

CATCH COMPOSITION

Analysis of data from the
Observers Program

(2021-2023)

6M PROGRESS REPORT 2024



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May 2024



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1. Main conclusions

For operative purposes for the global analysis “**Catch composition**” means all fish species interacting with the fishery in this context, not only the “catch retained” part. It refers to “**Interaction**”, meaning in this case all specimens that interact with the gear and get hooked, being either caught and retained on board or discarded

> Data from the observers programme shows that two species make up most of the species’ interactions/catches: Blue shark (BSH) and Swordfish (SWO). Both species together make most of the catch with ~ 90% of the total weight for the three years analysed for the whole Atlantic.

> Blue shark is by far the main species caught in the North and South Atlantic, representing about the 58% and 66% respectively, of the total individuals recorded for the three years.

> Swordfish is the second of the list for the North and South Atlantic with 31% and 24% respectively of the total “catch”

> The third species in weight in the North is the Short fin mako, representing 4,20% for the North and Black marlin with 3,23%.

> The third species in weight in the South is the Blue marlin with 3,34%, followed in 4th position by Short fin mako, which represents only 1,66%.

> In the North and South, the rest of the species make each one less than the 1% of the total catch weight, being most of them even under 0,1%.

>According to data, all these species grouped (Blue shark, Swordfish, Shortfin mako, Blue marlin, Black Marlin and Big Eye Tuna), which are allowed to be retained -except SMA mako, which is released- make the 99% of the catch, or, 96% without considering SMA mako (2,86%) so, it can be said the discard rate would be around 4%. The rest of species represent around 1% of the total weight, as shown in table 1.

> For the whole Atlantic shortfin mako is the main species discarded/released (63,55% of the total discards fraction), followed by swordfish (9,70%) and the Blue shark (9,52%).

> ETP sharks interacting and discarded/released: Mako sharks n.e.i (3,81%), Silky shark (2,16%), Thresher sharks n.e.i (2,08%), Bigeye thresher (2%), and Oceanic whitetip shark with a sparse 1,33%. Therefore, Shortfin mako, Swordfish and Blue shark make most of the discarded fraction with almost 83%, for different reasons for each species.

> On the other hand, all protected shark- species (without the recent banned SMA mako) amount just 13,87% of the discarded (representing the same species just 0,44% of the total “catch” of all species together (total interaction: retained + discards).

> These figures prove the long line fishery is highly selective, representing the BSH and SWO together around the 89% in the North and 90% in the South.

> Interaction with ETPs species is very low, being the following the main species and genus interacting with the fishery:

Sharks (*Alopias spp*, *Sphyrna ssp*, *Galeocerdo cuvier*, *Carcharhinus spp*, *Lamna nasus*, *Isistius brasiliensis*, etc); **Mobulidae spp**; **Rays spp**, etc; **Mola mola**, **Turtles** (*Lepidochelys olivacea*, *Chelonia mydas*); **Marine Mammals** (*Tursiops truncates*, *Stenella clymene*, *Megaptera novaeangliae*, *Pseudorca crassidens*); **seabirds** (*Morus bassanus*, *Thalassarche chrysostoma*)].

> Loggerhead turtle makes most of the interactions of marine turtles (68% in North Atlantic and 37% in South), followed by Leatherback turtle turtles (26% in North Atlantic and 15% in South) being released alive more than 80-90% of specimens of both species.

> Fishermen release those ETPs species specimens in accordance with their commitment with sustainability of the fishery, following the protocol of best practice to safe handling and release of sharks and turtles.

2. The “Observers program”

In 2017 the Observers Program for the Spanish long line fishing fleet operating in ICCAT waters started to be implemented (as well as in other RFMO). Observers coverage (on board biologists and electronic observers) has increased since then and the reporting scheme has been progressively improving data recording quality and facilitating the posterior data management. This has been possible thanks to the involvement of the industry to collaborate and establishing a common methodology for data collection and reporting system, giving this way continuity to previous efforts on the matter.

Thus, the data collection form was finally standardized in 2020-2021, in accordance with ICCAT requirements: “Harmonization of the reporting system for Observers program (Data collection form and reporting system)” to enhance the data analysis. This task was largely enhanced the subsequent data collection, processing and analysis phase by the IEO (for SGP), and so the subsequent data submitted to DGMARE (the CPC in ICCAT) which finally is submitted to ICCAT.

Single Observers Program 2022-2023

Therefore, as there were observers’ campaigns from the IEO and since 2017 OPP’s program observer, in 2022 SGP (with the involvement of the industry) and IEO agreed to implement a joint “Programa de Observadores único” (Single Observers Program) to optimise the efforts made by the fleet, the observers, IEO scientists and the public fisheries manager (SGP). This fruitful interaction allows to optimizing work and resources while generating synergies to produce more and better data on the fishery as requested by ICCAT. Detailed information on the form can be found in the Annual Reports 2021 and 2022 (Action 3 section). The last 2024 update can be found on the factsheet “Annual training session for observers of surface long-line fisheries. Madrid. 2024” in the Action 3 of this May 2024 semestral report.

The IEO (Spanish Institute of Oceanography) is a public research institution dedicated to marine sciences, especially to produce scientific knowledge on sustainability of fishing resources and the marine environment. The IEO is subordinate to the Ministry of Science, Innovation and Universities and it is the scientific advisor for the SGP-MAPA (General Secretariat of Fisheries-Ministry of Agriculture, Fisheries and Food), the Spanish public administration responsible for fisheries. As such, it is the scientific representative of Spain in most of the forums and international fisheries organizations. The IEO has been working with the industry since the fishery began to operate in the high seas in the 70-80s of the XXI century. As a research and advisor institution on fisheries for the Spanish fisheries department, applied research teams have been and are involved in data collection for scientific purposes and management advice.

