

**REPORT OF JAPAN'S SCIENTIFIC OBSERVER
PROGRAM FOR TUNA LONGLINE FISHERY IN THE
ATLANTIC OCEAN IN THE FISHING YEARS 2013 AND 2014**

Japan¹

SUMMARY

Japan's scientific observer program for longline fishery in the Atlantic Ocean has been continuously carried out in 2014 fishing years (FY). This document mainly provides the summary of collected data by observers in 2014 FY, and the summary in 2013 FY were also updated. In 2014 FY, 20 observer trips were conducted on Japanese tuna longline vessels in the entire Atlantic Ocean, while observers had 30 trips in 2013 FY. Total number of fishing operations with observers was 1,076 (3,136,837 hooks) in 2014 FY, while 1,564 (4,460,651 hooks) were monitored in 2013 FY. In each FY, more than 15,000 individuals were recorded by scientific observers. Details of trips and catch records were shown, and the coverage level based on the number of operating days was provided. Japan's observer programs covered 12.1% fishing activities in the entire Atlantic Ocean in 2014 calendar year, and also monitored 44.0% of the operations by Japanese longline vessels targeting Atlantic bluefin tuna in 2014 FY. The nominal CPUE (number of fish caught per 1000 hooks) by fishing area for major species were also calculated.

RÉSUMÉ

Le programme d'observateurs scientifiques du Japon encadrant la pêcherie palangrière de l'océan Atlantique a été mené sans interruption tout au long de l'année de pêche 2014. Le présent document fournit principalement un résumé des données collectées par les observateurs pendant l'année de pêche 2014 ; le résumé de l'année de pêche 2013 a également été mis à jour. Au cours de l'année de pêche 2014, 20 sorties d'observateurs ont été réalisées sur des palangriers thoniers japonais dans l'ensemble de l'océan Atlantique, tandis que les observateurs ont effectué 30 sorties au cours de l'année de pêche 2013. Le nombre total d'opérations de pêche avec observateurs était de 1.076 (3.136.837 hameçons) pendant l'année de pêche 2014, alors que 1.564 opérations de pêche (4.460.651 hameçons) avaient fait l'objet d'un suivi pendant l'année de pêche 2013. Au cours de chaque année de pêche, plus de 15.000 spécimens ont été enregistrés par des observateurs scientifiques. Des informations détaillées sur les sorties et les registres de capture ont été présentées et le niveau de couverture basé sur le nombre de jours d'opérations a été fourni. Au cours de l'année civile 2014, les programmes d'observateurs du Japon couvraient 12,1% des activités de pêche dans l'ensemble de l'océan Atlantique et ils contrôlaient également 44,0% des opérations des palangriers japonais qui ciblaient le thon rouge de l'Atlantique pendant l'année de pêche 2014. La CPUE nominale (nombre de poissons capturés pour 1.000 hameçons) par zone de pêche pour les principales espèces a également été calculée.

RESUMEN

El programa de observadores científicos de Japón para la pesquería de palangre en el océano Atlántico se desarrolló de forma continua durante el año pesquero (FY) 2014. Este documento proporciona sobre todo un resumen de los datos recopilados por los observadores en el año pesquero 2014; también se ha actualizado el resumen del año pesquero 2013. En el año pesquero 2014, se realizaron 20 mareas con observadores en los palangreros atuneros japoneses en todo el océano Atlántico, mientras que en el año pesquero 2013 hubo 30 mareas con observadores. El número total de operaciones de pesca con observadores ascendió a 1.076 (3.136.837 anzuelos) en el año pesquero de 2014, mientras que en el año pesquero de 2013 se observaron 1.564 operaciones de pesca (4.460.651 anzuelos). En cada año pesquero, los observadores científicos consignaron más de 15.000 ejemplares. Se presenta información detallada sobre las mareas y registros de captura, así como el nivel de cobertura basado en el

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número de días operativos. El programa de observadores de Japón cubrió el 12,1% de las actividades pesqueras en todo el Atlántico en el año civil 2014, y también hizo un seguimiento del 44,0% de las operaciones de los palangreros japoneses que se dirigen al atún rojo del Atlántico en el año pesquero de 2014. También se ha calculado la CPUE nominal (número de ejemplares capturados por 1.000 anzuelos) por zona de pesca para las principales especies.

