use in a timely fashion.

Table 2: Parties having/presumed to have fisheries for IOTC species in the IOTC Area of Competence

	IOTC Code	English name	French name	IOTC status	IOTC EEZ*	UNCLOS	UN FSA
1.	AUS	Australia	Australie	Member	Yes	Ratified	Ratified
2.	BHR	Bahrain	Bahreïn		Yes	Ratified	
3.	BGD	Bangladesh	Bangladesh		Yes	Ratified	Signatory
4.	BLZ	Belize	Belize	Member	No	Ratified	Ratified
5. 6.	CHN TWN	China Taiwan,China	Chine Taiwan,Chine	Member	No	Ratified	Signatory
7.	COM	Comoros	Comores	Member	Yes	Ratified	
8.	DJI	Djibouti	Djibouti		Yes	Ratified	
9.	EGY	Egypt	Egypte		Yes	Ratified	Signatory
10.	ERI	Eritrea	Erythrée	Member	Yes		
11.	EUR	European Community	Communauté européenne	Member	Yes●	Ratified	Ratified
12.	FRAT	France OT	France TOM	Member	Yes	Ratified	Ratified
13.	GIN	Guinea	Guinée	Member	No	Ratified	Accession
14.	IND	India	Inde	Member	Yes	Ratified	Accession
15.	IDN	Indonesia	Indonésie	Member	Yes	Ratified	Signatory
16.	IRN	Iran IR	Iran RI	Member	Yes	Signatory	Accession
17.	IRQ	Iraq	Iraq		Yes	Ratified	
18.	ISR	Israel	Israël		Yes		Signatory
19.	JPN	Japan	Japon	Member	No	Ratified	Ratified
20.	JOR	Jordan	Jordanie		Yes	Accession	
21.	KEN	Kenya	Kenya	Member	Yes	Ratified	Accession
22.	KWT	Kuwait	Koweït		Yes	Ratified	
23.	MDG	Madagascar	Madagascar	Member	Yes	Ratified	
24.	MYS	Malaysia	Malaisie	Member	Yes	Ratified	
25.	MDV	Maldives	Maldives		Yes	Ratified	Ratified
26.	MUS	Mauritius	Maurice	Member	Yes	Ratified	Accession
27.	MOZ	Mozambique	Mozambique		Yes	Ratified	Accession
28.	MYM	Myanmar	Myanmar		Yes	Ratified	
29.	OMN	Oman	Oman	Member	Yes	Ratified	Accession
30.	PAK	Pakistan	Pakistan	Member	Yes	Ratified	Signatory
31.	PHL	Philippines	Philippines	Member	No	Ratified	Signatory
32.	QAT	Qatar	Qatar		Yes	Ratified	
33.	SAU	Saudi Arabia	Arabie saoudite		Yes	Ratified	
34.	SEN	Senegal	Sénégal	Cooperating	No	Ratified	Ratified
35.	SYC	Seychelles	Seychelles	Member	Yes	Ratified	Ratified
36.	SLE	Sierra Leone	Sierra Leone	Member	No	Ratified	
37.	SOM	Somalia	Somalie		Yes	Ratified	
38.	ZAF	South Africa	Afrique du Sud	Cooperating	Yes	Ratified	Accession
39.	KOR	Republic of Korea	République de Corée	Member	No	Ratified	Ratified
40.	LKA	Sri Lanka	Sri Lanka	Member	Yes	Ratified	Ratified
41.	SDN	Sudan	Soudan	Member	Yes	Ratified	
42.	TZA	Tanzania	Tanzanie	Member	Yes	Ratified	
43.	THA	Thailand	Thaïlande	Member	Yes	Signatory	
44.	TMP	Timor-Leste	Timor-Leste		Yes		
45.	ARE	United Arab Emirates	Emirats arabes unies		Yes	Signatory	
46.	GBRT	United Kingdom OT	Royaume Uni OT	Member	Yes	Accession	Ratified
47.	URY	Uruguay	Uruguay	Cooperating	No	Ratified	Ratified
48.	VUT	Vanuatu	Vanuatu	Member	No	Ratified	Signatory
49.	YEM	Yemen	Yémen		Yes	Ratified	
50.	NEI◆	Various flags	Plusieurs pavillons		No	n/a	n/a

***** Countries whose Economic Exclusive Zone (EEZ) lies partially or fully within the IOTC Area of Competence

● Reunion's EEZ (EC-France) lies within the IOTC Area of Competence

◆ Includes non-CPC's having IOTC fisheries that are not coastal countries in the IOTC Area (e.g. Equatorial Guinea)

n/a: Non-applicable

UNCLOS/UN FSA: **Signatory** (willing to be bound by the Convention/Agreement), **Accession** (consent to be bound), **Ratified** (definitive consent to be bound)

SCOPE: FLEETS, AREA, FISHERIES, SPECIES AND TIME PERIODS TO BE COVERED

FLEETS

As stated in Article 94 (***Duties of the flag state***) of the **UNCLOS** *"Every state shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag"* and Part V, Article 18 (***Duties of the Flag State***) of the **FSA** *"A State whose vessels fish on the high seas shall take such measures as may be necessary to ensure that vessels flying its flag comply with subregional and regional conservation and management measures and that such vessels do not engage in any activity which undermines the effectiveness of such measures."*

The responsibility for the reporting of fisheries statistics to the IOTC lies with the flag country. Thus, IOTC CPC's and other parties fishing for IOTC species within the IOTC Area of Competence shall report the data requested for all fishing crafts that operate under its flag.

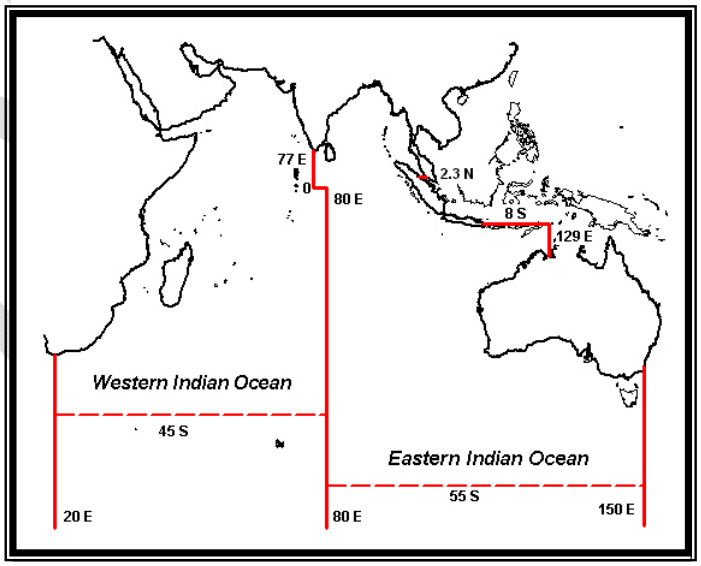
Countries reporting data on vessels that operate under flags other than their own shall report separate statistics for each flag. (e.g. catches of vessels licensed to operate within their EEZ or those of vessels operating under charter arrangements.)

IOTC AREA OF COMPETENCE

The IOTC Area of Competence is defined in Article 2 of the IOTC Agreement (***Area of Competence***): *"The area of competence of the Commission shall be the Indian Ocean (as shown on the map set out in Annex A to this Agreement) and adjacent seas, north of the Antarctic Convergence, insofar as it is necessary to cover such seas for the purpose of conserving and managing stocks that migrate into or out of the Indian Ocean."*

The IOTC Area is shown in Figure 1 below.

Figure 1: IOTC Area of Competence



IOTC CPC's and other parties cooperating with the IOTC shall report statistics for their fleets operating in the IOTC Area. **Parties reporting statistics from areas other than the IOTC Area shall report such data separately, indicating the area of origin.** (e.g. Statistics off South Africa in waters adjacent to the 20 degrees longitude east or those from waters in the southern ocean.)

Initially, the IOTC compiles information on the catches of yellowfin tuna, bigeye tuna, southern bluefin tuna and albacore in waters adjacent to its western boundary (off South Africa in waters west to the 20 degrees longitude east) and from waters in the southern ocean (corresponding to the southern area beyond the broken line in Figure 1). IOTC CPC's are encouraged to report statistics for the species and areas referred to above.

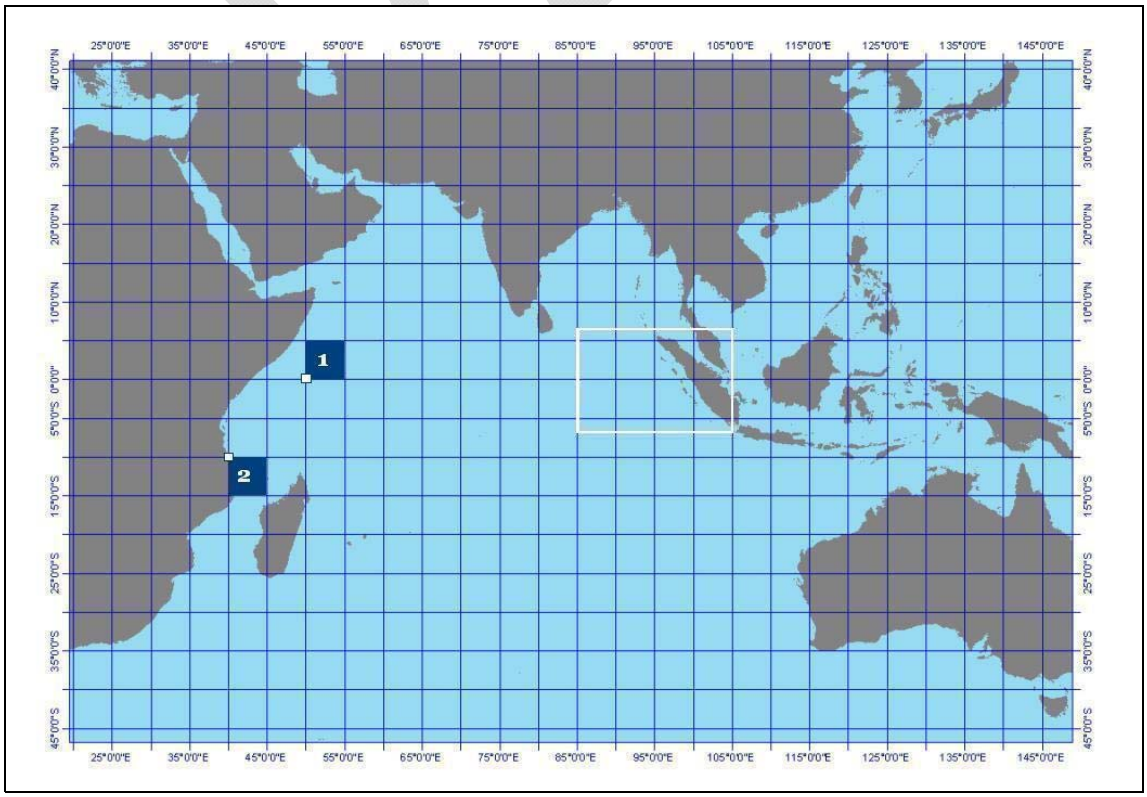
Areas for the reporting of catch-and-effort and size frequency data

The standards for the reporting of catch-and-effort and size frequency data are specified in IOTC Resolution 08/01 (***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's)*):

- *Paragraph 3.* ***Catch-and-effort data***
  - *Subparagraph (a) For* ***surface fisheries****: catch weight by species and fishing effort* ***shall be provided by 1° grid area and month strata****. (…)*
  - *Subparagraph (b)* ***Longline fisheries****: catch by species, in numbers or weight, and effort as the number of hooks deployed* ***shall be provided by 5° grid area and month strata****. (…)*
  - *Subparagraph (c)* ***Coastal fisheries****: available catch by species, fishing gear and fishing effort shall be submitted frequently and* ***may be provided using an alternative geographical area*** *if it better represents the fishery concerned.*
- *Paragraph 4.* ***Size data****: (…) Length data by species, including the total number of fish measured,* ***shall be submitted by a 5° grid area by month****, by gear and fishing mode (…)*
- *Paragraph 5.(b)* ***Number of days at sea by supply vessels by 1° grid area and month*** *(…)*

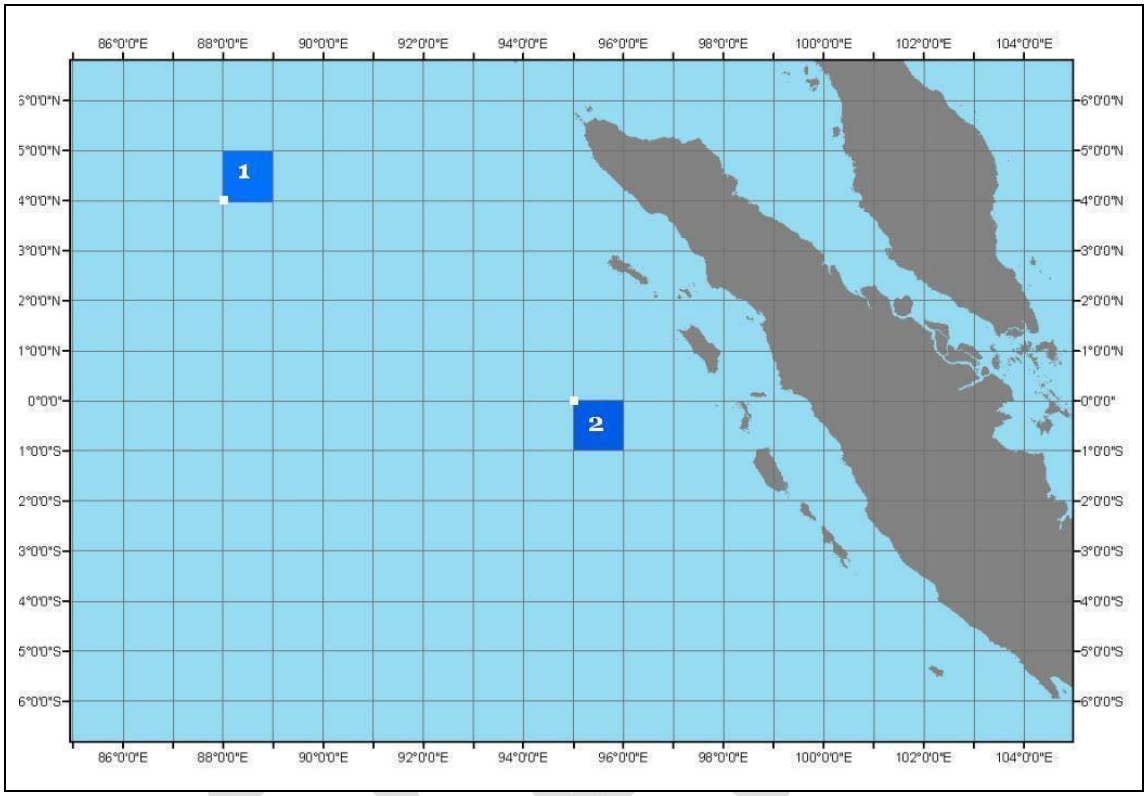
IOTC Standard Grids: IOTC statistics shall be aggregated by using 5° grid areas (Figure 2) or 1°grid areas (an example is shown in Figure 3).

