

NATIONAL REPORT. 2004 UE-SPAIN

Instituto Español de Oceanografía – IEO

1. General Fisheries Statistics

Since the beginning of the tropical tuna, purse seine Spanish fishery in 1984, data of catch and effort have been collected by a logbooks system created to get information on the fleet in the Indian Ocean. Sampling of sizes landed has been conducted under the control of experts of the Instituto Español de Oceanografía (IEO) and Spanish Fishing Agency in close collaboration with the Seychelles Fishing Authorities (SFA) and the IRD's scientist team. Since the beginning of the 90's a Spanish expert on fisheries has been permanently based in Mahe, Seychelles Islands, in order to monitor "in situ" this fishery.

The Spanish surface longline fishery targeting swordfish (*Xiphias gladius*) started its activity in the Indian Ocean in the mid-nineties. The basic data for the scientific monitoring of this fleet have been collected by different systems that provide detailed information on the activities of the fleet and biological information on the individual swordfish caught.

1.1. Purse seine fishery

1.1.1 Fishing vessels

Table 1 shows the carrying capacity (in tons) and number of boats by category of the Spanish purse seine fleet from 1984 to 2004, together with the number of supplies used in association with Spanish boats and the number of vessels fishing in association with supplies between 1984 - 2004. In 2004, 20 Spanish purse seiners fished in the area, same number that in 1998 and 1999.

1.1.2 Fishing effort

Table 2 show the nominal effort in fishing days and searching days. After the higher level of the last nineties, since 2000 the nominal effort has been reduced and remind stable. In 2004 the fishing effort (3,891 f.d) is similar to the 2000-2003 level.

1.1.3 Catch

Table 3 shows the total yearly catches by species. The total catch in 2004 has reached 154,106 t (176,200 t in 2003), similar to 2002 catches. The catch by species was: yellowfin tuna, 80,810 t (78,968 t in 2003), skipjack 63,393 t (88,035 in 2003) and 8,634 t for bigeye (8,544 t in 2003).

1.2. Longline fishery

1.2.1 Fishing vessels

The Spanish surface longline fleet began operating in the international waters of the Indian Ocean on the basis of the fishery prospecting cruises conducted in the West Indian Ocean in late 1993. The average number of vessels fishing in the Indian Ocean rose from 19 vessels in 2003 to 24 units, which carried out fishery operations mainly in the Indian Ocean in 2004 although some of these units are also fishing temporally in the South Atlantic during some trips.

In terms of characteristics, the vessels range in length from 27 to 42 meters with a mean TRB of 210 and 693 HP. The type of gear used, starting in 2001, is based on the 'Florida style' fishing gear with slight variations.

1.2.2 Fishing effort

Figure 1 shows the spatial distribution of the mean nominal effort in number of hooks carried out during 2003 in all of the oceans where the Spanish surface longline fleet was operating.

The surface longline fishery was originally carried out in waters to the west of 80°E at the

start of the Spanish fleet's activity in the Indian Ocean. The fishing areas were later expanded to include zones in the South Central Indian Ocean, and in 2002 they reached out as far as 95°E. In the year 2003 during the course of a fishery prospecting cruise conducted by 4 of the fleet's vessels, the fishery zones extended to 110°E, which were maintained during 2004.

1.2.3 Catch

The catch levels of swordfish taken by the Spanish surface longline fleet have increased gradually over the past few years. In 2003 landings totalled 3,502 t with a nominal yield of 966 kg in round weight per thousand hooks set, while in year 2004 the level of catches reached 4,713 t with a nominal yield of 920 kg in round weight per thousand hooks set.

2. Report on the implementation of recommendations of the Scientific Committee

All national research programs include as part of their objectives the main recommendations made by the Scientific Committee in research and statistics. In particular, in 2004 a logbook system has been established for the supply vessels in order to get detailed information on its activities.

