

**National Report of Taiwan: Ecologically Related Species in the Taiwanese
Southern Bluefin Tuna Fishery 2012-2013
Fisheries Agency of Taiwan**

1. Introduction

Southern Bluefin Tuna (*Thunnus maccoyii*, SBT) was bycatch of Taiwanese tuna longline fishery targeting albacore in the past. After the fishing vessels equipped with deep-frozen freezers, some fishing vessels operating in the Indian Ocean have started targeting SBT seasonally since 1990s. There are no vessels fishing for SBT whole year round. For Taiwanese fishing vessels, only longliner caught SBT and except by-catch vessels, seasonal target SBT vessels all operate in the Indian Ocean. There are two main fishing grounds in general: one is in the southern central Indian Ocean around 55°E – 95°E, 30°S – 40°S, and the other locates off the southeast coast of Africa around 20°E – 55°E, 35°S – 45°S. Two fishing seasons for Taiwanese seasonal target SBT fishing vessels have been in the southern central Indian Ocean from April to September, and in the southern and western Indian Ocean extending to the eastern limit of the Atlantic Ocean from November to February of the following year.

This report includes information on ecologically related species (ERS) of Taiwanese SBT fishery sampled by scientific observers updated to 2013.

2. Review of SBT fisheries

Fleet size and distribution

More than 100 vessels had SBT catch records during 1998-2001. Since 2002, Taiwan has become a member of the Extended Commission of CCSBT and agreed on its national quota of 1,140 tons. Taiwan has imposed strict regulation and started to allocate individual quota to each vessel authorized to fish for SBT since 2002. Besides, those vessels are separated to either seasonal target ones or by-catch ones. The number of active vessels to fish for SBT from 2002 to 2013 is shown as Table 1.

Distribution of Catch and Effort

Historically, annual catches of SBT were less than 250 tons in early 1980s. Thereafter, with the improvement of vessel facilities, the fishing grounds and target species have also been changed. Apart from capturing albacore, Taiwanese vessels also capture SBT in the specific seasons. From 1989 to 2001, annual catch of SBT

fluctuated around 900 to 1,600 tons. Since CCSBT has been established, Taiwan, in line with the CCSBT conservation and management measures, voluntarily set up its SBT catch limit at 1996 level of 1,450 tons since 1997. During 1996-2001 the average annual catch of SBT maintain around 1,450 tons. When Taiwan joined CCSBT in 2002, it compromised by reducing 310 tons from its original self restraint catch limit, and set up annual catch quota to 1,140 tons. In 2006, CCSBT adopted TAC arrangement based on binding allocated catch limits for 2007 – 2009, and Taiwan catch quota has being fixed in 1,140 tons. For the 2010 and 2011 fishing season, the communion quota was 1,718 mt.

In 2012 and 2013 quota years, Taiwan's national allocations were 911 tons and 948 tons, respectively. Due to the two year period with unused allocation from the first year carried forward to the second year. The total catches of quota year (from April 1 to March 31) were 496 and 1,032 tons for 2012 and 2013 respectively, while the catches of calendar year were 494 tons in 2012 and 1,044 tons in 2013. The annual catch of SBT by gear from 1969 to 2013 was shown in Table 2.

The fishing locations of SBT fishing vessels are mainly concentrated in the waters of 30°S – 40°S in the Indian Ocean and the waters adjacent to the Atlantic Ocean. The catch distribution of the calendar year from 2010 to 2013 was showed in Fig. 1.

3. Fisheries Monitoring

Intensive efforts have been continuously exerted for monitoring the SBT fishery through the following measures:

- (1) Since April 2002, vessels authorized to fish for SBT have been required to install VMS equipment in order to monitor the positions of the vessels.
- (2) Weekly report for SBT catch is required for submission to Fisheries Agency of Taiwan through Taiwan Tuna Association. From 2002, provision of such information as daily catch, fishing location and discards is required in the weekly report when applying for SBT statistical document. Since 1 January 2010, the CCSBT SBT Statistical Document has been replaced by CCSBT Catch Documentation Scheme (CDS). When fishers apply for validation on CDS, the officials authorized by Fisheries Agency of Taiwan shall check all of the above information consistent with the real catch.
- (3) Taiwan has designated two foreign ports (Port Louis and Cape Town) for

SBT transshipment since March 2010 and has prohibited transshipment at other foreign ports. Government officials stationed at Port Louis and Cape Town are responsible for sampling inspection and supervising all SBT catch. Any catch without inspection by its officials shall not obtain validated catch document.