Figure 2: IOTC 5° grid areas



Each grid in the map is defined through a 7 digit number, as can be seen in the following examples for grids 6100050 (Figure 2 (1)), 6205040 (Figure 2 (2)), 5104088 (Figure 3 (1)), 5200095 (Figure 3 (2)).

Figure 3: IOTC 1° grid areas (section of the Indian Ocean corresponding to the area defined by the white rectangle represented on Figure 2)



Example	Grid Size	Quadrant	Degrees Latitude		Degrees Longitude		
Figure 2 (1)	6	1	0	0	0	5	0
Figure 2 (2)	6	2	0	5	0	4	0
Figure 3 (1)	5	1	0	4	0	8	8
Figure 3 (2)	5	2	0	0	0	9	5

Where:

- Grid size: Size of the square/rectangle used as unit of area. Use the following codes:
  - **5** to refer to 1° square areas (catch-and-effort surface fleets and supply vessels)
  - **6** to refer to 5° square areas (catch-and-effort longline fleets and size data all fleets)
- Quadrant: Major geographic quadrants divided by the Equator (latitude 0°) and the Greenwich meridian (longitude 0°), as follows:
  - **1**: Northeast
  - **2**: Southeast
  - **3**: Southwest
  - **4**: Northwest

  In the Indian Ocean, only **1** and **2** will apply

- Latitude / Longitude: Indicate the latitude (two digits) and longitude (three digits) of the corner of the square closest to 0° latitude and 0° longitude (point defined by the white square in each case).

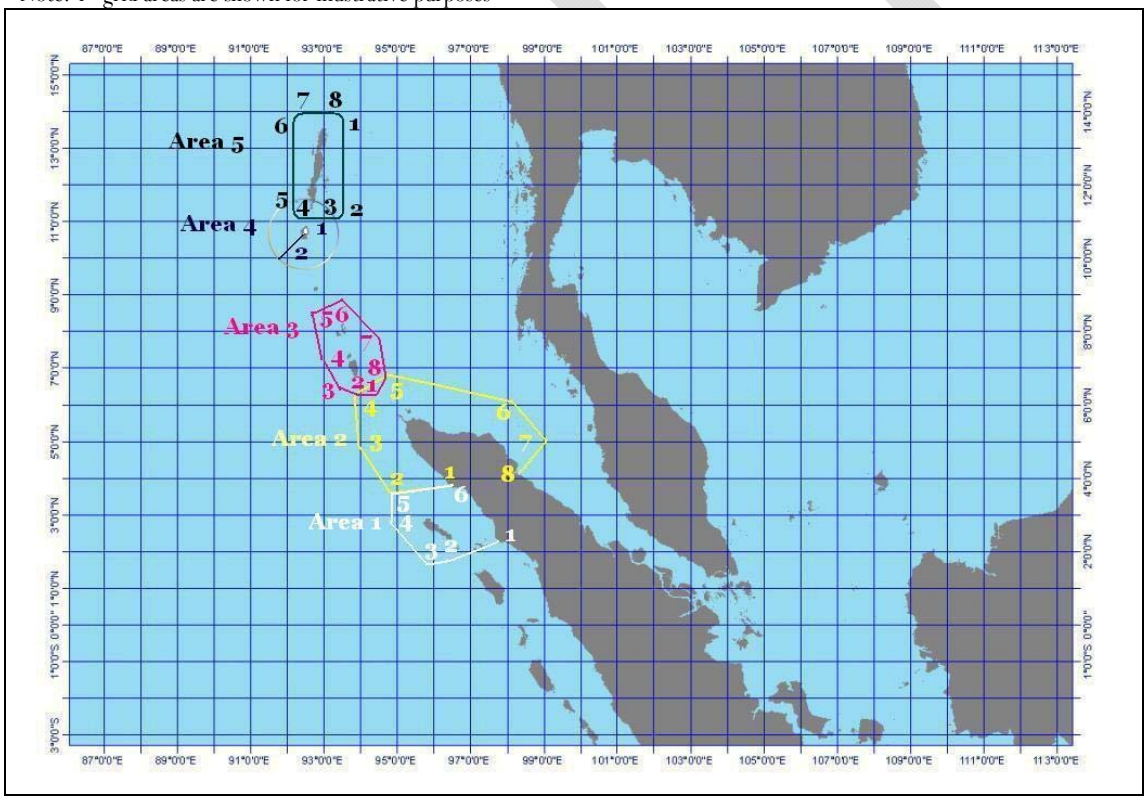
Thus, all catch-and-effort or size frequency sampling events recorded within the areas represented in the above figures shall be aggregated and recorded under the grids referred to in the above examples (e.g. the catch-and-effort corresponding to all longline sets that occurred between 0° North (inclusive) and 5° North (exclusive) and between 50° East (inclusive) and 55° East (exclusive) are to be aggregated under grid 6100050).

Other alternative areas: Paragraph 3.(c) of IOTC Resolution 08/01 states that alternative areas can be used for **coastal fisheries** if they better represent the fishery concerned. In general, **the areas chosen should be of small size, preferably lower in size than any of the 5° grid areas located at a latitude and longitude similar to that of the area concerned**.

All points defining each area shall be provided, in sequential order. Example of five hypothetical areas can be seen in Figure 4. The points that define each area are specified in the tables below Figure 4.

Figure 4: Examples of alternative areas (Northern Sumatra and neighbouring islands)

Note: 1° grid areas are shown for illustrative purposes



As shown in the example on Figure 4 areas can have different shapes:

- Polygons (Areas 1-3), in which case only the coordinates for each point are required

Example	Area 1			Area 2			Area 3		
	Q	Lat	Lon	Q	Lat	Lon	Q	Lat	Lon
Point 1	1	02:15	97:50	1	03:50	96:25	1	06:20	94:25
Point 2	1	01:55	96:55	1	03:35	94:57	1	06:20	93:55
Point 3	1	01:45	95:55	1	04:50	94:00	1	06:30	93:20
Point 4	1	02:45	94:57	1	06:20	93:55	1	07:10	92:57
Point 5	1	03:35	94:57	1	06:50	94:45	1	08:30	92:45
Point 6	1	03:50	96:25	1	06:05	98:10	1	08:50	93:30

Example	Area 1			Area 2			Area 3		
	Q	Lat	Lon	Q	Lat	Lon	Q	Lat	Lon
Point 7				1	05:00	99:00	1	07:55	94:30
Point 8				1	04:05	98:10	1	06:50	94:45

- Circular areas (Area 4) around small islands (e.g. atolls), in which case the coordinates for the centre point and the radius (equivalent to the operating range of the fleet involved) of the circle have to be provided.

Example	Centre point			Radius (km)
	Q	Lat	Lon	
Area 4	1	10:45	92:35	121

- Areas defined by curved lines or a combination of curved and straight lines (Area 5), in which case the coordinates for each point are required plus the centre point and the radius (of the circle) for points that are joined through curved lines.

Area 5	Coordinates			Centre point			Radius (km)
	Q	Lat	Lon	Q	Lat	Lon	
Point 2	1	11:20	93:30	1	11:45	93:00	105
Point 3	1	11:05	93:20				
Point 4	1	11:05	92:20	1	11:45	92:45	105
Point 5	1	11:20	92:15				
Point 6	1	13:45	92:15	1	13:25	92:45	105
Point 7	1	13:57	92:20				
Point 8	1	13:57	93:20	1	13:25	93:00	105
Point 1	1	13:45	93:30				

The use of polygons is recommended over the use of other areas, whenever it is possible.

Note that the areas may, in some cases, overlap (as it is the case with areas 2 and 3 and areas 4 and 5 in the example shown in Figure 4).

In addition, the IOTC uses **other regular areas** that are defined by following the same standards as those used for 1° and 5° square areas:

- Grid size: Size of the square/rectangle used as unit of area. Use the following codes:
  - **1** to refer to 30° square areas (e.g. 1230060 to contain catches/effort between 30°-60° South and 60°-90° East)
  - **2** to refer to 10° latitude by 20° longitude areas (e.g. 2100040 to contain catches/effort between 0°-10° North and 40°-60° East)
  - **3** to refer to 10° square areas (e.g. 3110030 to contain catches/effort between 10°-20° North and 30°-40° East)
  - **4** to refer to 20° square areas (e.g. 4220080 to contain catches/effort between 20°-40° South and 80°-100° East)

SPECIES UNDER THE PURVIEW OF THE IOTC

The species covered by the IOTC Agreement are defined in the Article 3 of this Agreement (***Species and stocks***): *"The species covered by this Agreement shall be those set out in Annex B. The term 'stocks' means the populations of such species which are located in the Area or migrate into or out of the Area."*

The Species[2] under the IOTC Mandate are shown in Table 3 below.

Table 3: IOTC Species

	IOTC Code	Species English name	Species French name	Species scientific name
1.	YFT	Yellowfin tuna	Albacore	*Thunnus albacares*
2.	BET	Bigeye tuna	Patudo; Thon obèse	*Thunnus obesus*
3.	SKJ	Skipjack tuna	Listao	*Katsuwonus pelamis*
4.	ALB	Albacore	Germon	*Thunnus alalunga*
5.	SBF	Southern bluefin tuna	Thon rouge du Sud	*Thunnus maccoyii*
6.	SWO	Swordfish	Espadon	*Xiphias gladius*
7.	BLM	Black Marlin	Makaire noir	*Makaira indica*
8.	BUM	Blue Marlin	Makaire bleu	*Makaira nigricans*
9.	MLS	Striped marlin	Marlin rayé	*Tetrapturus audax*
10.	SFA	Indo-Pacific sailfish	Voilier indo-pacifique	*Istiophorus platypterus*
11.	LOT	Longtail tuna	Thon mignon	*Thunnus tonggol*
12.	KAW	Kawakawa	Thonine orientale	*Euthynnus affinis*
13.	FRI	Frigate tuna	Auxide	*Auxis thazard*
14.	BLT	Bullet tuna	Bonitou	*Auxis rochei*
15.	COM	Narrow-barred Spanish mackerel	Thazard rayé indo-pacifique	*Scomberomorus commerson*
16.	GUT	Indo-Pacific king mackerel	Thazard ponctué indo-pacifique	*Scomberomorus guttatus*

In addition to the above species, the IOTC Scientific Committee identified other species that, not being the target of IOTC fisheries, may be an important by-catch on those fisheries. For this reason, the Commission has adopted resolutions that call for IOTC CPC's and other countries having fisheries for IOTC species in the IOTC Area to collect statistics on the **sharks** (Resolutions 08/01 and 05/05), **seabirds** (Resolution 08/03 and Recommendation 05/09) and **sea turtles** (Recommendation 05/08) that are incidentally caught on those fisheries. The species identified are shown in table 4 (sharks), table 5 (sea turtles) and table 6 (seabirds).

Table 4: Species of SHARKS that are caught incidentally on IOTC fisheries

	IOTC Code	Species English name	Species French name	Species scientific name
1.	ALS	Silvertip shark	Requin pointe blanche	*Carcharhinus albimarginatus*
2.	ALV	Thresher Shark	Renard	*Alopias vulpinus*
3.	BSH	Blue shark	Peau bleue	*Prionace glauca*
4.	BTH	Bigeye thresher	Renard a gros yeux	*Alopias superciliosus*
5.	CCP	Sandbar shark	Requin gris	*Carcharhinus plumbeus*
6.	FAL	Silky shark	Requin soyeux	*Carcharhinus falciformis*
7.	LMA	Longfin mako	Petite taupe	*Isurus paucus*
8.	OCS	Oceanic whitetip shark	Requin océanique	*Carcharhinus longimanus*
9.	POR	Porbeagle	Requin-taupe commun	*Lamna nasus*
10.	PSK	Crocodile shark	Requin crocodile	*Pseudocarcharias kamoharai*
11.	PTH	Pelagic Thresher Shark	Renard pelagique	*Alopias pelagicus*
12.	RHN	Whale shark	Requin-baleine	*Rhincodon typus*
13.	SMA	Shortfin mako	Taupe bleue	*Isurus oxyrinchus*
14.	SPL	Scalloped hammerhead	Requin marteau halicorne	*Sphyrna lewini*
15.	TIG	Tiger shark	Requin tigre commun	*Galeocerdo cuvier*
16.	WSH	Great White shark	Grand requin blanc	*Carcharodon carcharias*
17.	RMB	Giant manta	Mante géante	*Manta birostris*

[2] To date, no separate stocks have been identified in the Indian Ocean for any of the species under the IOTC mandate.

The data requirements existing for IOTC species do apply also to sharks. IOTC CPC's and other parties having fisheries for IOTC species in the IOTC Area are requested to report **statistics** for the above species **of sharks, by species**. The statistics for species of sharks other than those in the list shall also be reported, by species whenever it is possible.

Table 5: Species of SEA TURTLES that may be caught incidentally on IOTC fisheries

	IOTC Code	Species English name	Species French name	Species scientific name
1.	FBT	Flatback turtle	Tortue plate	*Natator depressus*
2.	TUG	Green turtle	Tortue verte	*Chelonia mydas*
3.	TTH	Hawksbill turtle	Tortue caret	*Eretmochelys imbricata*
4.	DKK	Leatherback turtle	Tortue luth	*Dermochelys coriacea*
5.	TTL	Loggerhead turtle	Caouane	*Caretta caretta*
6.	LKV	Olive ridley turtle	Tortue olivatre	*Lepidochelys olivacea*

IOTC CPC's and other parties having fisheries for IOTC species in the IOTC Area are encouraged to report estimates of total numbers of sea turtles and seabirds that are caught incidentally on their fisheries for IOTC species, by species[3].