KEYWORDS

Longline, Japan, Observer CPUE, Scientific observer, Tuna fisheries, Observer coverage level

Introduction

Japan has continuously conducted its national scientific observer programs on Japanese tuna longline vessels in the Atlantic Ocean since the mid-1990s, and this program have played a major role in response to the recommendations made by ICCAT since 1996. Various data have been collected through the observer programs, and that includes vessel attributes, gear configuration, species identification, biological sampling and various measurements on all observed catches. These collected data have been summarized until 2014, and been reported to SCRS meetings (Matsumoto and Miyabe, 1997, 1998, 1999, 2000, 2001; Matsumoto *et al.*, 2002, 2003, 2004, 2005; Matsumoto, 2006; Semba *et al.* 2007, 2008; Anon, 2012; Japan, 2013, 2014a, and 2014b).

This document overviews Japan's scientific observer programs conducted in the entire Atlantic Ocean, and provides the summary of collected data mainly from August 2014 to January 2015 which were in 2014 fishing years (FY, thereafter, fishing year starts from August to next July). The summary which were already reported in 2014 (Japan, 2014b) was revised, because many additional observer data in 2013 FY, mostly in the south Atlantic monitored a part of fishing activities for southern bluefin tuna, were newly compiled. In accordance with the 2010 Recommendation [Rec. 10-10] on minimum standards for fishing vessel scientific observer programs, catch rates, the coverage level, and its details were also contained in this document. The coverage level for Atlantic bluefin tuna fishery were also provided in accordance with the Recommendations [Rec. 12-03/13-07].

Outline of the observer program

In principle, all observers attended a training class held by National Research Institute of Far Seas Fisheries and observer providers before the departure for the cruises. The observer training program included keys for species identification, data recording protocols for information on fishing operation and catches, and protocols for taking various measurements for catches. During fishing operations the observers recorded various information, and collected as many data and biological samples as possible. When there were substantial numbers of catch, priority on the observers' records was given to tunas and billfishes but the number of catch was counted for all species.

Contents of observers' records

i) General information of fishing operations

Various information of observed fishing activities were recorded. The name and attributes of the observed fishing vessel, and oceanographic and weather condition were recorded. At each fishing operation, date, location, the number of radio-buoys, hooks, gear configuration and bait used were also recorded. In addition, the number of sea birds flown during line setting were observed once in several days.

ii) Identification of species and related information

All catches taken on the deck were identified its species and recorded while the observers were on the deck for their research. The catches which were not hauled up on the deck were also recorded. For double check of species identification, digital photos of observed catches were sometimes taken.

For each catch, retrieving time, the branch number on which the catch was hooked, and the life status of the catch (alive or dead; “alive” was further separated into “no details”, “vigorous”, “sluggish” or “injured”) were recorded as much as possible. The life status was immediately identified on the deck or at the deck side for releasing.

iii) Measurement of catch

Lengths were measured for all intact catches by 1cm interval (round up) and the following measurements were applied for different fish groups; fork length for tunas, post-orbit fork length (POFL) for billfishes, precaudal length for sharks, disk length for rays, total or fork length for other teleosts. A caliper was used for the measurement. Clasper inner length (between the anterior margin of the cloaca and the posterior clasper tip) was measured and recorded for male sharks by 0.1 cm interval.

Whole body weight (to the nearest 0.1kg in principal), processed weight (to the nearest 1 kg) and gonad weight (for tunas and billfishes; to the nearest 0.1kg) were measured as much as possible.

iv) Sex determination and biological sampling

Sex determination was conducted through the observation of genital gland for teleosts and with or without of clasper for sharks and rays. Biological sampling mainly for tunas and sharks was sometimes conducted for muscle, stomach contents, otolith and hard parts.

Results

i) Trip and observer coverage

Japan's observer program was continuously carried out in 2014. Details of observer trips on Japanese longline vessels in the entire Atlantic Ocean (the ICCAT convention area) in 2013 and 2014 were shown in **Table 2** by fishing year. Since newly compiled 16 trips data was added to the previous report (Japan, 2014b), thirty observer trips data has been collected for 2013 FY. In 2014 FY, twenty observer trips data were collected as of July 2015. The detailed data shown as "new_tentative" in **Table 1** and **2** were not used for 2013 FY information update nor 2014 FY analysis because they are being compiled.

In the north Atlantic, 11 and 12 trips were observed the operations targeting Atlantic bluefin tuna in 2013 and 2014 FYs, respectively. Some of these trips were also monitored the operations targeting bigeye tuna in the tropical area, mostly after the Japanese longline vessels finished their quota for Atlantic bluefin tuna. The trips in the south Atlantic were monitored a part of fishing activities for southern bluefin tuna and tropical tunas, and 12 and 2 trips were complied in 2013 and 2014 FYs, respectively. The rest of trips were conducted only in the tropical area.