3. The Observers Form for data collection

The form with the structure, contents, parameters and rationale of the harmonized form used by the observers in ICCAT waters comprises a wide range of key biological parameters for target species, discards, sharks fecundity, marine birds, marine mammals and marine turtles, etc., which are processed and analysed annually by the IEO and wrapped to be delivered to the SGP. (Detailed information on the form, structure, contents, guidelines to fulfil and training handbook are available in “Annual training session for observers of surface long-line fisheries. Madrid. 2024”, Action 3 of this May 2024 semestral report).

• Se deben enviar en formato XLS para su procesado.

- Marea
- Lances
- Capturas
- Interacciones con tortugas
- Interacciones con aves
- Interacciones con cetáceos
- Avistamientos

- Aparejos
- Lances
- Registro de capturas
- Registro de tortugas
- Registro de aves marinas

The screenshot shows the full Excel spreadsheet form. It includes a header with the Spanish Ministry of Agriculture, Fisheries and Food logo and name. A prominent red warning box states: "EN NINGÚN CASO SE MODIFICARÁN/ANADIRÁN/ELIMINARÁN LAS FILAS Y LAS COLUMNAS DE ESTE ESTADILLO. EL OBSERVADOR DEBE LIMITARSE A CUBRIR CADA CAMPO CON EL FORMATO Y LA INFORMACION REQUERIDA." Below this, the form is organized into sections for trip data (Barco, Marea, Puerto de Salida, Puerto de Llegada, etc.), gear information (Pabellón, Matricula, IMO, etc.), and observation data. At the bottom, there are tabs for different categories: MAREA, LANCES, CAPTURAS, INTERACCION TORTUGAS, INTERACCION AVES, INTERACCION CETACEOS, and AVISTAMIENTOS.

Main contents of the FORM:

- > Fishing trip data (Marea)
- > Lances (Fishing Set)
- > Catches:
 - Nº Fishing set/haul & date & position; gear and bait; mitigation measures.
 - Catches: Species name, Retained/Discarded, Length, Length type, Weigh, Sex, Gonadal status, Fate-Use, Predation, Predator type, Hook position, observer observations.

> Turtles interaction:

Species, Length, CCC (Curved Carapace Length), ACC (Curved Carapace Width), interaction with the gear, hooked, entangled, status, fate, observer observations. Data linked to the fishing set date and position.

> Birds interaction:

Species, interaction with the gear, hook position, entanglement, status, fate, observer observations. Data linked to the fishing set date and position

> Cetaceans interaction: date, species, geographical position, vessel activity, n° of individuals sighted, distance, observer observations.

> Sighting (turtles, seabirds, cetaceans), but not interacting with the gear

> Codes and instructions.

Therefore, substantial ecological and biological information are generated annually as the bases for the IEO reports on the species. Some of those are published as papers or technical reports in the framework of ICCAT. It is not the aim of FIP Blues to do that scientific work as it is IEO and other research institutions the responsible for that. However, it is worth to note that as more information is currently available compared to previous years and, specific ad hoc reports on ecological and biological aspects could be available to evaluators, on previous request. Those reports might be prepared by the IEO and SGP in accordance with the collaboration basis for FIP Blues.

4. Results of data analysis

A general analysis of the relative species composition from observers programme data series is provided, complementing this way the “Catch composition” report of 2022 from eLogbook data (“the DEA” revision, to be updated in the annual report). Data have been processed to provide absolute and relative distribution of each species within the global catch for North, South and “Whole Atlantic”.

FIPBLUES is working in a comprehensive final report on catch composition as the result of the tasks to improve data and information on the fisheries as stated in the Action 2. The aim is to obtain a substantial improvement and increase of the information on the species integrating analytics of data from the DEA (e-logbook) and the Observers program at the end of the FIP in 2024.

These data correspond to a total of 49 fishing trips or “campaigns” of a fishing vessel with observer (biologist on board or electronic observation) for the period 2021-2023, distributed as follows:

Year	Nº fishing trips-campaigns with Observer		Days observed
	North	South	
2021	12	4	845
2022	11	9	743
2023	8	5	945
Total	31	18	2.533

Species composition is shown in the following tables for North Atlantic and South Atlantic (data 2021-2023).

Species interaction with the fishery

Interactions, in this case, meaning all species that interact with the gear and “is hooked”, being either caught and retained or afterwards discarded. The species composition for the period 2021-2023 is shown in the table as for North Atlantic, South Atlantic and “whole Atlantic” (North and South), with the official form finally standardised for all OPPs and companies.

Data for species is provided in weigh (kg) as well as percentage of the total weigh for each species.

Data provided by the SGP (Spanish Fisheries Department) only for analytical purposes, with the correspondent obligation of confidentiality and data protection respect. Therefore, we kindly ask the evaluators to keep the same confidentiality.

4.1 All species interacting with the fishery (Without differentiation between “catch” or “discard”).

This concerns species interacting with the fleet of Long Line expressed in Weight and its Percentage for each species in North, South and Whole Atlantic. After data processing for the period 2021-2023 we have got the following table:

Table 1. Total species interaction (Weigh in kg percentage weight)