Table 6: Species of SEABIRDS that may be caught incidentally on IOTC fisheries

	IOTC Code	Species English name	Species French name	Species scientific name
1.	DAM	Amsterdam Albatross	Albatros d'Amsterdam	*Diomedea amsterdamensis*
2.	DQS	Antipodean Albatross	Albatros des Antipodes	*Diomedea antipodensis*
3.	DCR	Atlantic Yellow-nosed Albatross	Albatros atlantique à nez jaune	*Thalassarche chlororhynchos*
4.	DIM	Black-browed Albatross	Albatros à sourcils noirs	*Thalassarche melanophrys*
5.	DIB	Buller's Albatross	Albatros de Buller	*Thalassarche bulleri*
6.	TQW	Campbell Albatross	Albatros de l'île Campbell	*Thalassarche impavida*
7.	DER	Chatham Albatross	Albatros des Chatham	*Thalassarche eremite*
8.	DIC	Grey-headed Albatross	Albatros à tête grise	*Thalassarche chrysostoma*
9.	TQH	Indian Yellow-nosed Albatross	Albatros indien à nez jaune	*Thalassarche carteri*
10.	PHE	Light-mantled Albatross	Albatros Fuligineux	*Phoebetria palpebrata*
11.	MAH	Northern Giant Petrel	Pétrel de Hall	*Macronectes halli*
12.	DIQ	Northern Royal Albatross	Albatros royal du nord	*Diomedea sanfordi*
13.	DKS	Salvin's Albatross	Albatros de Salvin	*Thalassarche salvini*
14.	PFT	Short-tailed Shearwater	Puffin à bec grêle	*Puffinus tenuirostris*
15.	DCU	Shy Albatross	Albatros timide	*Thalassarche cauta*
16.	PHU	Sooty Albatross	Albatros Brun	*Phoebetria fusca*
17.	PFG	Sooty Shearwater	Puffin Fuligineux	*Puffinus griseus*
18.	MAI	Southern Giant Petrel	Pétrel géant	*Macronectes giganteus*
19.	DIP	Southern Royal Albatross	Albatros royal	*Diomedea epomophora*
20.	DBN	Tristan Albatross	Albatros de Tristan	*Diomedea dabbenena*
21.	DIX	Wandering Albatross	Albatros hurleur	*Diomedea exulans*
22.	PCW	Westland Petrel	Pétrel de Westland	*Procellaria westlandica*
23.	TWD	White-capped Albatross	Albatros à cape blanche	*Thalassarche steadi*
24.	PRO	White-chinned Petrel	Puffin à menton blanc	*Procellaria aequinoctialis*

The reporting of statistics by species for species other than those recorded in the preceding tables is also encouraged, especially when the catches of these species represent a significant proportion of the total catches of the IOTC fishery concerned. Table 7 (bony fishes) and Table 8 (sharks) in Appendix IV show other fish species that may be also caught incidentally on IOTC fisheries. It is to note that those lists are not exhaustive, containing only those species for which statistics have ever been reported to the IOTC Secretariat. The statistics for species of fish other than those in the list shall also be reported, by species whenever it is possible.

Table 9 (Appendix V) lists the species of **sea mammals** that occur within the IOTC Area. IOTC CPC's are encouraged to report on any known interactions between their fisheries and

[3] CPC's having longline fisheries shall report incidental catches of seabirds from their fisheries, by species whenever it is possible.

any species of sea mammals, including incidental catches, in number and/or live weight, for those species.

Use of aggregates of species: IOTC CPC's are encouraged to report all statistics by species. In the event of statistics not fully available by species, the statistics not available by species shall be aggregated by species group. The use of large aggregates of species (e.g. unidentified tuna and tuna-like species) is not recommended. **The aggregates of species used shall contain the minimum number of species possible. The scientific names of the species making up each aggregate shall also be provided.**

TYPE OF FISHERIES CATCHING IOTC SPECIES

The term Fishery has been defined in various ways; following are two examples:

- **OECD**: A Fishery is one or more stocks of fish that can be treated as a unit for purposes of conservation and management and that can be identified on the basis of geographical, scientific, technical, recreational, and economic characteristics. (Review of Fisheries in OECD Countries: Glossary, February 1998.)
- **FAO Glossary**: Generally, a fishery is an activity leading to harvesting of fish. It may involve capture of wild fish or raising of fish through aquaculture.

  Other Definitions: A unit determined by an authority or other entity that is engaged in raising and/or harvesting fish. Typically, the unit is defined in terms of some or all of the following: people involved, species or type of fish, area of water or seabed, method of fishing, class of boats and purpose of the activities.

For the purpose of the present Guidelines the IOTC fisheries are identified on the basis of geographical, scientific, technical and economic characteristics. These are defined by using the following criteria:

- Type of fishing craft involved and type of fishing gear/s used: Fishing crafts are usually classified according to their shape and size; the type of gear used is related in most cases with the type of vessel and its size.
- Gear configuration, fishing mode and target species: Fishing gears are usually configured in different ways depending on the type of species targeted (e.g. Florida longlines are used to catch swordfish, purse seine fisheries on associated schools [e.g. FAD's] or free schools).
- Type of operation: as related with the economic scale of the fishery. Table 10 below shows the categories that are generally used at this level and the criteria that can be used to identify the type of operation.

Table 10: Classification and dimensions of fisheries (Modified from Carman, 2001)

Fisheries- related Characteristics	Categories		
	Industrial	**Semi-industrial**	**Artisanal**
Fishing unit	Stable, with division of labour and career prospect	Stable, small, specialized with some division of labour	Lone operators, or family or community group
Ownership	Concentrated in few hands, often non-operators	Usually owned by senior operator, or operators jointly, absentee owner	Owner-operated
Time commitment	Usually full-time	Either full-time or part-time	Most often part-time
Boat	Powered, much equipment	Small; inboard motor (or small outboard)	None, or small, usually non-motorized
Equipment types	Machine-made, assembled by others	Partly or wholly machine-made materials, often operator-assembled	Often hand-made materials, operator-assembled
Gear sophistication	Electronics, automation	Mechanized and manual	Mainly non-mechanized
Investment	High; large proportion other than by operator	Medium to low; entirely by operator	Low
Catches (per fishing unit)	Large	Medium to low	Low to very low
Disposal of catch	Sale to organized markets	Organized local sale, significant	Primarily consumed by operator,

Fisheries- related Characteristics	Categories		
	Industrial	Semi-industrial	Artisanal
		consumption by operators	his family, and friends; exchange by barter; occasional sale
Processing of catch	Much for fishmeal and non-human consumption	Some drying, smoking, salting; primarily human consumption	Little or none; all for human consumption
Operator's income level	Often high	Middle to lowest brackets	Minimal
Integration into economy	Formal; fully integrated	Partially integrated	Informal; not integrated
Occupationality	Full-time or seasonal	Often multi-occupational	Multi-occupational
Extent of marketing	Products found worldwide	Often national and local	Local or district-level only
Management capacity of fisheries authority	Considerable, with many scientists and managers	Minimal to moderate, with few scientists/managers	Often not managed except by the resource users
Management units	One or few large units	Usually many small units	Very many small units
Fisheries data collection (also see Figure 1.1)	Not too difficult, given the authority's capacity	Difficult due to fisheries and authority's features	Often no data may be collected due to difficulty

Table 11 below shows the types of fisheries for which statistics of IOTC species have been made available to date.

Table 11: Types of Fisheries for IOTC species

	IOTC Code	Type of Operation	English name	French name
1.	BS	Artisanal	Beach seine	Senne de plage
2.	CN	Artisanal	Cast net	Épervier
3.	DS	Artisanal	Danish seine	Senne danoise
4.	GI	Artisanal	Gillnet	Filet maillant
5.	GIDR	Industrial	Driftnet	Filet dérivant
6.	GIOF	Semi-industrial	Offshore gillnet	Filet maillant pêche hauturière
7.	HL	Artisanal	Handline	Ligne à main
8.	HLLS	Artisanal	Handline with payao	Ligne à main sous épave
9.	HR	Artisanal	Harpoon	Harpon
10.	LL	Industrial	Drifting longline (over 1800 hooks)	Palangre dérivant (au-dessus de 1800 hameçons)
11.	LLCO	Artisanal	Smalll longline	Petit palangre
12.	LLEX	Industrial	Drifting longline (exploratory)	Palangre dérivant (prospection)
13.	LLFR	Industrial	Drifting longline (up to 1800 hooks)	Palangre dérivant (jusqu'au 1800 hameçons)
14.	LLGI	Semi-industrial	Gillnet/longline	Filet maillant/palangre
15.	LLSI	Semi-industrial	Swordfish longline (semi-industrial)	Palangre à l'espadon (semi-industriel)
16.	LLSK	Industrial	Shark longline	Palangre aux requins
17.	LLSW	Industrial	Swordfish longline (Florida longline)	Palangre à l'espadon (palangre Florida)
18.	LLTU	Industrial	Tuna longline	Palangre aux thons
19.	LN	Artisanal	Liftnet	Carrelet
20.	PL	Artisanal	Pole and line	Canne
21.	PLIN	Industrial	Industrial pole and line	Canne industriel
22.	PLME	Artisanal	Pole and line (mechanized boats)	Canne (bateaux motorisés)
23.	PLNM	Artisanal	Pole and line (non-mechanized boats)	Canne (bateaux non-motorisés)
24.	PLOF	Semi-industrial	Offshore pole and line	Canne pêche hauturière
25.	PS	Industrial	Tuna purse seine	Senne tournante industriel thons
26.	PSFS	Industrial	Free-school tuna purse seine	Senne tournante banc livres des thons
27.	PSLS	Industrial	Log-school tuna purse seine	Senne tournante thons sous épave
28.	PSPA	Industrial	Purse seine with payao	Senne tournante avec payao
29.	PSRN	Artisanal	Ringnet	Filet tournant
30.	PSRP	Artisanal	Ringnet with payao	Filet tournant avec payao
31.	PSSP	Industrial	Supply vessel industrial purse seiner	Bateau auxiliaire senneur industriel
32.	PSSS	Semi-industrial	Small purse seines	Petites sennes tournantes
33.	SN	Artisanal	Setnet	Filet calé
34.	SP	Artisanal	Sport fishing	Pêche sportive
35.	TL	Artisanal	Trolling	Pêche à la traine
36.	TLME	Artisanal	Trolling (mechanized boats)	Pêche à la traine (bateaux motorisés)
37.	TLNM	Artisanal	Trolling (non-mechanized boats)	Pêche à la traine (bateaux non-motorisés)
38.	TP	Artisanal	Trap	Madragues
39.	TR	Semi-industrial	Trawl	Chaluts

IOTC CPC's and other parties catching IOTC species in the Indian Ocean are requested to report statistics to the IOTC. Two types of fisheries can be identified:

- **Fisheries targeting IOTC species** (IOTC fisheries): Statistics for IOTC species, sharks and other by-catch species of IOTC fisheries shall be reported. Table 12 below lists the species that are the main target of IOTC fisheries.

Table 12: Main species or groups of species that are the target of IOTC Fisheries

	English name	French name
1.	Yellowfin tuna	Albacore
2.	Bigeye tuna	Patudo; Thon obèse
3.	Skipjack tuna	Listao
4.	Yellowfin tuna and Bigeye tuna	Albacore et thon obèse
5.	Yellowfin tuna and Skipjack tuna	Albacore et Listao
6.	Albacore	Germon
7.	Southern bluefin tuna	Thon rouge du Sud
8.	Swordfish	Espadon
9.	Marlins and sailfish	Marlins et voilier indopacifique
10.	Longtail tuna	Thon mignon
11.	Small tunas (Frigate tuna, bullet tuna, kawakawa)	Thons mineurs (Auxide, Bonitou, thonine orientale)
12.	Narrow-barred Spanish mackerel	Thazard rayé indopacifique
13.	Sharks	Requins

- **Fisheries** which, **targeting other species**, catch IOTC species as a by-catch (other fisheries): The statistics of IOTC species shall be reported along with the statistics of target species and other species making up the catches of other fisheries.

Use of **aggregates of fisheries**: IOTC CPC's are encouraged to **report separate statistics for each fishery**. In the event of statistics not fully available by fishery, **the statistics not available by fishery shall be aggregated by group of fisheries.** The use of large aggregates of fisheries (e.g. unidentified fisheries) is not recommended. **The aggregates of fisheries used shall contain the minimum number of fisheries possible.** The types of fisheries that make up each aggregate shall also be provided.

TIME PERIOD TO BE COVERED

Fisheries statistics should be provided from the year in which the fleet began operating. In the case that fisheries statistics are not available for the entire fishing period, **estimates of total catches should at least be provided for years from the year 1950 onwards**, indicating the first year of operation in the case that the fleet concerned began operating before 1950.

DATA SOURCES, DATA HANDLING AND COVERAGE RATE

Paragraphs 3.(a) and 3.(b) of IOTC Resolution 08/01 (***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's)*) state the following concerning catch-and-effort data: "(…) *The data shall be extrapolated to the total national monthly catches for each gear.* ***Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely****.*"

In addition, the following is stated in Paragraph 4 (Size Data): "*(…)* ***Size sampling shall be run under strict and well described random sampling schemes*** *which are necessary to provide unbiased figures of the sizes taken.* ***Length data by species, including the total number of fish measured, shall be submitted*** *by a 5 grid area by month, by gear and fishing mode (…)*"

The following information shall be provided for each fishery:

- **Data source/s:** types of datasets that were used to estimate the statistics that are reported to the IOTC and main sources for those datasets. Table 13 below shows the main types of data and reporting sources for catch, effort and size data.

Table 13: Types of datasets used in the estimation of IOTC statistics and main reporting sources

	IOTC Code	Type(s) of Dataset(s) and reporting source(s)
1.	RCPR	Amounts unloaded / transshipped monitored by the fishing industry (e.g. fishing vessel, canning factory, stevedores, auction hall, processing plants, etc.)
2.	RCCS	Amounts unloaded / transshipped monitored by The Customs
3.	RCPA	Amounts unloaded / transshipped monitored by Port Authorities or other government offices (compliance data)
4.	RCRS	Amounts unloaded / transshipped monitored by staff from research institutions (sampling survey or total enumeration)
5.	RCOB	Amounts unloaded / transshipped monitored by observers (compliance data)
6.	DILG	Discard levels monitored by the vessel skipper / fishing master (Logbook)
7.	DIOB	Discard levels monitored by scientific observers
8.	DIEL	Discard levels monitored through electronic means (e.g. video system, etc.)
9.	FCGV	Number of crafts actually operated monitored by Port Authorities or other government offices (compliance data)
10.	FCRS	Number of crafts actually operated monitored at the landing place by staff from research institutions (research data)
11.	FCRG	Number of crafts registered at the Ministry of Fisheries or other government institutions (Ministry of Transportation, etc.)
12.	CELG	Catch-and-effort Logbooks completed onboard by the captain/fishing master of the ship (detailed data)
13.	CETR	Catch-and-effort Interviews completed at the end of each trip by the captain / fishing master of the ship (aggregated data)
14.	CEOB	Catch-and-effort data collected by scientific observers
15.	CERS	Catch-and-effort data collected at the landing place by staff from research institutions (sampling survey or total enumeration)
16.	CEEL	Catch-and-effort data monitored through electronic means (e.g. video system, etc.)
17.	SFLG	Individual fish lengths /weights monitored by fishermen during the fishing trip (recorded in a logbook)
18.	SFPR	Individual fish lengths /weights monitored at the end of the trip by the fishing industry (e.g. fishing vessel, canning factory, stevedores, auction hall, processing plants, etc.)
19.	SFRS	Individual fish lengths /weights monitored at the landing place by staff from research institutions
20.	SFOB	Individual fish lengths /weights monitored by scientific observers during the fishing trip
21.	SFEL	Individual fish lengths /weights monitored through electronic means (e.g. video system, etc.)

A combination of the above would be required for systems using two or more types of datasets from various sources. For instance, the retained catches for a fishery may be estimated by using landing data plus logbook information (e.g. ***RCPR*** plus ***CELG*** from the above table)

- **Estimation method:** the datasets collected for each fishery (Table 13) are used in the estimation of retained catches (RC__), discards (DI__), numbers of fishing crafts (FC__), catch-and-effort (CE__) and size data (SF__). Table 14 below lists the most common methods used to estimate catches, effort, crafts and size data for IOTC fisheries.