The coverage level achieved within Japanese longline vessels was estimated based on the number of operating days. The ratio was calculated by dividing the number of operating days with observers by the total number of operating days which were from the available latest logbook data as of July, 2015. Japan's observer programs covered 12.1% fishing activities in the entire Atlantic Ocean in 2014 calendar year, while it was 7.0% in 2013 calendar year (**Table 1-a**). The coverage level for the Japanese longline vessels targeting Atlantic bluefin tuna achieved 48.6% and 44.0% in 2013 and 2014 FYs, respectively (**Table 1-b**). Both coverage levels accomplished required coverage both in [Rec. 10-10] which requires 5% in the entire Atlantic Ocean and in [Rec. 12-03/ 13-07] which specifies 20% for the operations of Atlantic bluefin tuna by longline.

ii) Observed operations

Total number of observed fishing operations was 1,564 and 1,076 during 2,235 and 1,847 days in which observers were on board in 2013 and 2014 FYs, respectively. Total hooks in all operations with observers were 4,460,651 and 3,136,837 hooks in 2013 and 2014 FYs, respectively. The number of observers has been increased since 2012 FY to achieve the observer coverage level stipulated by the [Rec. 10-10].

The distribution of hooks in all operations with observer was shown in **Figure 1**, using the revised and new data shown in **Table 2**. The area of operation was divided into six areas; off Ireland, central north, off Grand Bank, off Florida, tropical area, and off Cape Town. Main observed areas were off Ireland and tropical area, and the numbers of trips in the areas were 17 in each FY. Since 2010 FY, there are a few operations in off Florida. Around 10 operations were observed in the area off Cape Town and tropical area in every year.

iii) Catch records

The lists of species recorded by scientific observers in 2013 and 2014 FYs were shown in **Table 3**. The lists were compiled mainly for tunas and billfishes. The number of observed individuals was 15,871 in 2014 FY as of July 2015, while 38,565 were recorded in 2013 FY. In 2014 FY, 66% of individuals were observed in the tropical area or the area off Cape Town, whereas it was 88% in 2013 FY. This is mainly due to the shorter fishing season of Atlantic bluefin with a higher catch rate since 2011 FY (**Table 5**, Japan, 2014a and 2014b), thus more operations in the tropical areas were monitored by observers compared to other fishing years.

Figure 2 shows that species composition in each area by fishing year for 6 main species which constituted the majority of total observed catch: albacore, yellowfin, bigeye, Atlantic bluefin, southern bluefin, and blue shark. In the area off Ireland, Atlantic bluefin and blue shark were the dominant species, which accounted for 38% and 62% of total catch of main 6 species in terms of number of fish in 2014 FY, and 62% and 38% in 2013 FY. The occurrence of other species was few (0%). In the central north, a very few number of operations was monitored in both FYs. In the area off Grand Bank, blue shark was the dominant species in both 2013 (52%) and 2014 FYs (55%).

In the tropical area, bigeye was the most dominant species in 2013 (59%) and 2014 FYs (59%). In the area off Cape Town, Southern bluefin tuna was the most dominant species (48%) in 2013 FY, while albacore accounted for 26% of the total catch of main 6 species in 2013 FY. Since the data for 2014 FY has been collecting, the information would be updated in 2016.

The number of fish measured, recorded or sampled by species in 2013 and 2014 FYs was indicated for each item in **Table 4**. Lengths and processed weight of tunas and billfishes were measured for 96% of the total observed catch in number in both FYs. Biological sampling was conducted mainly for bluefin, southern bluefin and blue shark.

iv) Catch ratio of main species

CPUE (catch number per 1000 hooks) of 6 main species by area was calculated for the period 2013 and 2014 FYs (**Table 5**). Total hooks in all operations with observers by area by fishing year were used as effort for the calculation. The CPUE of albacore was the highest in the area off Cape Town in the both FYs. For tropical tunas, the CPUE of bigeye was the highest in the tropical area in the both FYs.

For Atlantic bluefin tuna, CPUE value were significant (6.91) in 2013 FY in the areas off Ireland in 2013 FY, while a high CPUE value (3.79) was also observed in 2014 FY. Compared to the east Atlantic (i.e. areas off Ireland and central north), the CPUE values were low in the West Atlantic (i.e. area off Grand Bank). Southern bluefin tuna was caught in the area off Cape Town, and the CPUE in 2013 FY was 3.40, while the data in 2014 FY is now collecting. The CPUE of blue shark was significant mainly in the area off Ireland in the both FYs.

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Table 1-a). The estimated coverage level achieved within Japanese longline vessels in the entire Atlantic Ocean in 2013 and 2014 calendar years, in accordance with the Recommendation [Rec. 10-10].