SPECIES All interactions	North Atlantic	N %	South Atlantic	S %	Whol Atlantic	Whole At. %
BSH_Blue shark	1.500.260,24	58,37%	1.810.189	66,19%	3.310.449,43	62,40%
SWO_Swordfish	805.899,04	31,35%	657.290	24,03%	1.463.189,01	27,58%
SMA_Shortfin mako	107.841,45	4,20%	44.036	1,61%	151.877,63	2,86%
BUM_Blue marlin	1.118,61	0,04%	86.228	3,15%	87.346,73	1,65%
BLM_Black Marlin	83.130,00	3,23%	10.586	0,39%	93.716,40	1,77%
BET_Thunnus obesus	15.819,04	0,62%	59.238	2,17%	75.057,41	1,41%
LEC_Escolar negro	15.453,48	0,60%	13.592	0,50%	29.045,70	0,55%
YFT_Yellow Fin Tuna	6.433,71	0,25%	14.435	0,53%	20.868,42	0,39%
ALB_Albacore	12.246,97	0,48%	3.615	0,13%	15.862,05	0,30%
SAI_Atlantic sailfish	1.976,00	0,08%	7.160	0,26%	9.136,43	0,17%
SSP_Shortbill spearfish		0,00%	7.214	0,26%	7.214,30	0,14%
MAK_Mako sharks	7.070,15	0,28%	72	0,00%	7.141,97	0,13%
FAL_Silky shark	19,50	0,00%	3.394	0,12%	3.413,88	0,06%
THR_Thresher sharks nei	3.083,30	0,12%	97	0,00%	3.180,60	0,06%
BTH_Bigeye thresher	2.481,20	0,10%	579	0,02%	3.060,33	0,06%
WAH_Wahoo	871,30	0,03%	1.986	0,07%	2.857,60	0,05%
DOL_Common dolphinfish	1.011,89	0,04%	1.367	0,05%	2.379,13	0,04%
BFT_Atlantic bluefin tuna	2.050,70	0,08%		0,00%	2.050,70	0,04%
OCS_Oceanic whitetip shark		0,00%	2.026	0,07%	2.025,94	0,04%
MLS_Striped marlin	220,29	0,01%	1.788	0,07%	2.008,26	0,04%
(blank)		0,00%	1.637	0,06%	1.636,66	0,03%
OIL_Oilfish	824,61	0,03%	776	0,03%	1.600,61	0,03%
WHM_Atlantic white marlin	93,50	0,00%	1.442	0,05%	1.535,50	0,03%
SPY_Hammerhead sharks, nel	160,00	0,01%	1.290	0,05%	1.450,00	0,03%
LMA_Longfin mako	0,00	0,00%	764	0,03%	764,10	0,01%
TIG_Tiger shark	645,00	0,03%	27	0,00%	672,00	0,01%
SPZ_Smooth hammerhead		0,00%	611	0,02%	611,26	0,01%
MNT_Manta rays		0,00%	590	0,02%	590,00	0,01%
SPF_Longbill spearfish	91,60	0,00%	418	0,02%	509,56	0,01%
MOP_Sunfish		0,00%	500	0,02%	500,00	0,01%
RSK_Requiem sharks nei	436,65	0,02%		0,00%	436,65	0,01%
PLS_Pelagic stingray	87,80	0,00%	335	0,01%	423,22	0,01%
MOX_Ocean sunfish	150,00	0,01%	231	0,01%	381,09	0,01%
BIL_Marlins,sailfishes,etc. nei		0,00%	219	0,01%	219,45	0,00%
ALV_Thresher	190,00	0,01%	4	0,00%	194,00	0,00%
TUN_Tunas nei	188,42	0,01%		0,00%	188,42	0,00%
SPK_Great hammerhead		0,00%	176	0,01%	176,28	0,00%

BXQ_Marlins nei		0,00%	166	0,01%	166,40	0,00%
POR_Porbeagle	75,25	0,00%	85	0,00%	160,25	0,00%
SKY_Kimberley grunter		0,00%	135	0,00%	135,00	0,00%
DLP_Dolphins nei	130,00	0,01%		0,00%	130,00	0,00%
RMJ_Spinetail mobula		0,00%	128	0,00%	127,58	0,00%
OPA_Sailfin eel	120,00	0,00%		0,00%	120,00	0,00%
CCG_Galapagos shark		0,00%	108	0,00%	108,20	0,00%
PSK_Crocodile shark	0,00	0,00%	103	0,00%	103,09	0,00%
TTL_Loggerhead turtle	84,00	0,00%	0	0,00%	84,00	0,00%
PSY_Phasmatocottus ctenopterygius		0,00%	64	0,00%	64,00	0,00%
SKJ_Skipjack tuna	27,20	0,00%	32	0,00%	59,00	0,00%
OII		0,00%	52	0,00%	52,00	0,00%
YHF_Misty grouper		0,00%	44	0,00%	44,00	0,00%
GBA_Great barracuda	40,00	0,00%		0,00%	40,00	0,00%
SKH_Various sharks nei	29,70	0,00%		0,00%	29,70	0,00%
WHH-Spearfishes nei		0,00%	21	0,00%	21,10	0,00%
TST_Sickle pomfret	13,00	0,00%		0,00%	13,00	0,00%
ALX_Long snouted lancetfish	9,00	0,00%		0,00%	9,00	0,00%
BRZ_Pomfrets, ocean breams nei	8,00	0,00%		0,00%	8,00	0,00%
Dol_Smooth dosinia		0,00%	8	0,00%	8,00	0,00%
SKX_Sharks, rays, skates, etc. nei	8,00	0,00%		0,00%	8,00	0,00%
BRU_Rainbow runner		0,00%	7	0,00%	7,00	0,00%
CBG_Driftfish	5,00	0,00%		0,00%	5,00	0,00%
UBP_Cape fathe	5,00	0,00%		0,00%	5,00	0,00%
BRA_Brama spp	4,00	0,00%		0,00%	4,00	0,00%
TAL_Big-scale pomfret	3,00	0,00%		0,00%	3,00	0,00%
BAZ_Barracudas, etc. nei		0,00%	1	0,00%	1,00	0,00%
TOTAL	2.570.415,60	100%	2.734.871	100%	5.305.286,24	100%

Whole Atlantic Ocean

For the entire Atlantic data shows ratio for each species in the “total catch” (without distinction between retained catch and discards) relation of species proportion in line with that from the analysis carried out for log-books data: blue shark and swordfish together make most of the long line catches with ~ 90% of the total weight for the three years analysed for the whole Atlantic.

They are followed by shortfin mako to a much lesser extent of only 2,86%, and then blue marlin, black marlin and bigeye tuna with less than 2% each one. Escolar, yellow fin tuna and albacore would make quite lower than 1% each.