Table 14: Methods used in the estimation of catches, effort and size data for IOTC fisheries

	IOTC Code	Estimation Method
1.	RCNO	Retained catches not estimated (reported landings not verified by government staff)
2.	RCTE	Total enumeration of retained catches (no estimation required; landings monitored through/verified by government staff)
3.	RCLG	Retained catches estimated by raising the amounts recorded in the vessel logbooks to the total catches unloaded / transshipped for the trip (or alternative time-area strata)
4.	RCLS	Retained catches estimated by raising the amounts resulting from adjusting the species composition in the logbooks by using the size samples available to the total catches unloaded / transshipped for each trip (or alternative time-area strata)
5.	RCSB	Retained catches not available; RC estimated by using the retained catches available from other years (substitution scheme)
6.	RCES	Retained catches estimated by multiplying average CPUE values obtained through a sample survey (at the landing place) by the total effort recorded in each time-area stratum (total enumeration of effort in time and space; sampling of catches in time and/or space)
7.	RCSS	Retained catches estimated by multiplying average CPUE values obtained through a sample survey (at the landing place) by the total effort estimated for each time-area stratum (sampling of effort in time and/or space; sampling of catches in time and/or space)
8.	DINO	Discard levels not estimated (reported discards not verified by government staff)
9.	DITE	Total enumeration of discards (no estimation required; discards monitored through /verified by observers)
10.	DILG	Discard levels estimated by multiplying average DPUE values obtained from the data reported (not verified by government staff) by the total effort recorded in each time-area stratum (total enumeration of effort)
11.	DILS	Discard levels estimated by multiplying average DPUE values obtained from the data reported (not verified by government staff) by the total effort estimated for each time-area stratum (sampling of effort in time and/or space)
12.	DISB	Discard levels not available; DI estimated by using the discards available from other years (substitution scheme)
13.	DIES	Discard levels estimated by multiplying average DPUE values obtained through a sample survey (at-sea) by the total effort recorded in each time-area stratum (total enumeration of effort in time and space; sampling of discards in time and/or space)
14.	DISS	Discard levels estimated by multiplying average DPUE values obtained through a sample survey (at-sea) by the total effort estimated

	IOTC Code	Estimation Method
		for each time-area stratum (sampling of effort in time and/or space; sampling of discards in time and/or space)
15.	FCNO	Number of fishing crafts active not estimated (total number of crafts registered for the year used)
16.	FCTE	Total enumeration of fishing crafts operated (no estimation required; number of fishing crafts operated monitored through /verified by government staff)
17.	FCOR	Number of active fishing crafts estimated by multiplying the proportion that the number of fishing crafts operated make out of the total number of crafts registered for the period, obtained through sampling, by the total amount of fishing craft registered for that same period (sampling of number of fishing crafts operated in time and/or space)
18.	FCSS	Number of active fishing crafts estimated by multiplying the average number of fishing crafts operated by time-area stratum, obtained through a sampling survey, by the total number of strata operated (sampling of number of fishing crafts operated in time and/or space)
19.	FCSB	Number of active fishing crafts not available; FC estimated by using the number of crafts available from other years (substitution scheme)
20.	CENO	Catch-and-effort not estimated (reported catch-and-effort not verified by government staff)
21.	CETE	Total enumeration of catch-and-effort (no estimation required; catch-and-effort monitored through/verified by government staff (e.g. observers))
22.	CELS	Catch-and-effort by species adjusted by using the size samples available for each trip (or alternative time-area strata)
23.	CESB	Catch-and-effort not available for the stratum; CE estimated by using the catch-and-effort available in neighboring time-area strata (substitution scheme)
24.	CEES	Catch-and-effort estimated by multiplying average CPUE values obtained through a sample survey (at the landing place) by the total effort recorded in each time-area stratum (total enumeration of effort in time and space; sampling of catches in time and/or space)
25.	CESS	Catch-and-effort estimated by multiplying average CPUE values obtained through a sample survey (at the landing place) by the total effort estimated for each time-area stratum (sampling of effort in time and/or space; sampling of catches in time and/or space)
26.	SFNO	Length / weight frequency data not verified (fish lengths/weights reported by the fishing sector not verified by government staff)
27.	SFTE	Total enumeration of individual fish lengths /weights (no estimation required; fish lengths / weights monitored through/verified by government staff)
28.	SFSP	Length / weight frequency samples not processed (original samples collected by government staff or scientific observers)
29.	SFPR	Length / weight frequency samples raised to represent the catches in the sampling unit (e.g. the fish compartment, the fishing vessel, etc.)
30.	SFRS	Length / weight frequency samples raised to represent the total catches in the stratum (catch-at-size)

- **Coverage rate:** this refers to the proportion that the amount of fish (in number or weight) or fishing effort that is monitored (sampled) makes out of the total (number or weight) of fish or fishing effort estimated in the stratum concerned. In the event that the actual coverage rate cannot be derived for a stratum, the following coverage rates should be used (Table 15).

Table 15: Standard coverage rates for IOTC fisheries

	IOTC Code	English Description	French Description
1.	UP	Statistics partially raised; coverage unknown	Données partialement élevées; couverture inconnue
2.	UR	Statistics raised; coverage unknown	Données élevées; couverture inconnue
3.	US	Statistics not raised; coverage unknown	Données non-élevées; couverture inconnue
4.	UT	Total enumeration	Énumération totale
5.	UU	Not sampled	Non-échantillonné
6.	B0	Less than 5% of the boats covered	Moins de 5% des bateaux échantillonnés
7.	B1	Between 5%-9% of the boats covered	Entre 5%-9% des bateaux échantillonnés
8.	B3	Between 10%-29% of the boats covered	Entre 10%-29% des bateaux échantillonnés
9.	B7	Between 30%-69% of the boats covered	Entre 30%-69% des bateaux échantillonnés
10.	B9	70% or more of the boats covered	70% ou plus des bateaux échantillonnés
11.	T0	Less than 5% of the trips covered	Moins de 5% des marées échantillonnées
12.	T1	Between 5%-9% of the trips covered	Entre 5%-9% des marées échantillonnées
13.	T3	Between 10%-29% of the trips covered	Entre 10%-29% des marées échantillonnées
14.	T7	Between 30%-69% of the trips covered	Entre 30%-69% des marées échantillonnées
15.	T9	70% or more of the trips covered	70% ou plus des marées échantillonnées
16.	N0	Less than 5% of the fish sampled (in number)	Moins de 5% des poissons échantillonnés (en nombre)
17.	N1	Between 5%-9% of the fish sampled (in number)	Entre 5%-9% des poissons échantillonnés (en nombre)
18.	N3	Between 10%-29% of the fish sampled (in number)	Entre 10%-29% des poissons échantillonnés (en nombre)
19.	N7	Between 30%-69% of the fish sampled (in number)	Entre 30%-69% des poissons échantillonnés (en nombre)
20.	N9	70% or more of the fish sampled (in number)	70% ou plus des poissons échantillonnés (en nombre)
21.	W0	Less than 5% of the fish sampled (in weight)	Moins de 5% des poissons échantillonnés (en poids)
22.	W1	Between 5%-9% of the fish sampled (in weight)	Entre 5%-9% des poissons échantillonnés (en poids)
23.	W3	Between 10%-29% of the fish sampled (in weight)	Entre 10%-29% des poissons échantillonnés (en poids)

	IOTC Code	English Description	French Description
24.	W7	Between 30%-69% of the fish sampled (in weight)	Entre 30%-69% des poissons échantillonnés (en poids)
25.	W9	70% or more of the fish sampled (in weight)	70% ou plus des poissons échantillonnés (en poids)

It is important to note that, although tables 13 and 14 contain the majority of data types, reporting sources and estimation methods that are known to the IOTC, they may not be comprehensive. Countries using data sources and/or estimation procedures other than those specified on tables 13 and 14 are encouraged to report this information to the Secretariat.

TIMELINESS OF DATA SUBMISSION AND HISTORICAL REVISIONS TO DATASETS

The deadlines for the submission of data to the IOTC Secretariat are specified in paragraph 6 (*Timeliness of data submission to the IOTC Secretariat*) of IOTC Resolution 08/01:

(a) ***Longline fleets*** *operating in the high seas shall provide* ***provisional data for the previous year no later than 30 June***. ***Final data*** *shall be submitted* ***no later than 30 December***.

(b) ***All other fleets*** *(including supply vessels) shall submit their* ***final data for the previous year no later than 30 June***.

(c) In case where the final statistics cannot be submitted by that date, at least preliminary statistics should be provided.(…)

Paragraph 6(c) of IOTC Resolution 08/01 provides also standards for the revision of historical data sets:

(c) (…) ***Beyond a delay of two years, all revisions of historical data should be formally reported and duly justified****. These reports should be made on forms provided by the Secretariat and reviewed by the Scientific Committee. The Scientific Committee will advise the Secretariat if revisions are then accepted for scientific use.*

A template form for the reporting of historical data can be found in Appendix VI.

ESTIMATES OF ANNUAL CATCHES

DEFINITION: The term **Annual catches refers to highly aggregated statistics for each species estimated per fleet, gear and year for a large area** (IOTC Area). These include:

- **Retained catches**: Refers to the part of the catch that is retained on board, expressed in live weight; it includes:
  - Catches of specimens of the **target species**, which are usually stored on the main vessel compartments and sold in the local market or other international markets.
  - **Retained by-catch**, which refers to the incidental catches of specimens of species that are not the target of the fishery but are of commercial value or to the catches of specimens of the target species having poor quality (e.g. undersized, spoiled, etc.). Retained by-catch specimens are usually stored on separate compartments onboard and sold in the local markets or used for direct consumption.
- **Discards**: Refers to the part of the [by-]catch that is not retained on board, expressed in number and/or live weight. It includes:
  - The catches of specimens that are discarded dead due to them not having commercial value
  - The catches of specimens that are discarded dead due to other reasons: not enough storage on board, gear breakdown, etc.

STANDARDS FOR THE REPORTING OF ANNUAL CATCHES: The standards for the reporting of annual catches to the IOTC are defined in the following IOTC Resolutions:

Resolution 08/01 ***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's):*

> *Paragraph 2.* ***Nominal catch data****: Estimates of the total annual catch by species and gear for all species under the IOTC mandate*
>
> *Paragraph after 3(c): These provisions, 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 a* ***bycatch****.*

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****.*

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****.*

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.*

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.*

INFORMATION TO BE REPORTED: The following information shall be reported to the IOTC:

Retained Catches:

IOTC Form: Form 1RC (Appendix VII)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
    - Contact name: Name of the individual reporting the information
    - Contact e-mail address: E-mail of the individual reporting the information
    - Contact phone: Phone number of the individual reporting the information
    - Organization name: Name of the organization responsible for the report
    - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
    - Reporting Country: The country reporting the catches
    - Flag Country: The country for which retained catches are reported
    - Year: The calendar year the catches were made
    - Catch units: Retained catches shall be reported in live weight (metric tons)

Data:

- Type of Fishery: The type of fishery for which the retained catches are reported (see available fisheries on Table 9)
- IOTC Area: The IOTC Area in which the catches are taken (as shown in Figure 1)
- Type of data: Type of statistics reported.
    - Preliminary statistics: The catches were estimated by using some information from the fishery; the catches reported are likely to change in the future as more information become available.
    - Final statistics: The catches were estimated by using the complete set of data for the fishery and year concerned; the catches reported are unlikely to change in the future.
- Data Sources: The types of information that were used for the estimation of the catches retained on board for the fishery concerned; these are shown on Table 13.
- Data Processing: The type of estimation procedure, as defined in table 14.
- Coverage: The proportion of the total catches that were monitored (sampled, in number or weight) for the fishery concerned; refer to Table 15 for types of coverage.
- Target species: Main species targeted, as defined in table 12
- Catches by species: catches for each species retained on board in live weight by flag, type of fishery and IOTC Area. IOTC CPC's shall provide catches for IOTC species (Table 3) and main species of sharks (Table 4) and are encouraged to provide catches for all other species that are retained on board (Annex ??; Tables 7-8). **The catches of specimens for which only part/s of their bodies are retained on board shall be always reported as retained catches, in live weight**. This includes t**he catches of sharks for which only the fins are retained onboard** (weights shall include those corresponding to the carcasses discarded plus those of the fins retained).

Discards:

IOTC Form: Form 1DI (Appendix VII)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
    - Contact name: Name of the individual reporting the information
    - Contact e-mail address: E-mail of the individual reporting the information
    - Contact phone: Phone number of the individual reporting the information
    - Organization name: Name of the organization responsible for the report
    - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
    - Reporting Country: The country reporting the catches
    - Flag Country: The country for which retained catches are reported
    - Year: The calendar year the catches were made
    - Catch units: Discard levels may be reported in number or in weight, depending on the species:
        i. The discards of IOTC Species, sharks and other fish species shall be reported in live weight
        ii. The discards of seabirds, sea turtles and sea mammals shall be reported in number.

Data:

- Type of Fishery: The type of fishery for which discard levels are reported (see available fisheries on Table 9)
- IOTC Area: The IOTC Area in which the specimens were discarded (as shown in Figure 1)
- Type of data: Type of statistics reported.
    - Preliminary statistics: The discard levels were estimated by using some information from the fishery; the data reported are likely to change in the future as more information become available.
    - Final statistics: The discard levels were estimated by using the complete set of data for the fishery and year concerned; the data reported are unlikely to change in the future.
- Data Sources: The types of information that were used for the estimation of discard levels for the fishery concerned; these are shown on Table 13.
- Data Processing: The type of estimation procedure, as defined in table 14.
- Coverage: The proportion of the total discards that were monitored (sampled, in number or weight) for the fishery concerned; refer to Table 15 for types of coverage.
- Discard levels by species: discard levels for each species in live weight or number by flag, type of fishery and IOTC Area. IOTC CPC's shall provide discard levels for IOTC species (Table 3) and main species of sharks (Table 4) and seabirds (Table 5). CPC's are also encouraged to provide discard levels for sea turtles (Table 6) or other species not retained on board (Annex ??; Tables 7-9). The catches shall be provided according to the standards defined in IOTC Species (page 11).

FISHING CRAFT STATISTICS

DEFINITION: The term **Fishing Craft refers to highly aggregated statistics per fleet, gear, type/size range of boat and year for the entire IOTC Area**. These include:

- **Numbers of active fishing crafts targeting IOTC species (or sharks)**: Refers to the total number of fishing crafts that were fishing for IOTC species (Table 3) or main shark species (Table 4) within the IOTC Area during a calendar year.
- **Numbers of active fishing crafts targeting other species**: Refers to the total number of fishing crafts that, fishing for species other than those referred to above (Tables 7-8), caught IOTC species or main shark species as a by-catch within the IOTC Area during a calendar year.