3. National Research Programs currently in place

3.1. Purse seine

The European Union has initiated a Data Collection and Management Programme for the period 2002 – 2006. This programme is aimed at procuring information on catch, effort and biological parameters of all the fisheries undertaken in European waters and/or by fleets flying the flags of community countries. Within this programme, a number of trips were covered by observers on tuna purse-seiners, both in the Indian and Atlantic oceans, so as to obtain information about tuna discards and species associated with these fisheries, namely cetaceans, sharks, swordfish, and turtles. Although the observer programmes are national, that is, performed independently by each country, the programme project: definition of forms, selection criteria, training course content, trip planning, etc, has been carried out in a coordinated fashion between both European countries with a tropical purse-seine fleet (France and Spain), and through their corresponding research institutes (IRD, IEO and AZTI).

In 2005 the collection of purse seine fishery and size data have continued as well as the biological sampling program (sex ratio, maturity) in the Seychelles cannery started in 2003.

To estimate the by-catch associated with the purse seine fishery, a total of 7 trips have been covered by observers in the Indian Ocean in 2003, 9 trips in 2004 and 10 in 2005 until now.

At the present time it is developing, in the Indian ocean, a project in which participate four Spanish boats (two purse seiners and two supplies). It is a pilot project in which participate the shipowners' company ALBACORA S.A. and the Spanish Oceanographic Institute (IEO). This pilot action mainly aims to make progress in improving the mode of fishing over objects where the impact on stocks of the most sensitive species (bigeye and yellowfin) and the ecosystem (bycatches) is concerned. To this end, acoustic data will be collected using up-to-date devices (sonar and echosounders) and subsequently analysed to establish criteria that will enable a reduction in catches of juveniles tropical tuna (yellowfin, and essentially, bigeye), based on acoustic selectivity. At the same time, experiments will be undertaken with several prototypes of artificial floating objects and their behaviour will be studied, to find a typology that will result in fewer bycatches (particularly focussing on the exclusion of accessory catches of turtles) without reducing catches of target species. Data will be collected for six months, from May to November 2005.

3.2. Longline

For the purpose of obtaining IOTC tasks during 2004, data continued to be gathered by means of surveys-samplings at the ports, through information provided by on-board scientific observers on long-distance vessels as well as other sources of voluntarily information. A total of 31,756 swordfish specimens were size sampled, accounting for an overall coverage in size

sampling of 36.6% of the total number of swordfish landed. The biological sampling of the swordfish has continued to obtain size-sex variables by spatial-temporal stratum. These combined sources of information are making it possible –albeit with some technical difficulties– for us to carry out swordfish task II in a 5°x 5°-month-type format of the fleet which was already sent to the IOTC. Additionally, catch data of by-catches of this fishery was also provided to the IOTC, updating all time period with activity of the surface longline fleet. Some preliminary estimation of incidental by-catches of turtles and seabirds were also provided.

Traditional opportunistic tagging is still being carried out tentatively on both swordfish and other associated species. The voluntary tagging done by the commercial fleet operating in the Indian Ocean has continued to be promoted, just as the scientific observers have continued the opportunistic tagging of swordfish and other species such as pelagic sharks and billfish. Contact with the fleet is being stepped up on a continuous basis in order to make quantitative and qualitative improvements in the recapture of tagged fishes. The same methods are still used to disseminate information to the longline fleet regarding tagging and recapture techniques as well as the identification of species and the communication of voluntary information. During the year 2004 a total of 38 live swordfish specimens and 64 by-catch fishes –mainly sharks– were tagged and released, and 3 blue shark recaptures were recorded.

In December 2004 starting an experimental cruise by two Spanish longliners with the permanent presence of scientific observers from the Spanish Oceanographic Institute with two main objectives: to experiment with new hooks and different types of baits in order to reduce the marine turtle catches and to explore the possibilities of developing a new longline fishery targeting on tropical tuna. Until now 460 fishing operations were carried out, 67 tunas were tagged (opportunistic tagging) and 24 turtles were caught and released live.