According to this data, all these species grouped (which are allowed to be retained, except SMA mako) make the 99% of the catch, or, 96% without considering SMA mako (2,86%) so, it can be said the discard rate would be around 4%. The rest of species represent around 1% of the total weight, as shown in table 1.

North Atlantic

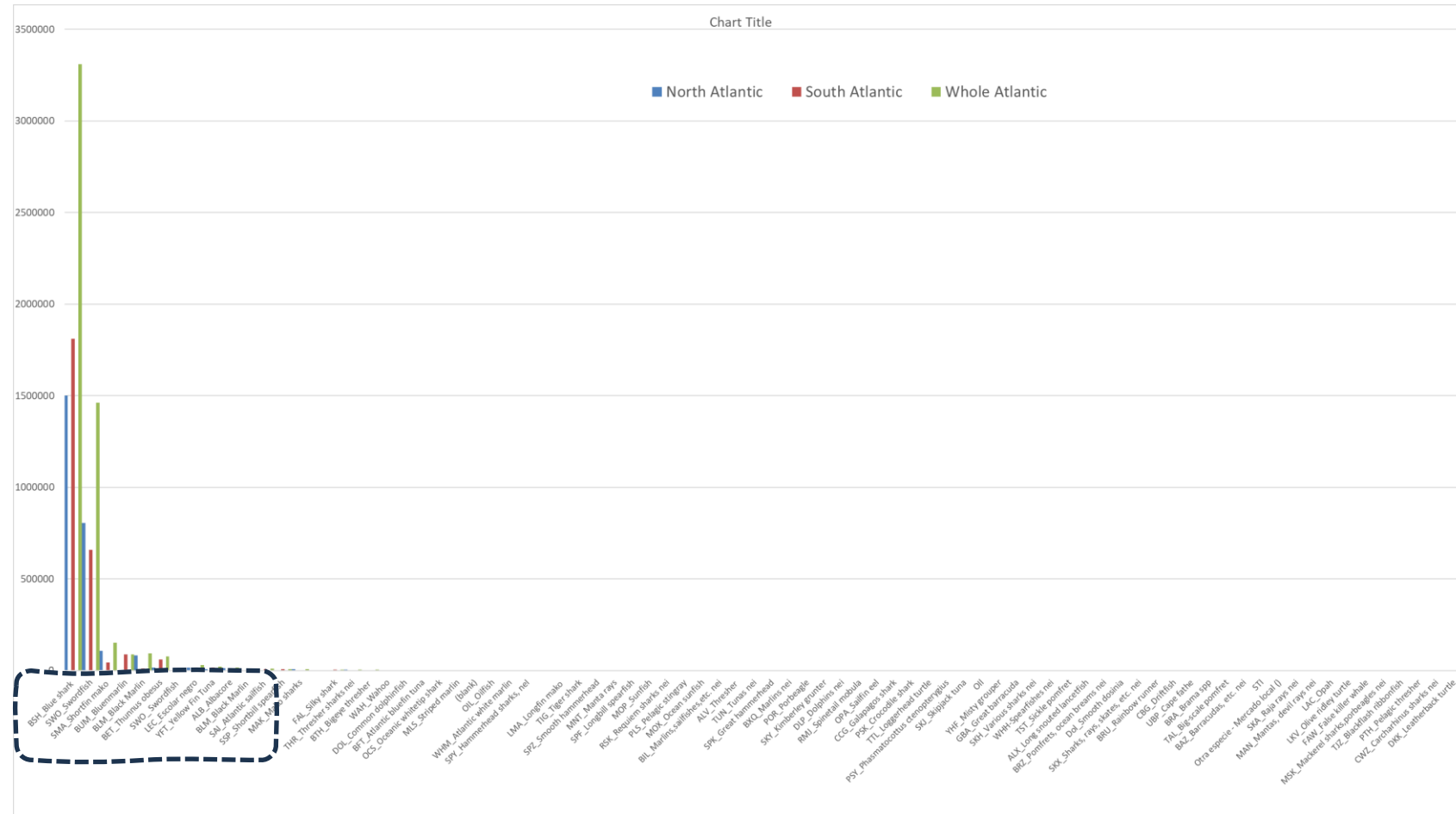
Blue shark is by far the principal species caught in the North, representing 58,37% of the total weight for the three years analysed; the second species in weight is the swordfish with ~31,35% (both species mount ~90% of the total weight for the three years analysed). The third one in terms of weight is the SMA mako, representing 4,20% of the total weight in the North. Note that SMA cannot be retained on board by the Spanish fleet as it is currently prohibited by decision of the Spanish fisheries department (SGP-MAPA) and so, all individuals are released, in accordance with ICCAT related recommendations. They are followed by black marlin with 3,53%, and with less than 1% each one there are big eye tuna, escolar, yellow fin tuna and albacore.

All these species grouped (except SMA mako, with 4,20%) amount 95% of the catch allowed to be retained, so, it can be said the discard rate for the North would be around 5%. The rest species represent much less than 1% of the total weight, as shown in table 1.