STANDARDS FOR THE REPORTING OF FISHING CRAFT STATISTICS: Although some standards exist for the reporting of **fishing craft statistics** to the IOTC these do not cover for all the types of fishing crafts described above. Two IOTC Resolutions call for IOTC CPC's to report data on the numbers and/or characteristics of crafts active for the calendar year:

Resolution 08/01 ***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's):*

> *Paragraph 5. Given that the activities of supply vessels and the use of Fish Aggregating Devices (FAD) are an integral part of the fishing effort exerted by the purse seine fleet, the following data shall be provided:*
>
> *(a) The* ***number and characteristics of supply vessels****: (i) operating under their flag, (ii) assisting purse seine vessels operating under their flag, or (iii) licensed to operate in their exclusive economic zones, and that have been present in the IOTC Area*

Resolution 07/04 ***Concerning registration and exchange of information on vessels fishing for tunas and swordfish in the IOTC Area:***

> *Paragraph 1. All Contracting Parties and Cooperating non-Contracting Parties (CPCs) with vessels fishing for tropical tunas, albacore and swordfish in the IOTC Area of Competence (hereinafter referred to as "the Area"), by 30 June every year:*
>
> - *Shall submit to the Secretary a* ***list of their respective vessels greater than 24 m LOA that have fished for tropical tunas, albacore and swordfish in the Area during the previous year;***
> - *Shall submit to the Secretary a* ***list of their respective vessels of less than 24 m LOA that have fished for tropical tunas, albacore and swordfish outside of their EEZ during the previous year****.*

IOTC CPC's shall report the above information to the IOTC. In addition, **IOTC CPC's are encouraged to report the numbers of fishing crafts operated other than those specified above, according to the categories referred to in the previous section (Definition)**.

INFORMATION TO BE REPORTED: The following information shall (should) be reported to the IOTC:

IOTC Form: Form 2FC (Appendix VIII)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
  - Contact name: Name of the individual reporting the information
  - Contact e-mail address: E-mail of the individual reporting the information
  - Contact phone: Phone number of the individual reporting the information
  - Organization name: Name of the organization responsible for the report

- Organization e-mail address: E-mail of the organization responsible for the report

- ***Dataset***: General information about the dataset reported.
  - Reporting Country: The country reporting the fishing craft statistics
  - Flag Country: The country for which the numbers of active fishing crafts are reported
  - Year: The calendar year of activity

Data:

- Type of Fishery: The type of fishery for which the fishing craft statistics are reported (see available fisheries on Table 11)
- Type of data: Type of statistics reported.
  - Preliminary statistics: The fishing craft statistics were estimated by using some information from the fishery; the data reported are likely to change in the future as more information become available.
  - Final statistics: The fishing craft statistics were estimated by using the complete set of data for the fishery and year concerned; the data reported are unlikely to change in the future.
- Data Sources: The types of information that were used for the estimation of fishing craft statistics for the fishery concerned; these are shown on Table 13.
- Data Processing: The type of estimation procedure, as defined in table 14.
- Coverage: The proportion of fishing crafts monitored (sampled, in number or weight) over the total number of crafts estimated for the fishery concerned; refer to Table 15 for types of coverage.
- Type of boat: Including
  - Boat type: **Fishing boats are classified according to its shape and the purpose for which they were built** (e.g. boats built to act as beam trawlers, multi-purpose, etc.). A boat that has been classified under a specific type shall not change over time, unless such boat undergoes major structural changes (e.g. significant changes in hull shape and / or size and/or material). For instance, the vessel type for beam trawlers whose decks have been modified for longlining or fiberglass longliners that have been modified for squid jigging will remain as beam trawlers and fiberglass longliners, respectively (as this does not imply major changes in boat shape). Table 16 below lists several types of boat known to the IOTC.

Table 16: Boat types used on IOTC fisheries

	IOTC Code	English Description	French Description
1.	PSEU	European type industrial purse seiner	Senneur industriel type européen
2.	PSUS	American type industrial purse seiner	Senneur industriel type américain
3.	PSAS	Asian type industrial purse seiner	Senneur industriel type asiatique
4.	PSWD	Wooden coastal purse seiner (small pelagics)	Senneur côtier en bois (petits pélagiques)
5.	PSFG	Fiberglass coastal purse seiner (small pelagics)	Senneur côtier en polyester (petits pélagiques)
6.	LLAS	Asian type steel tuna longliner	Palangrier en acier type asiatique
7.	LLAF	Asian type fiberglass tuna longliner	Palangrier en polyester type asiatique
8.	LLAW	Asian type wooden tuna longliner	Palangrier en bois type asiatique
9.	LLES	European type steel swordfish longliner	Palangrier en acier type européen
10.	PLES	European type steel baitboat	Canneur en acier type européen
11.	PLAW	Asian type wooden baitboat	Canneur en bois type asiatique
12.	MASD	Maldivian Masdhoani	Masdhoani maldivien
13.	VADH	Maldivian Vadhu	Vadhu maldivien
14.	DHOW	Arabian Dhow	Dhow arabe
15.	PIRG	Pirogue	Pirogue

	IOTC Code	English Description	French Description
16.	OCAN	Outrigger-Canoe (Madagascar)	Tangon-Canoë (Madagascar)
17.	LAUN	Launch	Chaloupe
18.	RWBO	Rowboat	Bateau à rames
19.	SCHO	Seychelles Schooner	Schooner seychellois
20.	WHAL	Seychelles Whaler	Whaler seychellois
21.	BARQ	Barque (Reunion, Comoros)	Barque (Réunion, Comores)
22.	VEDT	Vedette (Reunion, Comoros)	Vedette (Réunion, Comores)
23.	SPOR	Sport boat	Bateau sportif
24.	MLIN	Australian minor liner	Minor liner australien
25.	DLIN	Australian drop liner	Drop liner australien
26.	MULT	Fiberglass multipurpose	Bateau polyvalent en polyester
27.	SUPP	Supply vessel industrial purse seine	Bateau auxiliaire senneurs industriels
28.	SHAS	Yemeni Shasha	Shasha yéménite
29.	TRSS	Steel stern trawler	Chalutier pêche arrière en acier
30.	TRSW	Wooden stern trawler	Chalutier pêche arrière en bois
31.	TRSF	Fiberglass stern trawler	Chalutier pêche arrière en polyester

It is important to note that table 16 may not be comprehensive. Countries using types of boat other than those specified on table 16 are encouraged to provide this information to the Secretariat.

- Boat Mechanization: Table 17 below lists the types of boat mechanization used by the IOTC.

Table 17: Types of boat mechanization used on IOTC fisheries

	IOTC Code	English Description	French Description
1.	NO	Non-mechanized boat / gear (man-powered)	Bateau / engin non-mécanisé (actionné par l'homme)
2.	MI	Mechanized inboard boat	Bateau mécanisé inbord
3.	MO	Mechanized outboard boat	Bateau mécanisé hors bord
4.	SL	Sailing boat	Voilier

- Onboard fish preservation: Refers to the main type of onboard preservation that is used for specimens of the target species. Table 18 below lists the types of onboard preservation known to the IOTC.

Table 18: Types of onboard fish preservation used on IOTC fisheries

	IOTC Code	English Description	French Description
1.	NO	None	Aucune
2.	ST	Salt	Sel
3.	DR	Dried	Séché
4.	SM	Smoked	Fumé
5.	IC	Ice	Glace
6.	BR	Refrigerated brine	Saumure réfrigéré
7.	RW	Refrigerated sea water	Eau de mer réfrigérée
8.	FR	Cold storage beteen 0 and -30 degrees	Chambre au froid entre 0 et -30 degrés
9.	DF	Cold storage below -30 degrees	Chambre au froid en-dessous de -30 degrés

- Onboard fish processing: Refers to the main type of onboard fish processing that is used for specimens of the target species. Table 19 below lists the types of onboard preservation known to the IOTC.

Table 19: Types of onboard fish processing used on IOTC fisheries

	IOTC Code	English Description	French Description
1.	NO	Unprocessed	Non
2.	DR	Dressed (gilled-and-gutted and/or headed and/or tailed and/or fins-off, etc.)	Habillé (sans-branchies-et-étripé et/ou étêté et/ou sans-queue et/ou sans-nageoires, etc.)
3.	HP	Highly processed (fish loins, fish fillets, fish meat,	Fortement traité (longes de poissons, filets de poisson,

	IOTC Code	English Description	French Description
		fish oil, smoked fish, dried fish, etc.)	chair de poisson, huile de poisson, poisson fumé, poisson séché, etc.)
4.	SF	Fins (sharks)	Nageoires (requins)
5.	PR	Processed (unspecified)	Traité (non-spécifié)

- Boat size class and units: Table 20 lists the boat size categories used at the IOTC.

Table 20: Boat size categories used at the IOTC

	IOTC Code	Type of measure	English Description	French Description
1.	L005	Length OverAll / Longueur Hors Tout	LOA < 5 m	LHT < 5 m
2.	L015	Length OverAll / Longueur Hors Tout	LOA ≥ 5 m and < 15 m	LHT ≥ 5 m et < 15 m
3.	L024	Length OverAll / Longueur Hors Tout	LOA ≥ 15 m and < 24 m	LHT ≥ 15 m et < 24 m
4.	L032	Length OverAll / Longueur Hors Tout	LOA ≥ 24 m and < 32 m	LHT ≥ 24 m et < 32 m
5.	L045	Length OverAll / Longueur Hors Tout	LOA ≥ 32 m and < 45 m	LHT ≥ 32 m et < 45 m
6.	L060	Length OverAll / Longueur Hors Tout	LOA ≥ 45 m and < 60 m	LHT ≥ 45 m et < 60 m
7.	L080	Length OverAll / Longueur Hors Tout	LOA ≥ 60 m and < 80 m	LHT ≥ 60 m et < 80 m
8.	L100	Length OverAll / Longueur Hors Tout	LOA ≥ 80 m and < 100 m	LHT ≥ 80 m et < 100 m
9.	L120	Length OverAll / Longueur Hors Tout	LOA ≥ 100 m and < 120 m	LHT ≥ 100 m et < 120 m
10.	L150	Length OverAll / Longueur Hors Tout	LOA ≥ 120 m	LHT ≥ 120 m
11.	C002	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC < 2 t	CTP < 2 t
12.	C010	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 2 t and < 10 t	CTP ≥ 2 t et < 10 t
13.	C050	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 10 t and < 50 t	CTP ≥ 10 t et < 50 t
14.	C200	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 50 t and < 200 t	CTP ≥ 50 t et < 200 t
15.	C400	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 200 t and < 400 t	CTP ≥ 200 t et < 400 t
16.	C800	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 400 t and < 800 t	CTP ≥ 400 t et < 800 t
17.	C912	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 800 t and < 1200 t	CTP ≥ 800 t et < 1200 t
18.	C916	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 1200 t and < 1600 t	CTP ≥ 1200 t et < 1600 t
19.	C920	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 1600 t and < 2000 t	CTP ≥ 1600 t et < 2000 t
20.	C950	Fish Carrying Capacity / Capacité de Transport de Poissons	FCC ≥ 2000 t	CTP ≥ 2000 t
21.	T001	Gross Tonnage / Jauge Brute	GT < 1 t	JB < 1 t
22.	T015	Gross Tonnage / Jauge Brute	GT ≥ 1 t and < 15 t	JB ≥ 1 t et < 15 t
23.	T100	Gross Tonnage / Jauge Brute	GT ≥ 15 t and < 100 t	JB ≥ 15 t et < 100 t
24.	T200	Gross Tonnage / Jauge Brute	GT ≥ 100 t and < 200 t	JB ≥ 100 t et < 200 t
25.	T500	Gross Tonnage / Jauge Brute	GT ≥ 200 t and < 500 t	JB ≥ 200 t et < 500 t
26.	T910	Gross Tonnage / Jauge Brute	GT ≥ 500 t and < 1000 t	JB ≥ 500 t et < 1000 t
27.	T920	Gross Tonnage / Jauge Brute	GT ≥ 1000 t and < 2000 t	JB ≥ 1000 t et < 2000 t
28.	T935	Gross Tonnage / Jauge Brute	GT ≥ 2000 t and < 3500 t	JB ≥ 2000 t et < 3500 t
29.	T950	Gross Tonnage / Jauge Brute	GT ≥ 3500 t and < 5000 t	JB ≥ 3500 t et < 5000 t
30.	T970	Gross Tonnage / Jauge Brute	GT ≥ 5000 t	JB ≥ 5000 t

IOTC CPC's and other parties are encouraged to report vessel size categories in length (length overall; LOA) for their fisheries. Fish carrying capacity, measured in tones, or gross tonnage (GT) can be used alternatively in the case that LOA is not available. **IOTC CPC's should make every possible effort to classify their fleets according to the categories recorded in Table 20 and report this information to the Secretariat**. Alternative size categories can be used for fleets for which this information is not available.

- Target species: Main species targeted, as defined in table 12
- Number of boats: Total number of fishing crafts operated during the calendar year concerned.

CATCH-AND-EFFORT

DEFINITION: The term catch-and-effort **refers to the fine-scale data – usually from logbooks, and reported per fleet, year, gear- type of school, month, grid and species.** This includes:

- **Surface fisheries**:
  - Purse seine fisheries: **catch weight by species and fishing effort by fishing mode, 1° grid area and month strata**. In addition:
    - Supply vessels: effort data expressed as the **number of days at sea by 1° grid area and month**.
    - Fish Aggregating Devices (FAD): effort data expressed as the **total number of FAD set per type of FAD per quarter**.
  - Other fisheries: **catch weight by species and fishing effort by 1° grid area and month strata.**
- **Longline fisheries**: **catch by species, in numbers or weight, and effort as the number of hooks deployed by 5° grid area and month strata**.
- **Coastal fisheries**: available catch by species, fishing gear and fishing effort may be provided using an alternative geographical area if it better represents the fishery concerned.

Catch-and-effort data shall be extrapolated (raised) to the total catches (and effort) for the fishery concerned.