4. Any other relevant information

Thirteen documents have been presented to the different working parties:

IOTC-2005-WPBy-INF01, IOTC-2005-WPBy-INF02, IOTC-2005-WPBy-11, IOTC-2005-WPBy-12, IOTC-2005-WPBy-13, IOTC-2005-WPBy-14, IOTC-2005-WPTT-17, IOTC-2005-WPTT-18, IOTC-2005-WPTT-20, IOTC-2005-WPTT-23, IOTC-2005-WPTT-24, IOTC-2005-WPTT-25 and IOTC-2005-WPTT-26.

Six documents were submitted to the Bycatch group (IOTC-2005-WPBy) and seven papers were submitted to the Tropical Tunas Working Group (IOTC-2005-WPTT). One is an overview of aspects related to the reproduction of the blue shark in the Atlantic, Indian and Pacific oceans on the basis of over 80,000 observations and the other deals with tagging-recapture activities of large sharks. Both documents were presented to the group as reports: **IOTC-2005-WPBy-INF01** and **IOTC-2005-WPBy-INF02**. Moreover, another document was presented on the scientific estimations of the bycatch landings carried out by the Spanish surface longline fleet over the 2001-2003 period (**IOTC-2005-WPBy-14**), which has made it possible to update the time series of data previously reported. Some preliminary estimations on sea birds and turtles by-catch on research cruises are provided in document previously cited. Paper **IOTC-2005-WPBy-11** presents catch ratios, in number of specimens per 1,000 hooks for type of hook-bait in an experimental cruise carried out by the Spanish Oceanographic Institute. Document **IOTC-2005-WPBy-12** presents information about a pilot project aimed to make progress in improving the mode of fishing over objects where the impact on stocks of the most sensitive species and the bycatches is concerned. **IOTC-2005-WPBy-13** shows some of the results obtained, by purse seiner observers, under the National Plan undertaken by the IEO. **IOTC-2005-WPTT-17** document presents standardized catch rates for yellowfin for the European purse seine fleets. Paper **IOTC-2005-WPTT-18** presents summary statistics of the purse seiner Spanish fleet fishing in the Indian Ocean from 1984 to 2004. Document **IOTC-2005-WPTT-20** presents the preliminary sex ratio results corresponding to yellowfin tuna obtained by observers in experimental Spanish longline fishery. Paper **IOTC-2005-WPTT-23** shows summarized statistics of the main purse seine fleets fishing in the Indian Ocean. Stock assessment of Indian yellowfin tuna by a Bayesian surplus production model was presented in **IOTC-2005-WPTT-24**. Paper **IOTC-2005-WPTT-25** shows an Age-structured production model for the assessment of Indian Ocean yellowfin tuna under Bayesian and semi-bayesian variants and **IOTC-2005-WPTT-26** presents a tentative assessment of Indian Ocean yellowfin tuna using CASAL, an integrated length-based model.

Class	50-400	401-600	601-800	801-1200	1201-2000	>2000	total	C.Cap.	Sup p	VAS*
1984	-	-	2	5	5	0	12	5343	-	-
1985	-	-	2	5	7	0	14	9142	-	-
1986	-	-	2	5	3	0	10	8793	-	-
1987	-	-	2	4	6	0	12	10504	-	-
1988	-	-	2	6	8	0	16	14361	-	-
1989	-	-	3	8	9	0	20	20050	-	-
1990	-	-	3	8	9	0	20	17908	-	-
1991	0	0	3	6	8	0	17	16568	-	-
1992	0	0	1	6	11	0	18	16711	-	-
1993	0	0	1	6	11	1	19	18953	-	-
1994	0	0	2	4	11	1	18	18779	-	-
1995	0	0	2	5	11	1	19	20908	-	-
1996	0	0	2	6	13	1	22	24090	-	-
1997	0	0	2	6	14	1	23	26128	-	-
1998	0	0	2	6	12	0	20	21243	-	-
1999	0	0	2	6	12	0	20	20260	6	7
2000	0	0	1	7	9	0	17	19473	7	9
2001	0	0	1	7	9	0	17	20479	5	5
2002	0	0	1	6	10	1	18	20490	8	9
2003	0	0	1	6	9	2	18	21007	8	9
2004	0	0	1	4	10	5	20	23832		

(*) Vessel associated with supply

Table 1. Number of Spanish Purse seiners by category, carrying capacity in tons, number of supplies used in association with spanish boat and number of vessels fishing in association with supplies 1984 - 2004.