Year	Period	Total number of operations	Number of operations with observer	Coverage level
2013	01Jan2013-31Dec2013	16330	1148	7.0%
2014	01Jan2014-31Dec2014	15311	1855	12.1%

Table 1-b). The estimated coverage level for the Japanese longline vessels targeting Atlantic bluefin tuna in 2013 and 2014 fishing years, in accordance with the Recommendation [Rec. 12-03/13-07].

Fishing Year	Period	Total number of operations	Number of operations with observer	Coverage level
2013	01Aug2013-31July2014	566	275	48.6%
2014	01Aug2014-31July2015	702	309	44.0%

Table 2-a). Updated information on the trip of the scientific observer for Japanese tuna longline in the Atlantic Ocean during 2013FY. The trips shown as "revised" were already provided in 2014 (Japan 2014a), and were updated. The trips: RT1305 to RT1312, and AT1311 to AT1318 were newly compiled and added, but several trips shown as "new_tentative" were under compilation and their detailed data were not available.

Report	Trip ID	Main fishing ground	Range of latitude	Range of longitude	Start date of operation	End date of operation	Number of operation	Number of hooks observed
revised	RT1301	tropical area	14.3-15.9S	5-7.9E	2013/8/1	2013/8/16	15	49,270
revised	RT1302	off Cape Town, tropical area	18.2-33.2S	1.5W-17.7E	2013/8/1	2013/8/30	21	72,410
revised	RT1303	off Cape Town	25-26S	1.4-2.6E	2013/8/1	2013/8/24	19	63,171
revised	RT1304	off Cape Town	20-33.9S	5.7-18.4E	2013/8/1	2013/8/15	8	37,200
new_tentative	RT1305	tropical area, off Cape Town	10-44S	1W-10E	2014/4/18	2014/9/9	87	264,450
new	RT1306	off Cape Town	33.9-43.9S	1.4W-19.7E	2014/5/7	2014/6/24	31	99,770
new	RT1307	off Cape Town	20-44S	1.4W-18.9E	2014/5/11	2014/7/31	52	156,357
new	RT1308	off Cape Town, tropical area	14.4-44S	5.9W-18.2E	2014/5/20	2014/7/22	45	147,360
new_tentative	RT1309	off Cape Town	40-43S	0-9E	2014/5/1	2014/8/7	20	63,810
new	RT1310	off Cape Town	21.9-44.3S	7.3W-15.5E	2014/5/26	2014/7/30	49	151,380
new	RT1311	off Cape Town, tropical area	33.9-44S	5.6W-18.3E	2014/6/11	2014/7/31	41	128,292
new	RT1312	off Cape Town	29.3-42S	0.8-16.3E	2014/6/29	2014/7/31	36	38,120
revised	AT1301	off Grand Bank	10.2-45.8N	47.1-79W	2013/8/14	2013/10/27	51	149,584
revised	AT1302	off Grand Bank	10.6-45.3N	47.7-78.5W	2013/8/21	2013/11/16	64	176,424
revised	AT1303	tropical area, off Ireland	10.4-59.7N	12.6-79W	2013/10/9	2013/12/31	48	137,260
revised	AT1304	off Ireland	8.9-59.8N	23.2-79.9W	2013/9/10	2013/11/2	15	39,152
revised	AT1305	tropical area, off Ireland	18.3-59.9N	8.4-28.6W	2013/9/22	2013/12/16	54	158,982
revised	AT1306	tropical area, off Ireland	8.7-59.4N	18.3-30.8W	2013/9/24	2014/1/17	75	218,220
revised	AT1307	tropical area, off Ireland	14.9-59.7N	19.8-30.9W	2013/10/2	2013/12/7	38	116,568
revised	AT1308	off Ireland	32.3-59.8N	15.1-22.4W	2013/10/5	2013/11/2	12	25,872
revised	AT1309	tropical area, off Ireland	9.8-59.7N	15.3-35W	2013/10/8	2014/1/26	78	227,258
revised	AT1310	tropical area, off Ireland	8.6-58.1N	16.2-35.2W	2013/10/25	2014/1/19	58	168,633
new_tentative	AT1311	tropical area, off Ireland	12-59N	22-30W	2013/9/25	2014/1/11	69	198,297
new	AT1312	tropical area	3.2-10.7N	25.1-61.8W	2013/12/11	2014/3/14	68	197,520
new_tentative	AT1313	tropical area	5S-11N	19-41W	2013/11/20	2014/3/18	97	256,080
new_tentative	AT1314	tropical area	3S-10N	19-35W	2013/11/20	2014/4/1	113	298,320
new_tentative	AT1315	tropical area	2-11N	27-40W	2013/11/26	2014/3/28	101	258,560
new_tentative	AT1316	tropical area	3-10N	28-38W	2014/1/17	2014/3/27	69	182,160
new	AT1317	tropical area	5.1S-25.7N	16.6-28.5W	2014/1/24	2014/4/14	65	212,471
new_tentative	AT1318	tropical area	9-12N	34-37W	2014/1/24	2014/3/29	65	167,700

Table 2-b). Information on the trip of the scientific observer for Japanese tuna longline in the Atlantic Ocean during 2014 FY. Several trips shown as "new_tentative" were under compilation and their detailed data were not available.