South Atlantic

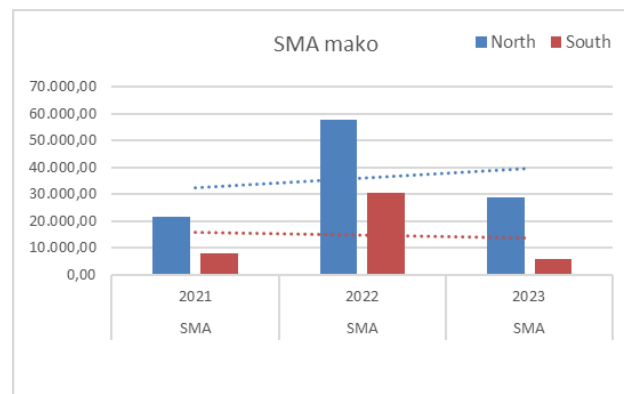
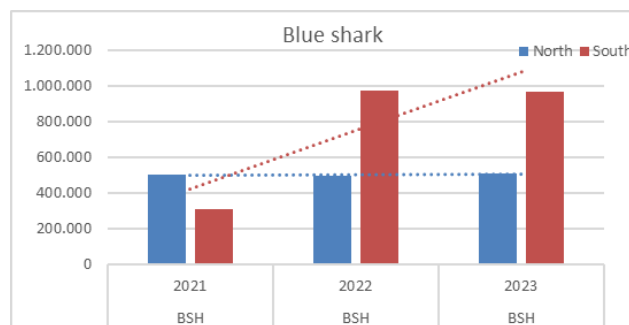
Blue shark is also the main species caught in the South, representing 66,19% of the total weight; the second one in total weight is swordfish with 24,03% (both species amount 90% of the total weight for the three years analysed). The third one in terms of weight is blue marlin with 3,15%, and then is followed by bigeye making the 2,17%, short fin mako with only 1,61%, and then come black marlin, escolar, yellow fin tuna and albacore with less than 1% of the total weight each. (Note that currently short fin mako cannot be retained on board currently by the Spanish fleet, as for the North).

Figure 1. Species composition for North, South and whole Atlantic, for all interactions (catches + discards). 2021-2023



Evolution of “interactions” (catches and discards together) for the three mains species for 2021-2023:

Species	Year	North	South	Whole Atlantic
BSH	2021	499.613,81	305.850,46	805.464,27
BSH	2022	494.924,54	974.821,86	1.469.746,40
BSH	2023	505.721,89	965.749,26	1.471.471,15
SWO	2021	291.576,60	98.051,17	389.627,77
SWO	2022	362.382,46	317.689,67	680.072,14
SWO	2023	151.939,98	209.754,22	361.694,20
SMA	2021	21.449,44	7.874,45	29.323,89
SMA	2022	57.550,35	30.452,15	88.002,50
SMA	2023	28.841,66	5.709,59	34.551,25



4.2 Catch retained

Species interacting with the fleet of Long Line that are retained on board, in accordance with ICCAT and EU rules. It is expressed in Weight and its Percentage for each species in North, South and Whole Atlantic:

Whole Atlantic Ocean

For the entire Atlantic data shows the ratio for each species of the “total retained catch”: blue shark (64%) and swordfish (27%) make most of the long line catches with ~ 91% of the total weight. They are followed to a much lesser extent by blue marlin, black marlin and bigeye tuna, the three of them lower than 2% each one.

North Atlantic

Blue shark is by far the principal species caught and retained in the North, representing ~61% of the total weight for the three years analysed; the second species in weight is the swordfish with ~33% (both species amount ~91% of the total weight for the three years analysed). They are followed by black marlin with 3,38%.

South Atlantic.

Blue shark is also by far the main species caught in the South representing 67% of the total weight and the second one in importance is the swordfish, with 24% (both species amount 90% of the total weight for the three years analysed). The third one in terms of weight is the blue marlin with 3,18%, and then is followed by bigeye making the 2,18%.

Tabla 2. Retained catch

SPECIES RETAINED	North	%North	South	%South	Total Atlantic	%Total Atlantic
BSH_Blue shark	1.496.852,90	60,91%	1.798.825,52	66,82%	3.290.875,15	63,91%
SWO_Swordfish	799.762,25	32,54%	648.391,88	24,09%	1.412.444,94	27,43%
BUM_Blumenmarlin	646,61	0,03%	85.619,12	3,18%	86.265,73	1,68%
BLM_Black Marlin	83.130,00	3,38%	10.390,40	0,39%	81.842,40	1,59%
BET_Thunnus obesus	15.615,04	0,64%	58.648,57	2,18%	74.263,61	1,44%
SMA_Shortfin mako	18.775,82	0,76%	35.594,30	1,32%	54.370,12	1,06%
LEC_Escolar negro	15.257,48	0,62%	13.418,32	0,50%	28.675,80	0,56%
YFT_Yellow Fin Tuna	5.225,71	0,21%	14.309,60	0,53%	19.535,31	0,38%
ALB_Albacore	12.246,97	0,50%	3.576,08	0,13%	15.823,05	0,31%
SAI_Atlantic sailfish	1.976,00	0,08%	7.098,40	0,26%	9.074,40	0,18%
SSP_Shortbill spearfish		0,00%	7.214,30	0,27%	7.214,30	0,14%
WAH_Wahoo	871,30	0,04%	1.902,80	0,07%	2.774,10	0,05%
DOL_Common dolphinfish	995,31	0,04%	1.348,56	0,05%	2.343,87	0,05%
MLS_Striped marlin	220,29	0,01%	1.787,97	0,07%	2.008,26	0,04%