YEAR	F.DAYS	S.DAYS
1984	1713	1432
1985	2846	2379
1986	2634	2161
1987	2938	2300
1988	3331	2613
1989	5164	4241
1990	5006	4205
1991	4325	3544
1992	4296	3591
1993	4565	3842
1994	4463	3771
1995	5221	4470
1996	5793	4925
1997	6407	5584
1998	5644	4888
1999	5224	4496
2000	4526	3825
2001	4940	4214
2002	4570	3889
2003	4468	3671
2004	4730	3891

Table 2. Nominal fishing effort in fishing days, searching days and standardized fishing days of the purse seine Spanish fleet (1984 – 2004).

TOTAL CATCH BY SPECIES					
YEAR	YFT	SKJ	BET	ALB	TOTAL
1984	11453	6393	759	197	18802
1985	18431	18643	1330	145	38549
1986	20030	19108	1845	0	40983
1987	26301	27936	4974	4	59215
1988	44948	39742	6810	65	91565
1989	41146	64003	5863	0	111012
1990	43728	47926	4867	145	96666
1991	44023	41790	6005	1066	92923
1992	37836	46694	3638	1461	89629
1993	47792	51272	5418	904	105385
1994	43128	61608	5924	1773	112433
1995	65143	69587	12233	561	147524
1996	59431	66276	11374	826	139134
1997	60977	62914	15897	1029	141025
1998	38565	58646	11245	269	108725
1999	51875	74285	16034	232	142426
2000	52070	77187	10769	410	140872
2001	47571	68346	7930	339	124389
2002	53205	91462	11096	217	156386
2003	78968	88035	8544	520	176200
2004	80810	64393	8634	76	154106

Table 3. Spanish purse seiners total catch by species in the Indian Ocean, 1984-2004.

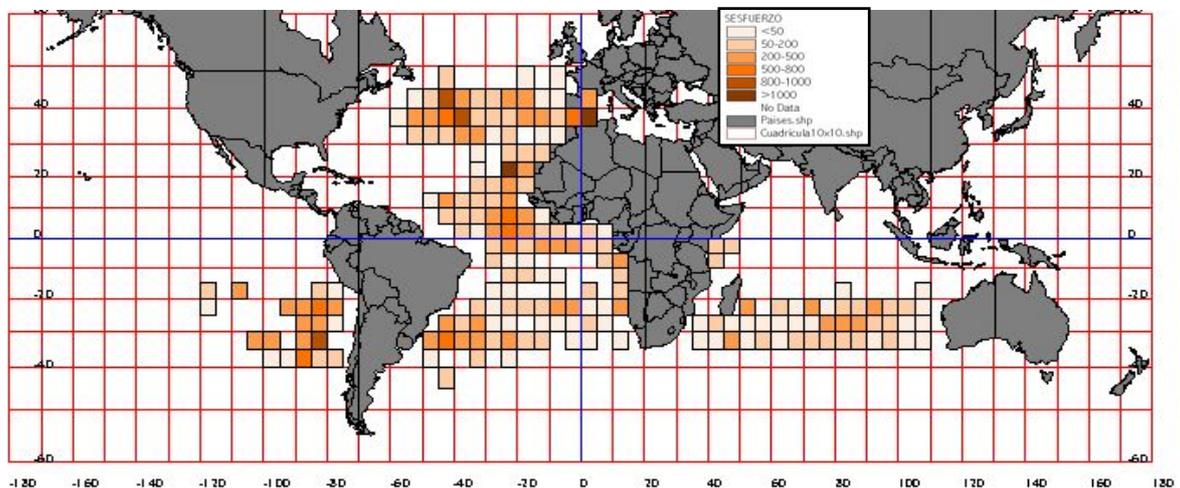


Figure 1. Nominal effort in thousands of hooks carried out by the Spanish surface longline fleet in the year 2003.