Report	Trip ID	Main fishing ground	Range of latitude	Range of longitude	Start date of operation	End date of operation	Number of operation	Number of hooks observed
new	RT1401	off Cape Town, tropical area	18.8-36.7S	0.3-16.7E	2014/8/1	2014/9/5	25	90,230
new_tentative	RT1402	tropical area	15-26S	3-5E	2014/4/18	2014/9/9	10	31,200
new	AT1401	off Grand Bank	28.1-47.5N	15.4-53W	2014/8/12	2014/11/24	83	244,419
new	AT1402	off Ireland	11.4-59.6N	18.5-77.6W	2014/8/25	2014/10/1	14	42,075
new	AT1403	off Grand Bank, tropical area	8.9-48N	25-79.6W	2014/8/29	2015/2/9	127	318,350
new	AT1404	off Ireland	10.8-64.2N	20.6-78.1W	2014/9/19	2014/11/23	24	60,144
new	AT1405	off Ireland	9.2-59.9N	18-79.9W	2014/9/26	2014/11/17	19	49,600
new	AT1406	tropical area, off Ireland	8.1-59.8N	15.1-33.5W	2014/10/3	2015/2/5	94	277,341
new_tentative	AT1407	off Ireland, tropical area	21-59N	17-25W	2014/9/14	2014/12/10	49	146,304
new_tentative	AT1408	tropical area, off Ireland	9-59N	20-32W	2014/9/16	2014/12/17	50	142,937
new_tentative	AT1409	tropical area, off Ireland	9S-59N	17-29W	2014/9/21	2014/12/26	51	137,820
new_tentative	AT1410	tropical area, off Ireland	13-59N	22-31W	2014/9/19	2014/12/22	40	119,075
new_tentative	AT1411	tropical area, off Ireland	13-59N	22-31W	2014/9/20	2014/12/21	40	119,075
new_tentative	AT1412	tropical area	6S-1N	17W-3E	2014/8/26	2015/1/4	86	252,522
new_tentative	AT1413	tropical area, off Ireland	14-59N	17-28W	2014/9/25	2014/12/27	66	201,564
new	AT1414	tropical area	9.1-25.5N	17.8-33.8W	2014/10/29	2015/1/31	82	257,329
new_tentative	AT1415	tropical area	9-14N	26-32W	2014/10/23	2014/12/17	41	123,297
new_tentative	AT1416	tropical area	0-8S	10W-2E	2014/9/8	2015/2/4	98	283,220
new_tentative	AT1417	tropical area	9S-16N	17-29W	2014/11/11	2014/12/25	29	86,740
new_tentative	AT1418	tropical area	5-13N	21-30W	2014/12/22	2015/3/26	48	153,595

Table 3-a). Updated list of species recorded by the Japanese tuna longline observer in the Atlantic Ocean during 2013 FY.

Species	off Ireland	central north	off Grand Bank	off Florida	tropical area	off Cape Town	Total
Albacore	0	-	5	-	1853	1501	3359
Bigeeye tuna	0	-	28	-	10966	442	11436
Bluefin tuna	2013	-	462	-	0	0	2475
Southern bluefin tuna	0	-	0	-	0	2759	2759
Yellowfin tuna	0	-	0	-	2072	236	2308
Other tunas	0	-	0	-	74	2179	2253
Blue marlin	0	-	0	-	67	0	67
Longbill spearfish	0	-	0	-	84	33	117
Sailfish	0	-	0	-	17	0	17
Swordfish	0	-	78	-	433	47	558
White marlin	0	-	0	-	46	7	53
Other teleosts	154	-	11	-	3399	1656	5220
Blue shark	1254	-	543	-	3819	830	6446
Other sharks	28	-	142	-	974	240	1384
Sea birds	0	-	0	-	1	38	39
Sea turtles	0	-	0	-	60	1	61
Dolphins	0	-	0	-	0	0	0
Unidentified	0	-	3	-	7	3	13
Total	3449	-	1272	-	23872	9972	38565

Table 3-b). List of species recorded by the Japanese tuna longline observer in the Atlantic Ocean during 2014 FY.