BFT_Atlantic bluefin tuna	1.861,00	0,08%		0,00%	1.861,00	0,04%
OIL_Oilfish	790,77	0,03%	768,00	0,03%	1.558,77	0,03%
WHM_Atlantic white marlin	93,50	0,00%	1.442,00	0,05%	1.535,50	0,03%
MAK_Mako sharks	1.319,97	0,05%		0,00%	1.319,97	0,03%
YFT_Yellow Fin Tuna	1.158,00	0,05%		0,00%	1.158,00	0,02%
SPF_Longbill spearfish	91,60	0,00%	417,96	0,02%	509,56	0,01%
RSK_Requiem sharks nei	345,25	0,01%		0,00%	345,25	0,01%
LMA_Longfin mako	0,00	0,00%	238,50	0,01%	238,50	0,00%
BIL_Marlins,sailfishes,etc. nei		0,00%	219,45	0,01%	219,45	0,00%
BXQ_Marlins nei		0,00%	166,40	0,01%	166,40	0,00%
TUN_Tunas nei	142,82	0,01%		0,00%	142,82	0,00%
OPA_Sailfin eel	120,00	0,00%		0,00%	120,00	0,00%
FAL_Silky shark		0,00%	115,00	0,00%	115,00	0,00%
CCG_Galapagos shark		0,00%	108,20	0,00%	108,20	0,00%
SPY_Hammerhead sharks, nel		0,00%	90,00	0,00%	90,00	0,00%
POR_Porbeagle	75,25	0,00%		0,00%	75,25	0,00%
SKJ_Skipjack tuna	27,20	0,00%	31,80	0,00%	59,00	0,00%
OIL		0,00%	52,00	0,00%	52,00	0,00%
YHF_Misty grouper		0,00%	44,00	0,00%	44,00	0,00%
GBA_Great barracuda	40,00	0,00%		0,00%	40,00	0,00%
WHH<-Spearfishes nei		0,00%	21,10	0,00%	21,10	0,00%
TST_Sickle pomfret	13,00	0,00%		0,00%	13,00	0,00%
Dol_Smooth dosinia		0,00%	8,00	0,00%	8,00	0,00%
BRZ_Pomfrets, ocean breams nei	8,00	0,00%		0,00%	8,00	0,00%
BRU_Rainbow runner		0,00%	7,00	0,00%	7,00	0,00%
BRA_Brama spp	4,00	0,00%		0,00%	4,00	0,00%
PLS_Pelagic stingray		0,00%	4,00	0,00%	4,00	0,00%
TAL_Big-scale pomfret	3,00	0,00%		0,00%	3,00	0,00%
Total	2.457.669,05	100%	2.691.859,23	100%	5.149.565,00	100%

4.3 Discards

Discards are those specimens that interact with the gear but, for different reasons, are not retained onboard in accordance with ICCAT and EU rules. Here it is expressed in Weight and its Percentage for each species in North, South and Whole Atlantic.

Whole Atlantic Ocean

For the entire Atlantic, the ratio of each species within the total amount of discarded specimens, is shown (in weigh, kg).

Shortfin mako is the main species discarded of the total discards fraction with almost 63,55%; second, it is the swordfish with 9,70% and then Blue shark with 9,52%. In a much lower proportion, there are Mako sharks (3,81%), Silky shark (2,16%), Thresher sharks n.e.i (2,08%), Bigeye thresher (2%), and finally Oceanic whitetip shark with a scarce 1,33%. Therefore, Shortfin mako, Swordfish and Blue shark make most of discards with almost 83%.

On the other hand, protected shark species (without including the recent banned SMA mako) amount just 13,87% of the discarded fraction (representing the same species just 0,44% of the total “catch” of all species together (total interaction: retained + discards)).

North Atlantic

Shortfin mako makes most of the discards in the North, representing 79,17% of the total weight for the three years analysed; the second position is for swordfish with 5,40% closely followed by the group “mako sharks” (not determined) with 5,13% , and then Blue shark with 2,98%. That is, Shortfin mako, Swordfish, the group of “mako sharks” and Blue shark make 93% of the discarded fraction, and the 98% adding Thresher sharks. They would represent just 0.55% of the total “catch” of all species together (total interaction: retained + discards).

South Atlantic

In the south most of the discard consists of Blue shark with 27,46%, the swordfish with 21,50% and Shortfin mako with 20,68%, representing altogether the 70% of the total subset of discards. Taking into account only protected shark species (without the recent banned SMA mako) they amount just 21,5% of the discard portion. They would represent just 2% of the total “catch” of all species together (total interaction: retained + discards).

Tabla 3. Discard/released species

SPECIES DISCARDED	North	%	South	%	Total Atlantic	%
SMA_Shortfin mako	88.713,63	79,17%	8.441,89	20,68%	97.155,51	63,55%
SWO_Swordfish	6.054,99	5,40%	8.778,59	21,50%	14.833,57	9,70%
BSH_Blue shark	3.343,24	2,98%	11.210,67	27,46%	14.553,91	9,52%
MAK_Mako sharks	5.750,18	5,13%	71,82	0,18%	5.822,00	3,81%
FAL_Silky shark	19,50	0,02%	3.279,38	8,03%	3.298,88	2,16%
THR_Thresher sharks nei	3.083,30	2,75%	97,30	0,24%	3.180,60	2,08%
BTH_Bigeye thresher	2.481,20	2,21%	579,13	1,42%	3.060,33	2,00%
OCS_Oceanic whitetip shark		0,00%	2.025,94	4,96%	2.025,94	1,33%
SPY_Hammerhead sharks, nel	160,00	0,14%	1.200,00	2,94%	1.360,00	0,89%
BUM_Blumenmarlin	472,00	0,42%	609,00	1,49%	1.081,00	0,71%
TIG_Tiger shark	645,00	0,58%	27,00	0,07%	672,00	0,44%
SPZ_Smooth hammerhead		0,00%	611,26	1,50%	611,26	0,40%
MNT_Manta rays		0,00%	590,00	1,45%	590,00	0,39%