- (4) Besides, Taiwan has designated fishing port of Cianjhen in Kaohsiung for domestic SBT unloading port by carrier vessels or fishing vessels. Since September 2009, Fisheries Agency of Taiwan has dispatched officials to supervise all of SBT catch. Only for those catch are verified, the officials of Fisheries Agency of Taiwan shall validate catch documents.
- (5) In case of transshipment at sea, regional observer of IOTC, ICCAT boarding on carrier vessel shall observe if all of SBT transshipped quantities consistent with the reported catch in the transshipment declaration since 1 April 2009. Besides, catch data were also verified by scientific observers on board. With exception of 2008 and 2011, the observer coverage rate was all above 10% in terms of effort since 2005. In 2008, due to high fuel price, fishing vessels reduced visiting ports and meeting with carrier vessels, it is difficult to dispatch observer onboard. Then in 2011 quota year, because of the increasing threat of Somalia piracy, considering the safety of observer, we stopped dispatching observer on board in the Indian Ocean until at the end of December. In 2012, due to the above mentioned reason we stopped dispatching observers to tropical area of India Ocean, so that observers were assigned to southern India Ocean. Therefore the observer coverage rate increased in southern India Ocean. In 2012 calendar year, 8 observers were deployed on 8 fishing vessels authorized to target SBT seasonally. There were 10 observers being deployed on 11 fishing vessels authorized in 2013. In 2012, the coverage rates by vessels accounted for 22.2%, 27.6% by hooks and 34.8% by catch. The coverage rates by vessels decreased to 13.2% in 2013, hooks made up 11.3%, and 16.4% was taken up by catch. The summary of observed catch and effort by area and month during 2012-2013 was shown in Table 3. In addition to catch data, observers also collected and recorded ecologically related species (ERS) data, such as sea birds, sea turtles, marine mammals, and sharks data. Besides, mitigation measures adopted by fishing vessels shall be recorded.

- (6) Besides, Patrol boats were also dispatched to inspect Taiwanese fishing vessels operating in the three oceans. In 2008, two SBT fishing vessels were boarded and inspected by patrol boat. It accounts for 4.9 % of Taiwanese SBT fishing vessels. In 2009, five SBT fishing vessels were boarded and inspected. It accounts for 7.5 % of Taiwanese SBT fishing vessels. Since 2010, due to the threat of Somalia piracy and for safety consideration, no patrol boat was dispatched in the Indian Ocean.
- (7) There are penalties for over catch, transshipment or unloading catch at any other non-designated ports or any violation of regulations.

4. Seabirds

In 2012, 42 seabirds were incidentally caught among which 6 were live released and 36 were dead discard. In 2013, 78 seabirds were incidentally caught among which 11 were live released, and 67 were dead discard. The distribution of seabirds observed by observer were showed in Fig. 2, Yellow-nosed albatross and Albatross nei were observed mainly in 2012 and 2013 respectively. Table 4 and Table 5 shows capture rate, and mortality rate by CCSBT statistical areas for each seabird species observed by observers in 2012 and 2013 separately.

5. Other Non-target Fish

For Taiwanese SBT vessels, the main catch is albacore and SBT. Other non-target fish include bigeye tuna, yellowfin tuna, sharks, and billfish. For shark species, blue shark was the most dominant species observed by observer accounting for 97.34% in 2012, and 90.12% in 2013. CPUE and total numbers of shark by area from 2012-2013 were showed in Table 6 and Table 7 separately.

6. Marine Mammal and Marine Reptile

According to observer record in 2012-2013, there were no bycatch recorded of cetaceans and sea turtles.