Species	off Ireland	central north	off Grand Bank	off Florida	tropical area	off Cape Town	Total
Albacore	0	0	53	-	804	150	1007
Bigeeye tuna	0	0	841	-	4794	31	5666
Bluefin tuna	776	5	301	-	0	0	1082
Southern bluefin tuna	0	0	0	-	0	0	0
Yellowfin tuna	0	0	3	-	371	17	391
Other tunas	0	0	2	-	1	1	4
Blue marlin	0	0	0	-	68	0	68
Longbill spearfish	0	0	1	-	96	0	97
Sailfish	0	0	0	-	1	0	1
Swordfish	0	0	186	-	123	6	315
White marlin	0	0	1	-	1	0	2
Other teleosts	126	0	90	-	1141	63	1420
Blue shark	1270	3	1483	-	2187	19	4962
Other sharks	21	0	288	-	509	20	838
Sea birds	0	0	0	-	0	0	0
Sea turtles	0	0	2	-	14	0	16
Dolphins	0	0	0	-	0	0	0
Unidentified	0	0	1	-	1	0	2
Total	2193	8	3252	-	10111	307	15871

Table 4-a). Updated the number of individuals measured or sampled by species in 2013 FY.

Species	Number of observed/measured individuals						Biological sampling			
	Length	Processed weight	Whole weight	Sex	Gonad weight	Maturity	Otolith	Muscle	Stomach	Gonad
Albacore	3245	3242	0	336	0	0	0	2	4	0
Bigeeye tuna	11158	11001	0	10299	0	579	166	228	1645	0
Bluefin tuna	2386	2401	1	2326	2	197	294	268	750	0
Southern bluefin tuna	2632	2618	0	2644	1	420	123	0	1019	0
Yellowfin tuna	2220	2170	0	1915	0	173	86	132	556	0
Other tunas	1994	2119	0	1576	0	113	1	46	809	0
Blue marlin	51	41	0	32	0	1	0	13	14	0
Longbill spearfish	94	42	0	48	0	5	0	3	8	0
Sailfish	17	12	0	17	0	0	0	4	5	0
Swordfish	516	426	0	415	1	42	3	59	86	0
White marlin	50	28	0	48	0	0	0	6	7	0
Other teleosts	2494	2068	0	895	0	30	0	32	22	0
Blue shark	4732	4718	0	5021	0	733	2	38	189	0
Other sharks	830	364	0	856	0	34	0	39	8	0
Sea birds	1	1	0	1	0	0	0	0	0	0
Sea turtles	2	4	0	6	0	0	0	0	0	0
Dolphins	0	0	0	0	0	0	0	0	0	0
Unidentified	0	0	0	0	0	0	0	0	0	0
Total	32422	31255	-	26435	4	2327	675	870	5122	0

Table 4-b). The number of individuals measured or sampled by species in 2014 FY.

Species	Number of observed/measured individuals						Biological sampling			
	Length	Processed weight	Whole weight	Sex	Gonad weight	Maturity	Otolith	Muscle	Stomach	Gonad
Albacore	964	967	0	5	0	0	0	17	2	0
Bigeye tuna	5430	5475	0	5168	11	675	170	166	3075	0
Bluefin tuna	1060	1041	0	1048	4	214	435	406	703	0
Southern bluefin tuna	0	0	0	0	0	0	0	0	0	0
Yellowfin tuna	387	383	0	348	0	43	63	94	250	0
Other tunas	4	2	0	0	0	0	0	0	0	0
Blue marlin	66	66	0	59	0	2	0	39	14	0
Longbill spearfish	66	29	0	19	0	0	0	20	5	0
Sailfish	1	0	0	0	0	0	0	0	0	0
Swordfish	288	280	2	239	3	21	0	60	88	0
White marlin	1	0	0	0	0	0	0	0	0	0
Other teleosts	610	495	0	271	0	24	1	129	79	0
Blue shark	3058	2805	0	4347	1	1146	0	73	153	0
Other sharks	396	203	0	426	1	40	0	51	9	0
Sea birds	0	0	0	0	0	0	0	0	0	0
Sea turtles	1	1	0	1	0	0	0	0	0	0
Dolphins	0	0	0	0	0	0	0	0	0	0
Unidentified	0	0	0	0	0	0	0	0	0	0
Total	12332	11747	2	11931	20	2165	669	1055	4378	0

Table 5-a). Updated catch ratio (/1000hooks) of main species in 2013 FY.