STANDARDS FOR THE REPORTING OF CATCH-AND-EFFORT: The following IOTC Resolutions call for IOTC CPC's to report aggregated catch-and-effort data**:**

Resolution 08/01 ***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's):*

> *Paragraph 3. Catch-and-effort data:*
>
> *(a) For* ***surface fisheries****:* ***catch weight by species and fishing effort shall be provided by 1° grid area and month strata****. Purse seine fishery data shall be* ***stratified by fishing mode*** *(e.g. free swimming schools or schools in association with floating objects). The data shall be extrapolated to the total national monthly catches for each gear. Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely.*
>
> *(b)* ***Longline fisheries****:* ***catch by species, in numbers or weight, and effort as the number of hooks deployed shall be provided by 5° grid area and month strata****. Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely. For the work of relevant working parties under the IOTC* ***Scientific Committee****,* ***longline data should be of a resolution of 1° grid area and month or finer****. These data would be for the exclusive use of IOTC scientists, subject to the approval of the data owners and IOTC Resolution 98/02 Data confidentiality policy and procedures (Resolution 98/02), and should be provided for scientific use in a timely fashion.*
>
> *(c)* ***Coastal fisheries****:* ***available catch by species, fishing gear and fishing effort*** *shall be submitted frequently and may be* ***provided using an alternative geographical area if it better represents the fishery concerned.***
>
> *These provisions,* ***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****.*
>
> *Paragraph 5. Given that the activities of* ***supply vessels*** *and the use of* ***Fish Aggregating Devices (FAD)*** *are an integral part of the fishing effort exerted by the purse seine fleet, the following data shall be provided:*
>
> *(a) The* ***number and characteristics of supply vessels****: (i) operating under their flag, (ii) assisting purse seine vessels operating under their flag, or (iii) licensed to operate in their exclusive economic zones, and that have been present in the IOTC Area*

(b) ***Number of days at sea by supply vessels by 1° grid area and month*** *to be reported by the flag state of the supply vessel*

(c) The ***total number and type of FADs set by the supply vessel and purse seine fleet per quarter****. Types of FADs are defined as 1) drifting log or debris, 2) drifting raft or fad with a net, 3) drifting raft or fad without a net, 4) other (e.g. Payao, dead animal etc). All types monitored by a tracking system*

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****.*

INFORMATION TO BE REPORTED: The following information shall be reported to the IOTC:

Surface and longline fisheries:

IOTC Form: Form 3CE (Appendix IX)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
    - Contact name: Name of the individual reporting the information
    - Contact e-mail address: E-mail of the individual reporting the information
    - Contact phone: Phone number of the individual reporting the information
    - Organization name: Name of the organization responsible for the report
    - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
    - Reporting Country: The country reporting the catches
    - Flag Country: The country for which retained catches are reported
    - Year: The calendar year the catches were made
    - Type of Fishery: The type of fishery for which the retained catches are reported (see available fisheries on Table 9)
    - Target species: Main species targeted, as defined in table 12
    - Effort units: The following effort units shall be used:
        i. Surface and coastal fisheries: no measure of effort is specified; Table 21 lists the units of effort that are recommended for each fishery. Other alternative units are also provided in each case.
        ii. Longline fisheries: number of hooks set

Table 21: Types of effort units recommended for main IOTC fisheries

	Fishery	Effort unit recommended		Alternate effort unit	
		IOTC Code	Description	IOTC Code	Description
1.	Purse seine associated schools	LS	Number of FAD sets	FH	Number of hours fishing
2.	Purse seine free schools	SH	Number of hours searching	FH	Number of hours fishing
3.	Supply vessels purse seine	DS	Number of days-at-sea		
4.	Fish aggregating devices	NF	Number of FAD set		
5.	Longline	HK	Number of hooks set		
6.	Gillnet	LS	Length of strings set	FD	Number of fishing days
7.	Pole-and-line	NP	Number of poles used	FD	Number of fishing days

	Fishery	Effort unit recommended		Alternate effort unit	
		IOTC Code	Description	IOTC Code	Description
8.	Handline	HK	Number of hooks set	FD	Number of fishing days
9.	Trolling	NL	Number of lines set	FD	Number of fishing days
10.	Trawl	FH	Number of hours fishing	FD	Number of fishing days

- Catch units: Catches shall be reported in live weight (metric tons) and/or number, depending on the fishery:
    i. Surface and coastal fisheries: live weight in tons
    ii. Longline fisheries: live weight in tons and/or numbers of fish
- Type of data: Type of statistics reported.
    i. Preliminary statistics: The statistics were estimated by using some information from the fishery; the statistics reported are likely to change in the future as more information become available.
    ii. Final statistics: The statistics were estimated by using the complete set of data for the fishery and year concerned; the statistics reported are unlikely to change in the future.
- Data Sources: The types of information that were used for the estimation of the catch-and-effort for the fishery concerned; these are shown on Table 13.
- Data Processing: The type of estimation procedure, as defined in table 14.
- Raised: The catch-and-effort data has been raised to the represent the total catches and effort in the year concerned (RS), has been raised but does not represent the total catches and effort in the year concerned (PR) or has not been raised at all (SA).
- Coverage: The proportion of the total catches (in number or weight)/effort that were monitored for the fishery concerned; refer to Table 15 for types of coverage.

Data:

- Month: The month the catches were made
- Grid: The grid area the catches were made; refer to standard areas for the reporting of catch-and-effort and size frequency data (pages 8-10)
- Estimated: The status of the catch-and-effort data recorded for the stratum:
    - SS: No or insufficient catch-and-effort data (CE) available in the stratum concerned; the CE data for the stratum was estimated by using data from neighboring time-area strata (substitution scheme). Applies only to raised CE.
    - AV: CE available for the stratum; the CE for the stratum was estimated by using the CE available in the referred stratum. Applies to both raised and non-raised CE (all non-raised CE fall under this category).
- Effort: Total effort exerted (in the units specified on table 21)
- Catches by species: including:
    - Retained catches: catches for each species retained on board in live weight and/or number. IOTC CPC's shall provide catches for IOTC species (Table 3) and main species of sharks (Table 4) and are encouraged to provide catches for all other species that are retained on board (Annex ??; Tables 7-8). The catches of specimens for which only part/s of their bodies are retained on board shall be always reported as retained catches, in live weight. This includes the catches of sharks for which only the fins are retained onboard (weights shall include those corresponding to the carcasses discarded plus those of the fins retained).

- Discard levels: discard levels for each species in live weight or number. IOTC CPC's shall provide discard levels for IOTC species (Table 3) and main species of sharks (Table 4). IOTC CPC's are encouraged to provide discard levels for other species (Tables 5-9).

Coastal fisheries:

IOTC Form: Form 3AR (Appendix IX)

General Information: (refer to IOTC Form 3CE in page 28)

Data: (refer to IOTC Form 3CE in page 28)

- Area: The area the catches were made; refer to alternative areas for the reporting of catch-and-effort and size frequency data (pages 10-11)

Supply vessels:

IOTC Form: Form 3SU (Appendix IX)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
    - Contact name: Name of the individual reporting the information
    - Contact e-mail address: E-mail of the individual reporting the information
    - Contact phone: Phone number of the individual reporting the information
    - Organization name: Name of the organization responsible for the report
    - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
    - Reporting Country: The country reporting the effort
    - Flag Country: The country for which the effort is reported
    - Year: The calendar year the effort was exerted
    - Effort units: shall be expressed as number of days-at-sea
    - Type of data: Type of statistics reported.
        i. Preliminary statistics: The statistics were estimated by using some information from the fishery; the statistics reported are likely to change in the future as more information become available.
        ii. Final statistics: The statistics were estimated by using the complete set of data for the fishery and year concerned; the statistics reported are unlikely to change in the future.
    - Data Sources: The types of information that were used for the estimation of the effort for the fishery concerned; these are shown on Table 13.
    - Data Processing: The type of estimation procedure, as defined in table 14.
    - Raised: The effort data has been raised to the represent the total effort in the year concerned (RS), has been raised but does not represent the total effort in the year concerned (PR) or has not been raised at all (SA).
    - Coverage: The proportion of the total effort that was monitored for the fishery concerned; refer to Table 15 for types of coverage.

Data:

- Month: The month the effort was exerted

- Grid: The 1° grid area where the effort was exerted; refer to standard areas for the reporting of catch-and-effort and size frequency data (pages 8-10)
- Estimated: The status of the effort data recorded for the stratum:
    - SS: No or insufficient effort data available in the stratum concerned; the effort data for the stratum was estimated by using data from neighboring time-area strata (substitution scheme). Applies only to raised effort data.
    - AV: Effort data available for the stratum; the effort for the stratum was estimated by using the effort data available in the referred stratum. Applies to both raised and non-raised effort data (all non-raised effort fall under this category).
- Effort: Total number of days-at-sea

Fish Aggregating Devices (FAD):

IOTC Form: Form 3FA (Appendix IX)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
    - Contact name: Name of the individual reporting the information
    - Contact e-mail address: E-mail of the individual reporting the information
    - Contact phone: Phone number of the individual reporting the information
    - Organization name: Name of the organization responsible for the report
    - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
    - Reporting Country: The country reporting the effort
    - Flag Country: The fishing country for which the effort is reported
    - Year: The calendar year the effort was exerted
    - Effort units: shall be expressed as number of FAD set
    - Type of data: Type of statistics reported.
        i. Preliminary statistics: The statistics were estimated by using some information from the fishery; the statistics reported are likely to change in the future as more information become available.
        ii. Final statistics: The statistics were estimated by using the complete set of data for the fishery and year concerned; the statistics reported are unlikely to change in the future.
    - Data Sources: The types of information that were used for the estimation of the effort for the fishery concerned; these are shown on Table 13.
    - Data Processing: The type of estimation procedure, as defined in table 14.
    - Raised: The effort data has been raised to the represent the total effort in the year concerned (RS), has been raised but does not represent the total effort in the year concerned (PR) or has not been raised at all (SA).
    - Coverage: The proportion of the total effort that was monitored for the fishery concerned; refer to Table 15 for types of coverage.

Data:

- Quarter: The quarter the effort was exerted
- Estimated: The status of the effort data recorded for the stratum:

  - SS: No or insufficient FAD data available in the stratum concerned; the FAD data for the stratum was estimated by using data from neighboring time-area strata (substitution scheme). Applies only to raised FAD data.
  - AV: FAD data available for the stratum; the FAD data for the stratum was estimated by using the data available in the referred stratum. Applies to both raised and non-raised FAD data (all non-raised FAD data fall under this category).
- Type of FAD: The type of FAD set:
  - Drifting log or debris (LG)
  - Drifting raft or FAD with a net (RN)
  - Drifting raft or FAD without a net (RF)
  - Other (e.g. Payao, dead animal etc) (OT)

  All monitored through a tracking system.
- Effort: Total number of FAD set by purse seiners and supply vessels operating under the flag of the country reporting the data. Note that this number shall include only the FAD that are originally set by each vessel. **The FAD that are found at sea with a tracking device attached belonging to another vessel and are re-used** (by removing the existing tracking device and attaching a new device of its own) **by the vessel encountering them shall not be accounted for.**

LENGTH FREQUENCY DATA

DEFINITION: The term length frequency **refer to individual body lengths of IOTC species and main shark species per fleet, year, gear, type of school, month and 5 degrees square areas.**

STANDARDS FOR THE REPORTING OF LENGTH FREQUENCY DATA: The following IOTC Resolutions call for IOTC CPC's to report length frequency data**:**

Resolution 08/01 ***Mandatory statistical requirements*** *for IOTC Members and Cooperating Non-Contracting Parties (CPC's):*

> *Paragraph 4. Size data: Size data shall be* ***provided for all gears and for all species covered by the IOTC mandate*** *according to the guidelines set out by the IOTC Scientific Committee. Size sampling shall be run under strict and well described random sampling schemes which are necessary to provide unbiased figures of the sizes taken.* ***Length data by species, including the total number of fish measured, shall be submitted by a 5° grid area by month, by gear and fishing mode*** *(e.g. free swimming schools or schools in association with floating objects for the purse seiners)*

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****.*

INFORMATION TO BE REPORTED: The following information shall be reported to the IOTC:

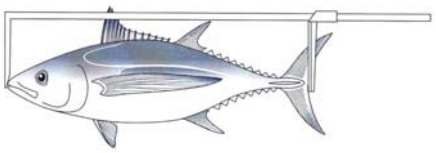
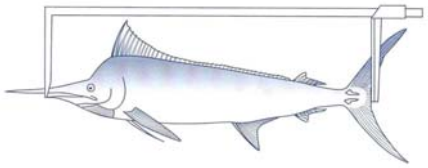
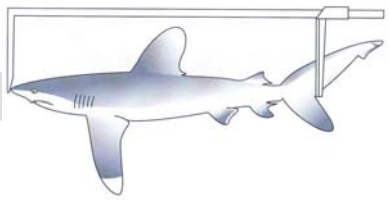
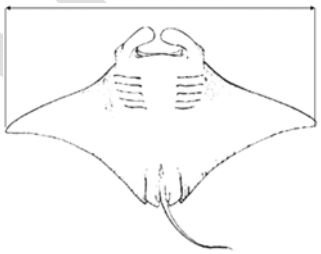
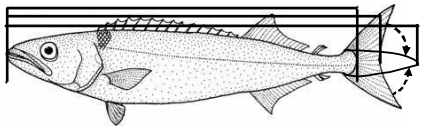
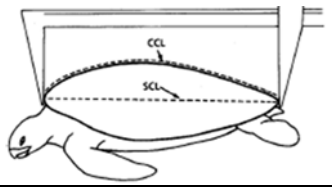
IOTC Form: Form 4SF (Appendix X)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
    - Contact name: Name of the individual reporting the information
    - Contact e-mail address: E-mail of the individual reporting the information
    - Contact phone: Phone number of the individual reporting the information
    - Organization name: Name of the organization responsible for the report
    - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
    - Reporting Country: The country reporting the catches
    - Flag Country: The country for which size data is reported
    - Year: The calendar year the size data was collected
    - Type of Fishery: The type of fishery for which the size data is reported (see available fisheries on Table 9)
    - Sampled catch: The type of catch sampled:
        i. Retained catch: The sample was taken from the catches retained on board (RC).
        ii. Discards: The sample was taken from the catches discarded (DI).
    - Species: The species for which the size data is reported. IOTC CPC's shall provide size data for IOTC species (Table 3) and main species of sharks (Table 4). IOTC CPC's are encouraged to provide size data for other species (Tables 6-8).

- Fish measurement details: **Fork lengths, measured straight with a caliper, are recommended over fish weights**. Table 22 shows the type of lengths recommended for each species group.

Table 22: Types of fish measurement recommended by the IOTC

Species Group	Measuring Tool	Recommended Measurement	Example
Tuna	Caliper	Fork length: Straight distance from the tip of the upper jaw to the fork of the tail	
Billfish	Caliper	Fork length: Straight distance from the tip of the lower jaw to the fork of the tail	
Sharks	Caliper	Fork length: Straight distance from the tip of the upper snout to the fork of the tail	
Rays	Caliper	Depending on the species; the length that applies to manta rays is shown on the right	
Other bonefish	Caliper	Depending on the species; Total length: Straight distance from the tip of the upper snout to the end of the tail Standard length: Straight distance from the tip of the snout to the posterior end of the last vertebra Fork length: as above	
Sea turtles	Caliper	Length of the shell	

The following information shall be recorded:

i. Measuring tool: The tool used to take the measurement. **The use of calipers (CP) is recommended over other measuring tools**; **measuring boards (MB)** can be used alternatively. **The use of tape measures (TM) is not recommended**. Table 23 lists the type of measurement tools used by the IOTC.