7. Mitigation Measures to Minimize Seabird and Other Species Bycatch

Current Measures

➤ *Mandatory Measures for Each Fleet*

Taiwanese SBT fishing vessels mainly operate in the IOTC area, and partial SBT

bycatch vessels operate in the ICCAT and WCPFC area, so that the Fisheries Agency has introduced a regulation which base on the resolutions/recommendations adopted by these organizations to make the fishers comply with the resolutions/recommendations.

➤ *Seabird*

The government of Taiwan has introduced a regulation which requires vessels fishing at the areas of southern than 30°S to deploy a tori line to reduce seabird incidental catch since 2004. Besides, in line with the IOTC resolution 08/03 on reducing the incidental bycatch of seabirds in longline fisheries, all Taiwanese longline vessels fishing south of 30°S shall use at least two of mitigation measures in consistence with the resolution since 2009.

Since 2010, longline vessels fishing in the area south of 25°S in Indian Ocean shall use at least two different mitigation measures including tori line and one other measure, such as night setting, weighted branch lines, offal discharge control or line shooting device in consistence with Resolution 10/06. Taiwan has already amended the relevant regulations to request fishing vessels operating in the area south of 25°S in Indian Ocean to start using at least two of the three mitigation measures, night setting with minimum deck lighting, tori lines, or line weighting from 1 July 2014 in consistence with Resolution 12/06. In addition, fishers shall fill out the specified form regarding the measures adopted by its vessels with photos of the finished mitigation measures and inform the Fisheries Agency of Taiwan in advance of one month the vessel fishing south of 25°S in the Indian Ocean. Government officials stationed at Port Louis and Cape Town shall examine the tori line by random and request fishers to make rectification so as to be consistent with the resolution.

Besides, in accordance with ICCAT's recommendation 2011-09, Taiwan imposed regulation requiring all Taiwanese longline vessels fishing south of 25°S in the Atlantic Ocean have to use tori lines and line weighting as the mitigation measure, with between 20°S to 25°S that tori lines as compulsory.

In accordance with WCPFC CMM 2012-07, Conservation and Management Measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds. We have required our fishers and industries to take appropriate measures in accordance with the NPOA-seabird to mitigate incidental catch of seabirds. Furthermore, according to domestic regulations, fishing vessels operating in south of 30°S are required to employ at least two seabird mitigation measures, one should be

tori lines, the other should be one of those including, weighted branch lines, night setting with minimum deck lighting. Incidentally caught seabirds are encouraged to release alive. For this purpose, fishing vessels are required to carry de-hookers and line cutters on board.

➤ ***Sea turtle***

To conserve sea turtles, Taiwan has publicized domestic management regulations since 2006, requiring fishing vessels to carry necessary devices on board, such as dig nets, de-hookers and line cutters, during voyage or operation periods, for appropriate release of incidentally caught sea turtles. The incidental catch individuals shall be released alive, and the operators shall record in their logbooks all incidents involving marine turtles during fishing operations.

In addition to the above mentioned regulations, Taiwan government has imposed “Wild Life Protection Act”, forbidding fishers to capture or possess the following kinds of sea turtles, which include green turtle, loggerhead turtle, olive ridley turtle, leatherback turtle and hawksbill turtle. The incidentally caught sea turtles must be released and the fishers are required to record this event in the logbook.

➤ ***Shark***

According to the Recommendations/Resolutions adopted by ICCAT and IOTC, Taiwan has applied mandatory regulations to require its authorized vessels fishing in the Atlantic Ocean and the Indian Ocean not to have onboard fins that total more than 5% of the weight of sharks onboard, up to the first point of landing since 2005. The regulation has subsequently applied to the fleets operating in the Pacific Ocean since 2006. Besides, Taiwan has imposed regulation to prohibit *Rhincodon typus* (whale shark) to be captured, possessed and sold since 2008.