	Albacore	Yellowfin tuna	Bigeye tuna	Bluefin tuna	Southern bluefin tuna	Blue shark
off Ireland	0.00	0.00	-	6.91	-	4.30
central north	-	-	-	-	-	-
off Grand Bank	0.02	0.00	0.09	1.42	-	1.67
off Florida	-	-	-	-	-	-
tropical area	1.38	1.54	8.17	-	-	2.85
off Cape Town	1.85	0.29	0.54	-	3.40	1.02

Table 5-b). Catch ratio (/1000hooks) of main species in 2014 FY.

	Albacore	Yellowfin tuna	Bigeye tuna	Bluefin tuna	Southern bluefin tuna	Blue shark
off Ireland	0.00	0.00	-	3.79	-	6.21
central north	0.00	0.00	0.00	1.58	-	0.95
off Grand Bank	0.11	0.01	1.72	0.61	-	3.03
off Florida	-	-	-	-	-	-
tropical area	1.27	0.59	7.59	-	-	3.46
off Cape Town	13.82	1.57	2.86	-	0.00	1.75

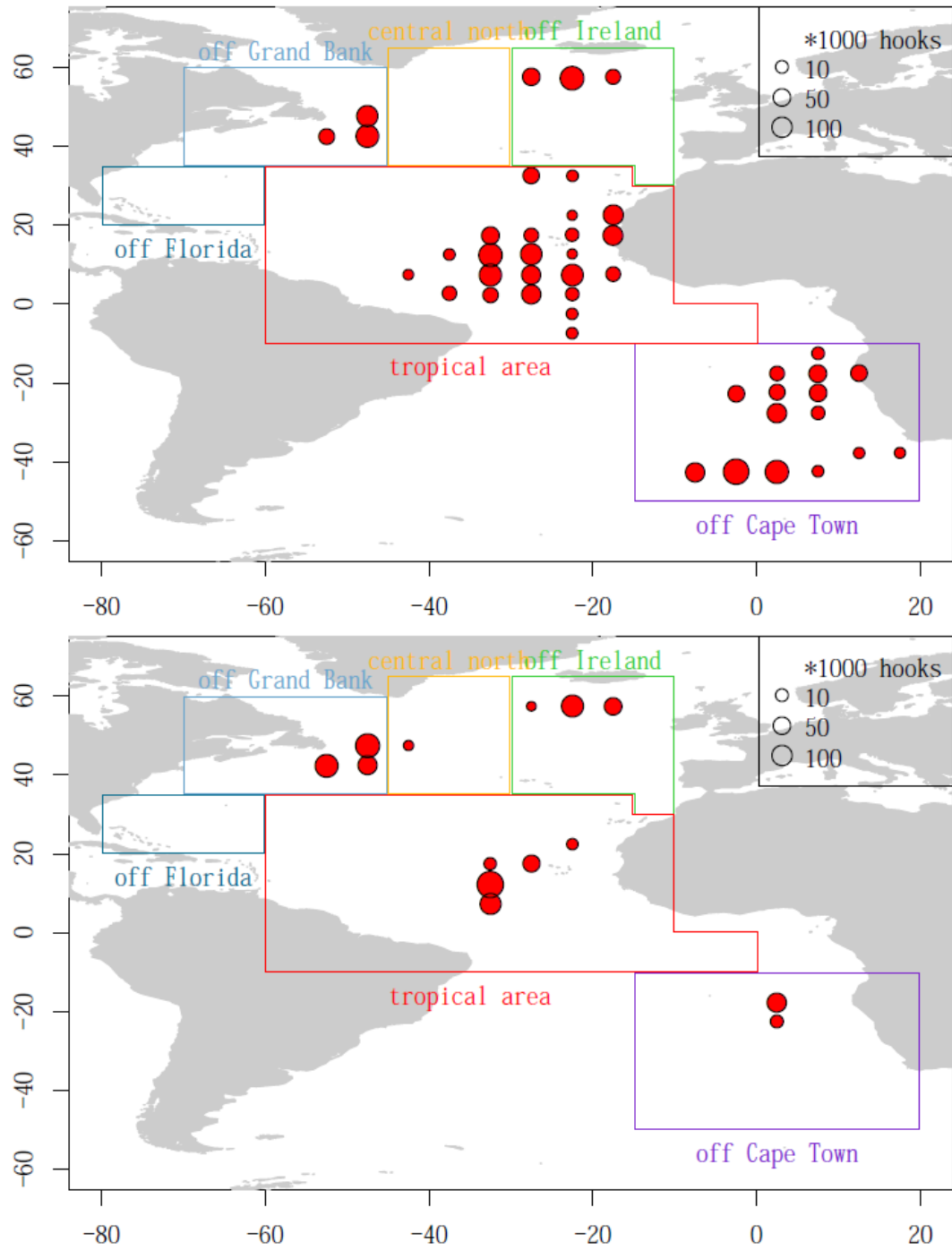


Figure 1. Distribution of total hooks with observers in the Atlantic Ocean by fishing year, and definition of 6 areas: off Ireland, central north, off Grand Bank, off Florida, tropical area, off Cape Town. Upper panel shows 2013FY, and lower panel shows 2014 FY.