BET_Thunnus obesus	204,00	0,18%	378,80	0,93%	582,80	0,38%
LMA_Longfin mako	0,00	0,00%	525,60	1,29%	525,60	0,34%
MOP_Sunfish		0,00%	500,00	1,22%	500,00	0,33%
PLS_Pelagic stingray	87,80	0,08%	331,42	0,81%	419,22	0,27%
MOX_Ocean sunfish	150,00	0,13%	231,09	0,57%	381,09	0,25%
LEC_Escolar negro	196,00	0,17%	173,90	0,43%	369,90	0,24%
BLM_Black Marlin		0,00%	196,00	0,48%	196,00	0,13%
ALV_Thresher	190,00	0,17%	4,00	0,01%	194,00	0,13%
SPK_Great hammerhead		0,00%	176,28	0,43%	176,28	0,12%
SKY_Kimberley grunter		0,00%	135,00	0,33%	135,00	0,09%
DLP_Dolphins nei	130,00	0,12%		0,00%	130,00	0,09%
RMJ_Spinetail mobula		0,00%	127,58	0,31%	127,58	0,08%
YFT_Yellow Fin Tuna	50,00	0,04%	64,11	0,16%	114,11	0,07%
PSK_Crocodile shark	0,00	0,00%	103,09	0,25%	103,09	0,07%
RSK_Requiem sharks nei	91,40	0,08%		0,00%	91,40	0,06%
POR_Porbeagle		0,00%	85,00	0,21%	85,00	0,06%
TTL_Loggerhead turtle	84,00	0,07%	0,00	0,00%	84,00	0,05%
WAH_Wahoo		0,00%	83,50	0,20%	83,50	0,05%
PSY_Phasmatocottus c.		0,00%	64,00	0,16%	64,00	0,04%
SAI_Atlantic sailfish		0,00%	62,03	0,15%	62,03	0,04%
TUN_Tunas nei	45,60	0,04%		0,00%	45,60	0,03%
OIL_Oilfish	33,84	0,03%	8,00	0,02%	41,84	0,03%
ALB_Albacore		0,00%	39,00	0,10%	39,00	0,03%
DOL_Common dolphinfish	16,58	0,01%	18,69	0,05%	35,27	0,02%
SKH_Various sharks nei	29,70	0,03%		0,00%	29,70	0,02%
ALX_Long snouted lancetfish	9,00	0,01%		0,00%	9,00	0,01%
SKX_Sharks, rays, skates, etc. nei	8,00	0,01%		0,00%	8,00	0,01%
UBP_Cape fathe	5,00	0,00%		0,00%	5,00	0,00%
CBG_Driftfish	5,00	0,00%		0,00%	5,00	0,00%
BAZ_Barracudas, etc. nei		0,00%	1,00	0,00%	1,00	0,00%
Total	112.058,95	100%	40.830,05	100%	152.889,00	100%

Sharks

Except the blue shark, which is a target species, shortfin mako is the main species of those banned/protected sharks interacting with the fishery, but at low levels such 4,20% in the North and 1,61% in the South. This data is very significant since the species is currently under a rebuilding plan and, so, retention of specimens aboard is not allowed and must be immediately released. The retention on board of the by-catch of this species was allowed until 2021 in the North (2022 in the South), when ICCAT adopted recommendations (November

2021) allocating extremely low levels of TAC for both stocks and, consequently, the EU established a zero quote to its fleet for the next years.

It is clear that the interactions with the rest of prohibited shark species in the list (family Alopidae, family Sphyrnidae, oceanic whitetip shark, silky shark, porbeagle...) is extremely low (0,24% in North, 0,34% in South, 0,29% in total Atlantic), which in practice means just a few individuals.

Table 4. Sharks species interacting with the fishery (except blue shark)

Shark Species	North Atlantic	N %	South Atlantic	S %	Whole Atlantic	Whole At. %
SMA_Shortfin mako	107.841,45	4,20%	44.036	1,61%	151.877,63	2,86%
MAK_Mako sharks	7.070,15	0,28%	72	0,00%	7.141,97	0,13%
FAL_Silky shark	19,50	0,00%	3.394	0,12%	3.413,88	0,06%
THR_Thresher sharks nei	3.083,30	0,12%	97	0,00%	3.180,60	0,06%
BTH_Bigeye thresher	2.481,20	0,10%	579	0,02%	3.060,33	0,06%
OCS_Oceanic whitetip shark		0,00%	2.026	0,07%	2.025,94	0,04%
SPY_Hammerhead sharks, nei	160,00	0,01%	1.290	0,05%	1.450,00	0,03%
LMA_Longfin mako	0,00	0,00%	764	0,03%	764,10	0,01%
TIG_Tiger shark	645,00	0,03%	27	0,00%	672,00	0,01%
SPZ_Smooth hammerhead		0,00%	611	0,02%	611,26	0,01%
RSK_Requiem sharks nei	436,65	0,02%		0,00%	436,65	0,01%
ALV_Thresher	190,00	0,01%	4	0,00%	194,00	0,00%
SPK_Great hammerhead		0,00%	176	0,01%	176,28	0,00%
POR_Porbeagle	75,25	0,00%	85	0,00%	160,25	0,00%
CCG_Galapagos shark		0,00%	108	0,00%	108,20	0,00%
PSK_Crocodile shark	0,00	0,00%	103	0,00%	103,09	0,00%
SKH_Various sharks nei	29,70	0,00%		0,00%	29,70	0,00%
total	122.032,20	4,75 %	53.374	1,95%	175.405,88	3,31%

Therefore, all protected or banned sharks, including the SMA-short fin mako, would make the 3,31% of the “total catch” composition (meaning interactions in this analysis) for the whole Atlantic, and 4,75% and 1,95% for the North and South respectively.

But, without including short fin mako, the protected or banned sharks would make only the 0,44% of the “catch” composition for the whole Atlantic and only 0,55% and 0,34% for the North and South respectively.

Table 5. ETP Shark species without SMA

Shark species (without SMA)	North	%	South	%	Total Atlantic	%
TOTAL banned sharks	14.190,75	0,55%	9.338	0,34%	23.528,25	0,44%

Considering that SMA mako is a species that has been retained as bycatch until recently (scarce 2 years ago), that represents those percentages indicated above, and according to the observers program data series, it can be said that interaction of shark protected species is extremely low, being of 0,44% of the total weight, taking apart the SMA mako. Thus, this proves the high selectivity of this fishing metier and the low impact on the state of the populations of protected sharks in ICCAT area.