In line with IOTC resolution 10/12, 12/09, Taiwan has required that fishers operating in the Indian Ocean are prohibited from retaining on board, transshipping, landing, storing, selling or offering for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae since 2011. In addition, according IOTC resolution 13/06, Taiwan has revised the requirement to prohibit from retaining on board, transshipping, landing, storing, selling or offering for sale any part or whole carcass of Oceanic whitetip shark since September 1 , 2013.

Besides, based on the ICCAT Recommendations 2009-07, 2010-07, 2010-08, 2011-08 and 2012-05 on sharks, we have enacted and revised periodically various

domestic regulations, including prohibiting our vessels operating in the Atlantic Ocean prohibiting from thresher sharks (family Alopiidae), hammerhead sharks (family Sphyrnidae), oceanic whitetip sharks, silky sharks.

To further conserve shark resources, we adopted the fins attached regulations in January 2012. Starting from January 2013, fishing vessel over 100 tons employing freezing method to preserve their catches are requested to implement regulations of shark fins naturally attached to the carcass, and fishing vessel less 100 tons employing freezing method to preserve their catches are requested to implement regulations of shark fins tied to the carcass when landing in our ports.

Voluntary Measures for Each Fleet

No information

Measures under Development/Testing

For mitigation of sea turtle by-catch for tuna longliner, Taiwan has collaborated with the United States of America for circle hook experiment in the Atlantic Ocean from September 2012 to May 2013. Both sides presented a joint paper to the ICCAT SCRS meeting in July 2013.

In 2013, FA commissioned scholars to collaborate with South Atlantic albacore targeting vessel to perform studies on the effectiveness of combined mitigation measures, such as use of tori line, weighted branch-lines, and night setting.

8. Public Relations and Education Activities

Public Relations Activities

- (1) Distribution of posters, sheets and booklets for guidance of mitigation measures of reducing seabird by-catch, shark full utilization, and species identification for seabirds, sharks and sea turtles to fishers (CCSBT/0402/Info28).
- (2) For sea turtles, we encouraged fishers to carry dip net and line clipper on board to safely release sea turtles. Meanwhile, we also distributed 3000 copies of posters entitled “Release the sea turtle incidentally caught” to our fishers in 2003.
- (3) In 2004, the FA, the Chinese Wild Bird Federation, and Birdlife International held a conference in Kaohsiung on the reduction of longline seabird bycatch

and exchanged opinions with representatives from the USA, Japan, and Birdlife International, among others. Besides, FA cooperated with Birdlife International, the Chinese Wild Bird Federation, and the International Seafood Sustainability Foundation (ISSF) during a “mitigation of seabird bycatch workshop” held in Kaohsiung in 2013. Experts from the United Kingdom, the USA, and Japan were invited to extensively exchange experiences and opinions with representative from the industry, government, and academia in Taiwan on issues regarding mitigation devise to avoid seabird bycatch by TLVs and on possible directions for future cooperation.

- (4) In order to avoid incidental catch of sea bird, sea mammal and sea turtle by deep-sea fisheries, Taiwan government sponsored the World Wildlife Fund (WWF) international and Chinese Wild Bird Federation to hold the International Smart Gear Competition Judges Workshop in Taiwan in September 2007. After the workshop, Fisheries Agency of Taiwan hosted a forum inviting the international experts and the related industries to discuss how to mitigate by-catch species during fishing operation.
- (5) Taiwan published seabird identification guideline in 2009 and shark identification pamphlet for observer training and for the related staffs training in 2011. Besides, Taiwan also published shark identification pads 2000 copies for fishers in 2011.
- (6) For disseminating shark fins naturally attached policy, Taiwan distributed posters, brochures and CD for fishers, the related fisheries associations and managers further understanding the regulation and the practical process for how to naturally attach fins in January 2012.
- (7) Fisheries journal as “New Fisheries” and magazines are published and distributed domestically and overseas to fishers, the related fisheries associations/organizations, and managers.
- (8) All local governments and related fisheries associations/organizations have been required to strengthen the knowledge to fishers. Besides, broadcasting for educating fishers through the professional fisheries radio station has been conducted regularly. The related information has been passed on to ship masters and crews during observer trips and while in port.