Table 23: Types of measuring tools used at the IOTC

	IOTC Code	English Description	French Description
1.	LC	Length measured using a Caliper	Longueur mesurée avec un Pied-en-coulisse
2.	LB	Length measured using a Measuring board	Longueur mesurée à l'Ichthyomètre
3.	LT	Length measured using a Tape measure	Longueur mesurée au ruban de mesure
4.	WE	Weight measured using an electronic scale	Poids mesuré à la balance électronique
5.	WC	Weight measured using a supermarket scale	Poids mesuré à la balance commerciale
6.	WB	Weight measured using a spring scale	Poids mesuré au peson

ii. Size interval: Refers to the distance between consecutive size classes. **Intervals of 1 cm** or **1 kg** are recommended for fish that is measured in fork length or live weight, respectively. The intervals recommended for other types of measurements are listed in Table 24.

iii. Measurement unit: **All fish lengths and weights shall be measured to the lowest size interval** (e.g. For 1 cm intervals all fish specimens recorded for lengths ranging from 57 cm (inclusive) to 58 cm (exclusive) shall be recorded under length 57 cm).

iv. Measurement method**: Straight lengths** shall be taken whenever it is possible. **The use of curved lengths shall be avoided**.

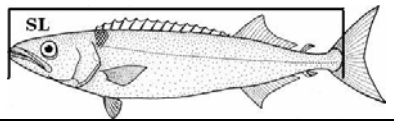
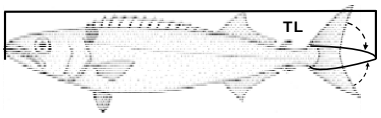
v. Type of measurement: Refers to the type of measurement used to record the fish length or weight. Table 24 lists the main types of measurement used by the IOTC. **Fork lengths are recommended over all other measurement types for IOTC species and sharks**.

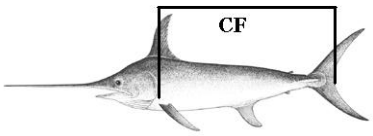
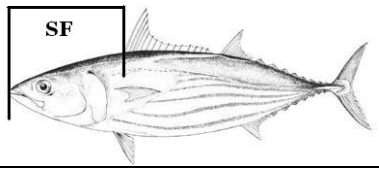
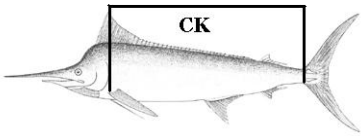
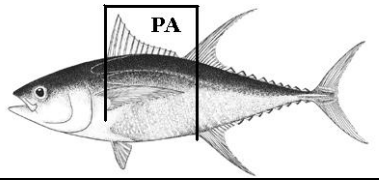
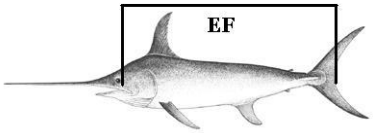
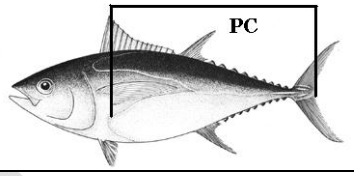
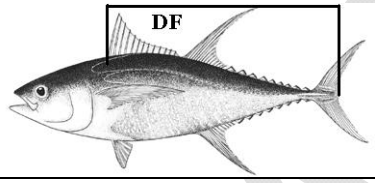
Table 24: Types of measurements used by the IOTC and size intervals recommended

	IOTC Code	English Description	French Description	Recom. Interval
1.	**FL**	**Fork length**	**Longueur à la fourche**	**1 cm**
2.	TL	Total length	Longueur totale	1 cm
3.	SL	Standard length	Longueur standard	1 cm
4.	CF	Cleithrum-fork of the tail length	Longueur opercule-fourche de la queue	1 cm
5.	CK	Cleithrum-keel length	Longueur opercule-carène	1 cm
6.	EF	Eye-fork of the tail length	Longueur œil-fourche de la queue	1 cm
7.	DF	Base first dorsal fin-fork of the tail length	Longueur base de la première nageoire dorsal-fourche de la queue	1 cm
8.	SF	Tip of snout-base first dorsal fin length	Longueur pointe du museau-base de la première nageoire dorsale	0.5 cm
9.	PA	Base pectoral fin-base anal fin length	Longueur base de la nageoire pectorale-base de la nageoire anale	0.5 cm
10.	PC	Base pectoral fin-fork of the tail length	Longueur base de la nageoire pectorale-fourche de la queue	1 cm
11.	RD	Round (whole, live) weight	Poids vivant (entier)	1 kg
12.	GG	Gilled-and-gutted (bill off) weight	Poids éviscéré (sans-épée)	1 kg
13.	HD	Headed-and-gutted weight	Poids étêté et éviscéré	0.5 kg
14.	PD	Headed and caudal peduncle-off weight	Poids étêté, éviscéré et sans pédoncule caudale	0.5 kg
15.	HT	Headed and tailed weight	Poids étêté, éviscéré et sans nageoire caudale	0.5 kg

The length measurements listed on table 24 are shown in Table 25, below.

Table 25: Length measurement used by the IOTC

IOTC Code	Description	Example	IOTC Code	Description	Example
SL	Tip of snout-posterior end of last vertebra~		TL	Tip of snout-tip of the longer lobe of the caudal fin*	

IOTC Code	Description	Example	IOTC Code	Description	Example
CF	Cleithrum-fork of the tail length		SF	Tip of snout-base first dorsal fin length	
CK	Cleithrum-keel length		PA	Base pectoral fin-base anal fin length	
EF	Eye-fork of the tail length		PC	Base pectoral fin-fork of the tail length	
DF	Base first dorsal fin-fork of the tail length		FL	Tip of snout-fork of the tail length	See Table 22 (Tuna, Billfish, Shark)

* Usually measured with the lobes compressed along the midline

~ Or posterior end of midlateral portion of the hypural plate

- Raised: The size data has been raised to the represent the total number of specimens caught in the year concerned (RS), has been raised but does not represent the total number of specimens caught in the year concerned (PR) or has not been raised at all (SA).
- Coverage: The proportion that the total number of fish sampled (or sampled weight) for the species make out of the total number (or weight) of fish caught for that species, for the fishery concerned; refer to Table 15 for types of coverage.
- Type of data: Type of statistics reported.
    i. Preliminary statistics: The statistics were estimated by using some information from the fishery; the statistics reported are likely to change in the future as more information become available.
    ii. Final statistics: The statistics were estimated by using the complete set of data for the fishery and year concerned; the statistics reported are unlikely to change in the future.
- Data Sources: The types of information that were used for the estimation of the length frequency for the fishery concerned; these are shown on Table 13.
- Data Processing: The type of estimation procedure, as defined in table 14.

Data:

- Month: The month the sample was taken
- Grid: The 5 grid area (or alternative area for coastal fisheries) the size data was collected; refer to standard areas for the reporting of catch-and-effort and size frequency data (pages 8-11)
- Estimated: The status of the size data recorded for the stratum:

    - SS: No or insufficient samples available in the stratum concerned; the size frequency data for the stratum was estimated by using data from neighboring time-area strata (substitution scheme). Applies only to raised size frequency data (catch-at-size).
    - AV: Samples available for the stratum; the size frequency data (SF) for the stratum was estimated by using the samples available in the referred stratum. Applies to both raised and non-raised SF (raw samples; all non-raised SF fall under this category)
- Size class: Length (Weight) class low (e.g. 57 cm corresponding to the size class 57-58 if the interval is one centimeter)
- Number of fish: Total number of fish measured.

SOCIO-ECONOMIC DATA (IN PREP.)

DEFINITION: The term socio-economic data refers to a range of socio-economic indicators by IOTC country, year or month for countries having IOTC fisheries in the Indian Ocean. These include:

- **Fish market prices:**
- **Country indicators:**

STANDARDS FOR THE REPORTING OF SOCIO-ECONOMIC DATA: Article V, Paragraph 2 subparagraph (b) of the IOTC Agreement (Objectives, Functions and Responsibilities of the Commission) states:

> *"2. In order to achieve these objectives, the Commission shall have the following functions and responsibilities, in accordance with the principles expressed in the relevant provisions of the United Nations Convention on the Law of the Sea:"*
>
> > ***"(d)** to keep under review the economic and social aspects of the fisheries based on the stocks covered by this Agreement bearing in mind, in particular, the interests of developing coastal states**;"***

The IOTC has not adopted standards for the reporting of **socio-economic data** to date. However, the **IOTC Scientific Committee**, at its 10th Session (2008), recommended that the IOTC Secretariat **compile** as much **information** as possible on the **market prices** of tropical tunas, temperate tunas and swordfish and, to the extent possible, other **IOTC species** and main **shark species**.

INFORMATION TO BE PROVIDED: Countries are invited to provide the following information:

Fish market prices:

IOTC Form: Form 7PR (Appendix XI)

General Information:

- ***Reporting Source***: details about the individual reporting the information and the Institution responsible for the report.
  - Contact name: Name of the individual reporting the information
  - Contact e-mail address: E-mail of the individual reporting the information
  - Contact phone: Phone number of the individual reporting the information
  - Organization name: Name of the organization responsible for the report
  - Organization e-mail address: E-mail of the organization responsible for the report
- ***Dataset***: General information about the dataset reported.
  - Reporting Country: The country reporting the fish prices
  - Year: The calendar year the fish prices refer to
  - Fleet origin: The fleet that caught the specimens for which prices are reported
  - Ocean: The ocean in which the specimens whose prices are reported were caught
  - Type of product: The type of product for which prices are reported. Table 26 lists the main types of fish product used by the IOTC

Table 26: Types of fish products used by the IOTC

	IOTC	English Description	French Description

	Code		
1.	**RAW**	**Raw**	
2.	**SHG**	**Sashimi high quality**	**Haute qualite sashimi**
3.	**SLW**	**Sashimi low quality**	**Basse qualite sashimi**

- Fish processing:
- Fish preservation:
- Product destination:
- Destination market:
-

Data:

- Month: The month the fish process refer to
- Species: The species for which the prices are reported. IOTC CPC's are invited to provide size data for IOTC species (Table 3) and main species of sharks (Table 4).
- Size category:
- Price:
- Weight units:
- Currency:

Country indicators:

IOTC Form: Form 7IN

General Information:

USE OF IOTC FORMS (IN PREP.)

APPENDIX I

RESOLUTION 08/01
MANDATORY STATISTICAL REQUIREMENTS FOR IOTC MEMBERS AND COOPERATING NON-CONTRACTING PARTIES (CPC'S)

The Indian Ocean Tuna Commission (IOTC)

GIVEN that the Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) encourages coastal States and fishing States on the high seas to collect and share, in a timely manner, complete and accurate data concerning fishing activities on, inter alia, vessel position, catch of target and non-target species and fishing effort.

NOTING that the United Nations Food and Agricultural Organisation (FAO) Code of Conduct for Responsible Fishing provides that States should compile fishery-related and other supporting scientific data relating to fish stocks covered by subregional or regional fisheries management organizations and provide them in a timely manner to the organization.

RECALLING the commitment made by members under Article V of the IOTC Agreement to keep under review the conditions and trends of the stocks and to gather, analyse and disseminate scientific information, catch and effort statistics and other data relevant to the conservation and management of the stocks and to fisheries based on the stocks covered by the Agreement.

COGNISANT that the above commitment can only be achieved when members meet the requirements of Article XI of the IOTC Agreement i.e. to provide statistical and other data and information to minimum specifications and in a timely manner.

ACKNOWLEDGING that the IOTC Scientific Committee has repeatedly stressed the importance of the timeliness of data submissions.

GIVEN that the activities of supply vessels and the use of Fish Aggregating Devices (FAD) are an integral part of the fishing effort exerted by the purse seine fleet.

RESOLVES in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. CPC's shall provide the following information to the IOTC Secretariat according to the timelines specified in paragraph 6:

2. Nominal catch data:
Estimates of the total annual catch by species and gear for all species under the IOTC mandate.

3. Catch and effort data:
(a) **For surface fisheries:** catch weight by species and fishing effort shall be provided by 1° grid area and month strata. Purse seine fishery data shall be stratified by fishing mode (e.g. free swimming schools or schools in association with floating objects). The data shall be extrapolated to the total national monthly catches for each gear. Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely.

(b) **Longline fisheries:** catch by species, in numbers or weight, and effort as the number of hooks deployed shall be provided by 5° grid area and month strata. Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely. For the work of relevant working parties under the IOTC Scientific Committee, longline data should be of a resolution of 1° grid area and month or finer. These data would be for the exclusive use of IOTC scientists, subject to the approval of the data owners and IOTC Resolution 98/02 Data confidentiality policy and procedures (Resolution 98/02), and should be provided for scientific use in a timely fashion.
(c) **For coastal fisheries:** available catch by species, fishing gear and fishing effort shall be submitted frequently and may be provided using an alternative geographical area if it better represents the fishery concerned.
These provisions, 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.

4. Size data:
Size data shall be provided for all gears and for all species covered by the IOTC mandate according to the guidelines set out by the IOTC Scientific Committee. Size sampling shall be run under strict and well described random sampling schemes which are necessary to provide unbiased figures of the sizes taken. Length data by species, including the total number of fish measured, shall be submitted by a 5° grid area by month, by gear and fishing mode (e.g. free swimming schools or schools in association with floating objects for the purse seiners).

5. Given that the activities of supply vessels and the use of **Fish Aggregating Devices** (FAD) are an integral part of the fishing effort exerted by the purse seine fleet, the following data shall be provided:

(a) The number and characteristics of supply vessels: (i) operating under their flag, (ii) assisting purse seine vessels operating under their flag, or (iii) licensed to operate in their exclusive economic zones, and that have been present in the IOTC Area.
(b) Number of days at sea by supply vessels by 1° grid area and month to be reported by the flag state of the supply vessel.
(c) The total number and type of FADs set by the supply vessel and purse seine fleet per quarter. Types of FADs are defined as 1) drifting log or debris, 2) drifting raft or fad with a net, 3) drifting raft or fad without a net, 4) other (e.g. Payao, dead animal etc). All types monitored by a tracking system.

These data would be for the exclusive use of IOTC scientists, subject to the approval of the data owners and Resolution 98/02 *Data confidentiality policy and procedures*, and should be provided in a timely fashion.

6. Timeliness of data submission to the IOTC Secretariat:
(a) Longline fleets operating in the high seas shall provide provisional data for the previous year no later than 30 June. Final data shall be submitted no later than 30 December.

(b) All other fleets (including supply vessels) shall submit their final data for the previous year no later than 30 June.
(c) In case where the final statistics cannot be submitted by that date, at least preliminary statistics should be provided. Beyond a delay of two years, all revisions of historical data should be formally reported and duly justified. These reports should be made on forms provided by the Secretariat and reviewed by the Scientific Committee. The Scientific Committee will advise the Secretariat if revisions are then accepted for scientific use.