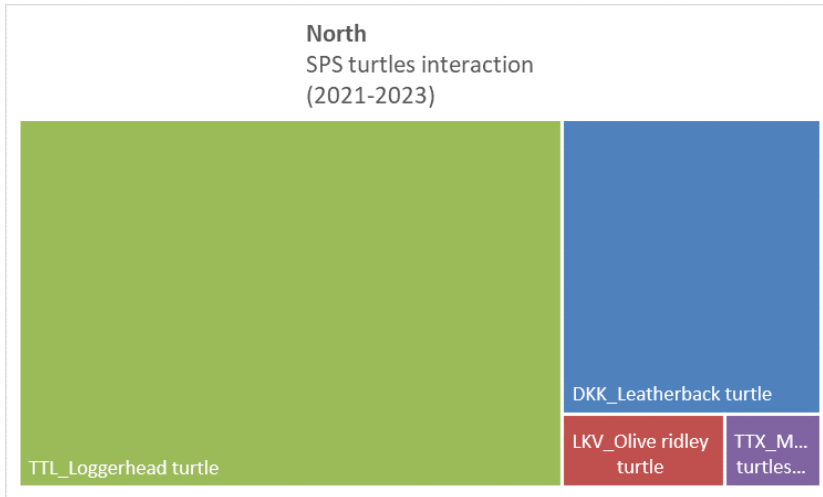
Other ETP fish species

Table 6. Other ETP fish species

Other ETP fish species	North Atlantic	N %	South Atlantic	S %	Whole Atlantic	Whole At. %
MNT_Manta rays		0,00%	590	0,02%	590,00	0,01%
MOP_Sunfish		0,00%	500	0,02%	500,00	0,01%
MOX_Ocean sunfish	150,00	0,01%	231	0,01%	381,09	0,01%

Turtles

North Atlantic

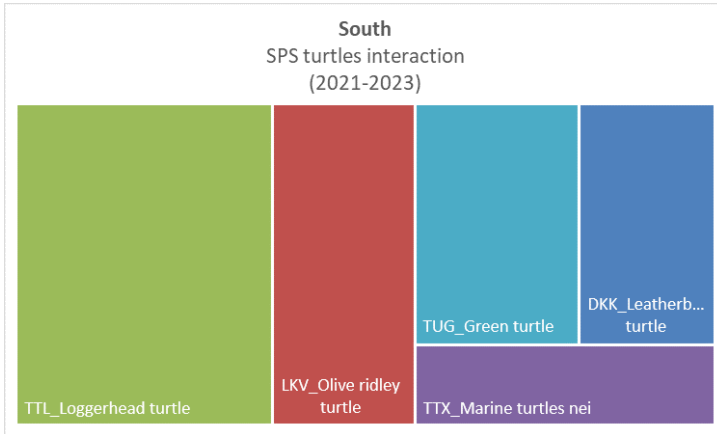


TTL_Loggerhead turtle makes by far most of the interactions of marine turtles in the North Atlantic with 68%, followed by DKK_Leatherback turtle, with 26%, making between both species 94%. Of these, 90% of the interactions of TTL_Loggerhead are released alive, and 97% of the DKK_Leatherback turtle. Considering all the species interactions in the south, 92% of them are released alive.

SPS turtles interaction (2021-2023)	North	%	Release Alive N.	%	Release Dead N.	%
DKK_Leatherback turtle	32	26%	31	97%	1	3%
LKV_Olive ridley turtle	5	4%	4	80%	1	20%
TTL_Loggerhead turtle	84	68%	76	90%	8	10%
TTX_Marine turtles nei	3	2%	3	100%	0	0%
TUG_Green turtle						
Total	124	100%	114	92%	10	8%

Interactions of DKK_Leatherback are mainly located off west Africa coast, within a latitude between the Sahara coast and Cape Verde. And other zona is between the waters of Açores and Canary islands. On the other hand, DKK_Leatherback interactions in the North are located north of those said before, towards mid-latitudes.

South Atlantic



TTL_Loggerhead turtle makes the major interaction of marine turtles in the South Atlantic with 37%, followed by LKV_Olive ridley turtle with 20%, TUG_Green turtle with 18% and DKK_Leatherback with 15%. Of these, 81% of the interactions of TTL_Loggerhead, 96% of the DKK_Leatherback, 69% of LKV_Olive ridley turtle with 20%, 55% of TTX_Marine turtles nei (no identified) and 28% of the TUG_Green turtle, are released alive. Considering all the species interactions in the north, 69% of them are released alive.

SPS turtles interaction (2021-2023)	South	%	Release Alive S.	%	Release Dead S	%
DKK_Leatherback turtle	54	15%	52	96%	2	4%
LKV_Olive ridley turtle	75	20%	52	69%	23	31%
TTL_Loggerhead turtle	136	37%	110	81%	25	18%
TTX_Marine turtles nei	40	11%	22	55%	18	45%
TUG_Green turtle	65	18%	18	28%	47	72%
Total	370	100%	254	69%	115	31%

Interactions of DKK_Leatherback in the South Atlantic are mainly located in the latitudes between 25°S-28°S, in the middle of the South Atlantic. On the other hand, DKK_Leatherback interactions in the South are located further north of those said before, towards the equator.

Marine Mammal and Seabirds interactions

SPECIES	North	South	Total Atlantic
DBO_Bottlenose dolphin	1	3	4
DCL_Clymene dolphin		2	2
DLP_Dolphins nei	1		1
FAW_False killer whale	3	5	8
HUW_Humpback whale		2	2
ODN>Toothed whales nei		3	3
SEK_South African fur seal		1	1
DIC_Grey-headed albatross		2	2
Total	5	18	23

There have been only 23 interactions for the three years, as shown in the table below. Data proves that, in practice, there are almost no interaction of the fishery with marine mammals and seabirds. The false killer whale is usually the main marine mammal interacting with the long line gear in the North and South Atlantic, which is also indicated in the e-logbook of fishing captains. False killer whale is an active predator that seeks for sharks and swordfishes to feed on their livers.

Usually, most of those specimens did not get hooked or entangled in the gear. On the contrary, the few interactions observed are due to the animals moving alongside the gear trying to eat (“depredation”) the bait on the hook. In this period 2021-2023, only 3 specimens (2 False killer whales and 1 Bottlenose dolphin) were hooked or entangled to the line until they were able to release themselves.

In relation to seabirds, for the 3 year period observers have recorded only two specimens of grey-headed albatross species hooked on the gear, which were finally released.