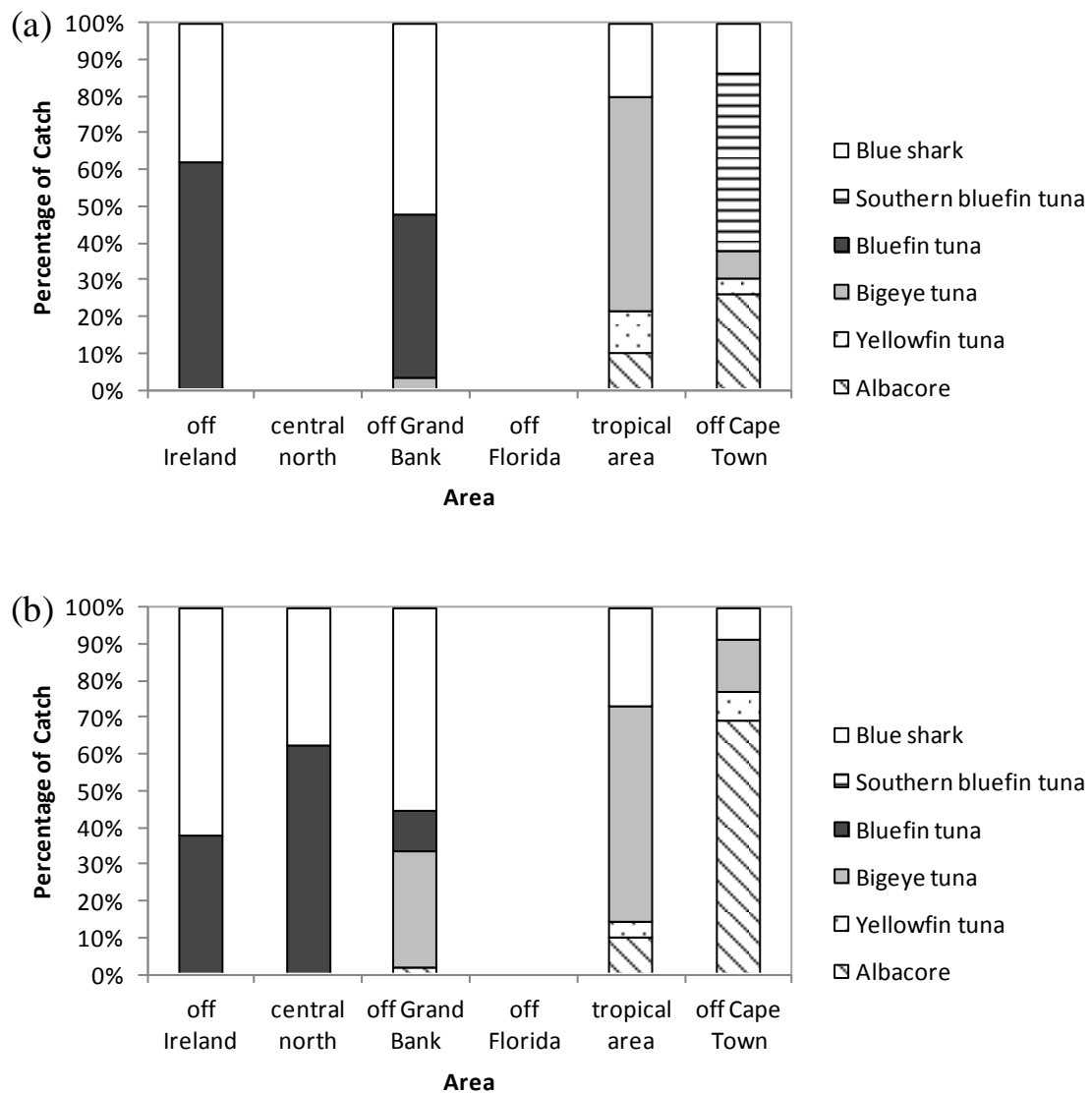


Figure 2. Catch composition of main species in the 6 areas by fishing year (a: updated 2013FY and b: 2014FY).