7. This Resolution supersedes Resolution 01/05 Mandatory statistical requirements for IOTC Members

APPENDIX II

RESOLUTION 98/02
DATA CONFIDENTIALITY POLICY AND PROCEDURES

The Indian Ocean Tuna Commission (IOTC),

RECOGNIZING the need for confidentiality at the commercial and organisational levels for data submitted to IOTC, the following policy and procedures on confidentiality of data will apply:

DATA SUBMITTED TO THE SECRETARIAT

1. The policy for releasing catch-and-effort and length-frequency data will be as follows:
2. Catch-and-effort and length-frequency data grouped by 5° longitude by 5° latitude by month for longline and 1° longitude by 1° latitude by month for surface fisheries stratified by fishing nation are considered to be in the public domain, provided that the catch of no individual vessel can be identified within a time/area stratum. In cases when an individual vessel can be identified, the data will be aggregated by time, area or flag to preclude such identification, and will then be in the public domain.
3. Catch-and-effort and length-frequency data grouped at a finer level of time-area stratification will only be released with written authorisation from the sources of the data. Each data release will require the specific permission of the Secretary.
4. A Working Party will specify the reasons for which the data are required.
5. Individuals requesting the data are required to provide a description of the research project, including the objectives, methodology and intentions for publication. Prior to publication, the manuscript should be cleared by the Secretary. The data are released only for use in the specified research project and the data must be destroyed upon completion of the project. However, with authorisation from the sources of the data, catch-and-effort and length-frequency data may be released for long-term usage for research purposes, and in such cases the data need not be destroyed.
6. The identity of individual vessels will be hidden in fine-level data unless the individual requesting this information can justify its necessity.
7. Both Working Parties and individuals requesting data shall provide a report of the results of the research project to IOTC for subsequent forwarding to the sources of the data.

PROCEDURES FOR THE SAFEGUARD OF RECORDS

Procedures for safeguarding records and databases will be as follows:

1. Access to logbook-level information will be restricted to IOTC staff requiring these records for their official duties. Each staff member having access to these records will be required to sign an attestation recognising the restrictions on the use and disclosure of the information.
2. Logbook records will be kept locked, under the specific responsibility of the Data Manager. These sheets will only be released to authorised IOTC personnel for the purpose of data input, editing or verification. Copies of these records will be authorised only for legitimate purposes and will be subjected to the same restrictions on access and storage as the originals.
3. Databases will be encrypted to preclude access by unauthorised persons. Full access to the database will be restricted to the Data Manager and to senior IOTC staff requiring access to these data for official purposes, under the authority of the Secretary. Staff entrusted with data input, editing and verification will be provided with access to those functions and data sets required for their work.

DATA SUBMITTED TO WORKING PARTIES

Data submitted to Working Parties will be retained by the Secretariat or made available for other analyses only with the permission of the source.

The above rules of confidentiality will apply to all members of Working Parties.

APPENDIX III

UNCLOS: United Nations Convention on the Law of the Sea of 10 December 1982

Article 119: Conservation of the living resources of the high seas

"2. Available scientific information, ***catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations****, whether subregional, regional or global, where appropriate and with participation by all States concerned."*

UN Fish Stocks Agreement (FSA): Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 24 July-4 August 1995)

Annex I: Standard Requirements for the Collection and Sharing of Data

Article 1: General Principles

"1. The timely collection, compilation and analysis of data are fundamental to the effective conservation and management of straddling fish stocks and highly migratory fish stocks. To this end, ***data from fisheries for these stocks on the high seas and those in areas under national jurisdiction are required and should be collected and compiled*** *in such a way as to enable statistically meaningful analysis for the purposes of fishery resource conservation and management.* ***These data include catch and fishing effort statistics and other fishery-related information, such as vessel-related and other data for standardizing fishing effort. Data collected should also include information on non-target and associated or dependent species.*** *All data should be verified to ensure accuracy. Confidentiality of non-aggregated data shall be maintained. The dissemination of such data shall be subject to the terms on which they have been provided."*

Article 2: Principles of data collection, compilation and exchange

Article 3: Basic fishery data

The types of fisheries data that need to be collected and compiled are covered in Articles 2 and 3 of the FSA (The complete text of Annex I can be found in Appendix ??, page ??).

Article 5: Reporting

A ***State shall ensure that vessels flying its flag send*** *to its national fisheries administration and, where agreed,* ***to the relevant subregional or regional fisheries management organization or arrangement, logbook data on catch and effort, including data on fishing operations on the high seas, at sufficiently frequent intervals to meet*** *national requirements and regional and* ***international obligations****.*

FAO Code of Conduct for Responsible Fisheries (Rome, 1995):

7.4 Data gathering and management advice

"7.4.4 States should ensure that timely, complete and reliable statistics on catch and fishing effort are collected and maintained in accordance with applicable international standards and practices and in sufficient detail to allow sound statistical analysis. Such data should be updated regularly and verified through an appropriate system. States should compile and

disseminate such data in a manner consistent with any applicable confidentiality requirements"

"7.4.6 States should compile fishery-related and other supporting scientific data relating to fish stocks covered by sub-regional and regional fisheries management organizations or arrangements in an internationally agreed format and provide them in a timely manner to the organization or arrangement."

"7.4.7 Sub-regional or regional fisheries management organizations or arrangements should compile data and make them available, in a manner consistent with any applicable confidentiality requirements, in a timely manner and in an agreed format to all members of these organizations and other interested parties in accordance with agreed procedures."

APPENDIX IV

Table 7: Other bony fish species that may be caught incidentally on IOTC fisheries

	IOTC Code	Species English name	Species French name	Species scientific name
1.	BAU	Australian bonito	Bonite bagnard	*Sarda australis*
2.	BAR	Barracudas	Brochets de mer	*Sphyraena spp*
3.	ESCL	Black escolar	Escolier noir	*Lepidocybium flavobrunneum*
4.	MAA	Blue mackerel	Maquereau tacheté	*Scomber australasicus*
5.	BUK	Butterfly kingfish	Thon papillon	*Gasterochisma melampus*
6.	DOL	Common dolphinfish	Coryphène commune	*Coryphaena hippurus*
7.	DOT	Dogtooth tuna	Bonite à gros yeux	*Gymnosarda unicolor*
8.	DBM	Double-lined mackerel	Thazard-kusara	*Grammatorcynus bilineatus*
9.	AMB	Greater amberjack	Sériole couronnée	*Seriola dumerili*
10.	RAG	Indian mackerel	Maquereau des Indes	*Rastrelliger kanagurta*
11.	KAK	Kanadi kingfish	Thazard kanadi	*Scomberomorus plurilineatus*
12.	KOS	Korean seerfish	Thazard coréen	*Scomberomorus koreanus*
13.	SPF	Longbill spearfish	Makaire à rostre	*Tetrapturus pfluegeri*
14.	OIL	Oilfish	Ruvet	*Ruvettus pretiosus*
15.	LAG	Opah	Opah	*Lampris guttatus*
16.	SAP	Pacific saury	Saurie	*Cololabis saira*
17.	BRA	Pomfrets nei	Castagnoles	*Brama spp*
18.	CFW	Pompano dolphinfish	Dorade	*Coryphaena equiselis*
19.	RRU	Rainbow runner	Comète saumon	*Elagatis bipinnulata*
20.	SSP	Short-billed spearfish	Makaire à rostre court	*Tetrapturus angustirostris*
21.	STS	Streaked seerfish	Thazard cirrus	*Scomberomorus lineolatus*
22.	BIP	Striped bonito	Bonite oriental	*Sarda orientalis*
23.	WAH	Wahoo	Thazard-bâtard	*Acanthocybium solandri*

Table 8: Other species of sharks that may be caught incidentally on IOTC fisheries

	IOTC Code	Species English name	Species French name	Species scientific name
1.	OXY	Angular rough shark	Centrine communes	*Oxynotus centrina*
2.	MTM	Arabian smooth-hound	Emissole d'Arabie	*Mustelus mosis*
3.	SHBC	Banded cat shark	Holbiche des plages	*Halaelurus lineatus*
4.	ODH	Bigeye sand tiger shark	Requin noronhai	*Odontaspis noronhai*
5.	BLR	Blacktip reef shark	Requin pointes noires	*Carcharhinus melanopterus*
6.	CCL	Blacktip shark	Requin bordé	*Carcharhinus limbatus*
7.	NTC	Broadnose sevengill shark	Platnez	*Notorynchus cepedianus*
8.	BRO	Copper shark	Requin cuivre	*Carcharhinus brachyurus*
9.	DUS	Dusky shark	Requin de sable	*Carcharhinus obscurus*
10.	CCG	Galapagos shark	Requin des Galapagos	*Carcharhinus galapagensis*
11.	ORR	Grey bambooshark	Requin-chabot gris	*Chiloscyllium griseum*
12.	AML	Grey Reef Shark	Requin dagsit	*Carcharhinus amblyrhynchos*
13.	CCM	Hardnose shark	Requin nez rude	*Carcharhinus macloti*
14.	SCK	Kitefin shark	Squale liche	*Dalatias licha*
15.	CPU	Little gulper shark	Petit squale-chagrin	*Centrophorus uyato*
16.	CYT	Ornate dogfish	Aiguillat élégant	*Centroscyllium ornatum*
17.	DOP	Shortnose spurdog	Aiguillat nez court	*Squalus megalops*
18.	ORI	Slender bambooshark	Requin-chabot élégant	*Chiloscyllium indicum*
19.	CLD	Sliteye shark	Requin sagrin	*Loxodon macrorhinus*
20.	CEM	Smallfin gulper shark	Squale-chagrin cagaou	*Centrophorus moluccensis*
21.	SPZ	Smooth hammerhead	Requin marteau commun	*Sphyrna zygaena*
22.	SMD	Smooth-hound	Emissole lisse	*Mustelus mustelus*
23.	SLA	Spadenose shark	Requin épée	*Scoliodon laticaudus*
24.	SKPN	Spinner Shark	Requin tisserand	*Carcharhinus brevipinna*
25.	CCQ	Spot-tail shark	Requin queue tachet	*Carcharhinus sorrah*
26.	ORZ	Tawny nurse shark	Requin nourrice fauve	*Nebrius ferrugineus*
27.	GAG	Tope shark	Requin-hâ	*Galeorhinus galeus*
28.	SSQ	Velvet dogfish	Squale-grogneur velouté	*Zameus squamulosus*
29.	CCD	Whitecheek shark	Requin joues blanches	*Carcharhinus dussumieri*
30.	RHA	White-eyed shark	Requin museau pointu	*Rhizoprionodon acutus*
31.	OSF	Zebra shark	Requin zèbre	*Stegostoma fasciatum*
32.	HXT	Sharpnose sevengill shark	Requin perlon	*Heptranchias perlo*
33.	SBL	Bluntnose sixgill shark	Requin griset	*Hexanchus griseus*
34.	HXN	Bigeyed sixgill shark	Requin vache	*Hexanchus nakamurai*
35.	RME	Longhorned mobula	Mante diable	*Mobula eregoodootenkee*
36.	RMJ	Spinetail mobula	Mante aiguillat	*Mobula japanica*
37.	RMO	Smoothtail mobula	Mante à queue lise	*Mobula thurstoni*

APPENDIX V

Table 9: Species of sea mammals that occur within the IOTC Area of Competence

	IOTC Code	Species English name	Species French name	Species scientific name
1.	BDW	Andrews' beaked whale	Baleine à bec de Bowdoin	*Mesoplodon bowdoini*
2.	BAW	Arnoux's beaked whale	Berardien d'Arnoux	*Berardius arnuxii*
3.	BBW	Blainville's beaked whale	Baleine à bec de Blainville	*Mesoplodon densirostris*
4.	BLW	Blue whale	Rorqual bleu	*Balaenoptera musculus*
5.	DBO	Bottlenose dolphin	Grand dauphin	*Tursiops truncatus*
6.	BRW	Bryde's whale	Rorqual de Bryde	*Balaenoptera edeni*
7.	CMD	Commerson's dolphin	Dauphin de Commerson	*Cephalorhynchus commersonii*
8.	DCO	Common dolphin	Dauphin commun	*Delphinus delphis*
9.	BCW	Cuvier's beaked whale	Ziphius	*Ziphius cavirostris*
10.	DDU	Dusky dolphin	Dauphin sombre	*Lagenorhynchus obscurus*
11.	DWW	Dwarf sperm whale	Cachalot nain	*Kogia simus*
12.	FAW	False killer whale	Faux-orque	*Pseudorca crassidens*
13.	FIW	Fin whale	Rorqual commun	*Balaenoptera physalus*
14.	PFI	Finless porpoise	Marsouin aptère	*Neophocaena phocaenoides*
15.	FRD	Fraser's dolphin	Dauphin de Fraser	*Lagenodelphis hosei*
16.	TGW	Ginkgo-toothed beaked whale	Baleine à bec de Nishiwaki	*Mesoplodon ginkgodens*
17.	BYW	Gray's beaked whale	Baleine à bec de Gray	*Mesoplodon grayi*
18.	BHW	Hector's beaked whale	Baleine à bec d'Hector	*Mesoplodon hectori*
19.	HRD	Hourglass dolphin	Dauphin crucigére	*Lagenorhynchus cruciger*
20.	HUW	Humpback whale	Baleine à bosse	*Megaptera novaeangliae*
21.	DHI	Indo-Pacific hump-backed dolphin	Dauphin à bosse de l'Indopacifique	*Sousa chinensis*
22.	IRD	Irrawaddy dolphin	Orcelle	*Orcaella brevirostris*
23.	KIW	Killer whale	Orque	*Orcinus orca*
24.	PIW	Long-finned pilot whale	Globicéphale commun	*Globicephala melas*
25.	BNW	Longman's beaked whale	Baleine à bec de Longman	*Mesoplodon pacificus*
26.	MIW	Minke whale	Petit rorqual	*Balaenoptera acutorostrata*
27.	DPN	Pantropical spotted dolphin	Dauphin tacheté pantropical	*Stenella attenuata*
28.	KPW	Pygmy killer whale	Orque pygmée	*Feresa attenuata*
29.	CPM	Pygmy right whale	Baleine pygmée	*Caperea marginata*
30.	PYW	Pygmy sperm whale	Cachalot pygmée	*Kogia breviceps*
31.	DRR	Risso's dolphin	Grampus	*Grampus griseus*
32.	RTD	Rough-toothed dolphin	Sténo	*Steno bredanensis*
33.	BSW	Sherpherd's beaked whale	Tasmacète	*Tasmacetus shepherdi*
34.	SHW	Short-finned pilot whale	Globicéphale tropical	*Globicephala macrorhynchus*
35.	SRW	Southern bottlenose whale	Hyperoodon austral	*Hyperoodon planifrons*
36.	EUA	Southern right whale	Baleine australe	*Eubalaena australis*
37.	RSW	Southern right whale dolphin	Dauphin aptère austral	*Lissodelphis peronii*
38.	SPP	Spectacled porpoise	Marsouin de Lahille	*Australophocaena dioptrica*
39.	SPW	Sperm whale	Cachalot	*Physeter catodon*
40.	DSI	Spinner dolphin	Dauphin longirostre	*Stenella longirostris*
41.	TSW	Strap-toothed whale	Baleine à bec de Layard	*Mesoplodon layardii*
42.	DST	Striped dolphin	Dauphin bleu et blanc	*Stenella coeruleoalba*

APPENDIX VI through XI

In Prep.