Education

- (1) Fisheries Agency of Taiwan had authorized Wild Bird Federation Taiwan (WBFT) to implement a fishers' education program for mitigating seabird by-catch in 2005. Wild Bird Federation Taiwan (WBFT) conducted an educational program for Taiwanese fishers in the Port Louis, Mauritius in the fall of 2005. The program was the first trial to discuss the by-catch problems and the efficiency of mitigation measures with fishers in their cabins.
- (2) Candidate observers who have passed the oral examination will have to take a 3-week training program, and only those who pass the training program and medical check will be qualified and deployed on board as scientific observers. Observer training program includes basic safety training for seafaring, operations of navigation devices, mini-log thermometer and VMS system, identification of tuna, tuna-like species, sea turtles, seabirds, sharks and marine mammals, sampling skill for muscle tissue, otolith, stomach content and gonad, and data collection for fishing activities, catches and locations. After the training program, they are required to undergo at sea training on a training ship for one week and have a test in identifying tuna and tuna-like species at local fish market.
- (3) In addition to the above mentioned posters, brochures, and CD, Taiwan has held a series of education training for fishers, the related association and managers for promoting shark fins naturally attached since January 2012.

Information Exchange

In line with the resolution/recommendation adopted by IOTC, ICCAT, WCPFC and IATTC aimed at the protection of ecologically related species (ERS), Taiwan has reported on its compliance with all current binding and recommendatory measures and on exchanging ERS information to these regional fisheries management organizations annually.

9. Information on Other ERS (Non-bycatch)

For investigating the prey species of southern bluefin tuna (SBT), Fisheries Agency of Taiwan commissioned scientists to conduct analysis on the stomach content of SBT in 2006 and 2009. The results were as follows.

(1)The stomach contents of 131 southern bluefin tunas captured by Taiwanese longliners in southern central Indian Ocean in August 2004 and in June-July 2005 were examined. The size ranged from 84-187 cm FL (12-115 kg GG). The length and weight frequency distributions indicated that most specimens were in the range of 100-120 cm FL with a body weight between 10 and 20 kg. For the stomachs with prey items, almost all the preys are Pisces and the proportion of each prey groups are fishes (56.02%), cephalopods (5.39%), and crustaceans (38.59%). In total, 7 prey taxa were identified – 4 species of fish, 1 unidentified Pisces, 1 unidentified crustacean, and 1 unidentified cephalopod. The 4 fish species fall in the family of Carangidae, Clupeidae, Emmelichthyidae, and Hemiramphidae.

(2)In total 53 stomach samples were collected by observers at mid-western South Indian Ocean from Nov. 2007 to Jan. 2008 and Jun. – Sep. 2008. The mean fork length (FL) were 118.9 ± 1.84 (90-175) cm and 27.2 ± 12.9 (9-74) kg. 95% of the fish samples were within 91-150 cm FL. Among the 18 good stomach samples, the rate of empty stomach was 38.9%, having 11 non-empty stomachs for further analysis. The prey items can be distinguished into four major groups, i.e. fish, cephalopod, crustacean and marine pollution, and subdivided into 12 items. Paralepididae (Pisces) and Euphausiidae (Crustacean) were the only two families can be identified. The descending orders of the prey-importance were fish > cephalopod > crustacean = marine pollution by occurrence.

10. Others

No other information.

11. Implementation of the IPOA-Seabirds and IPOA-Sharks

In line with “International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries” of FAO, Taiwan has adopted “National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA-Seabirds)” which came into force in October 2006 to act as a basis for establishing seabird conservation policy and updated this NPOA-Seabirds’ information in June 2014.(The website : <http://www.fa.gov.tw/en/Policy/content.aspx?id=13&chk=5aa236af-8280-456c-b5a3-867780b7a261¶m=pn%3d2>)

Similarly, in respect of shark's conservation, we have adopted NPOA-sharks which entered into force in May 2006, not only for the guidance to encourage full usage of shark caught, but also for avoidance of waste.

For consistent with global trend for the conservation and management of sharks, Taiwan is updating its NPOA-sharks.

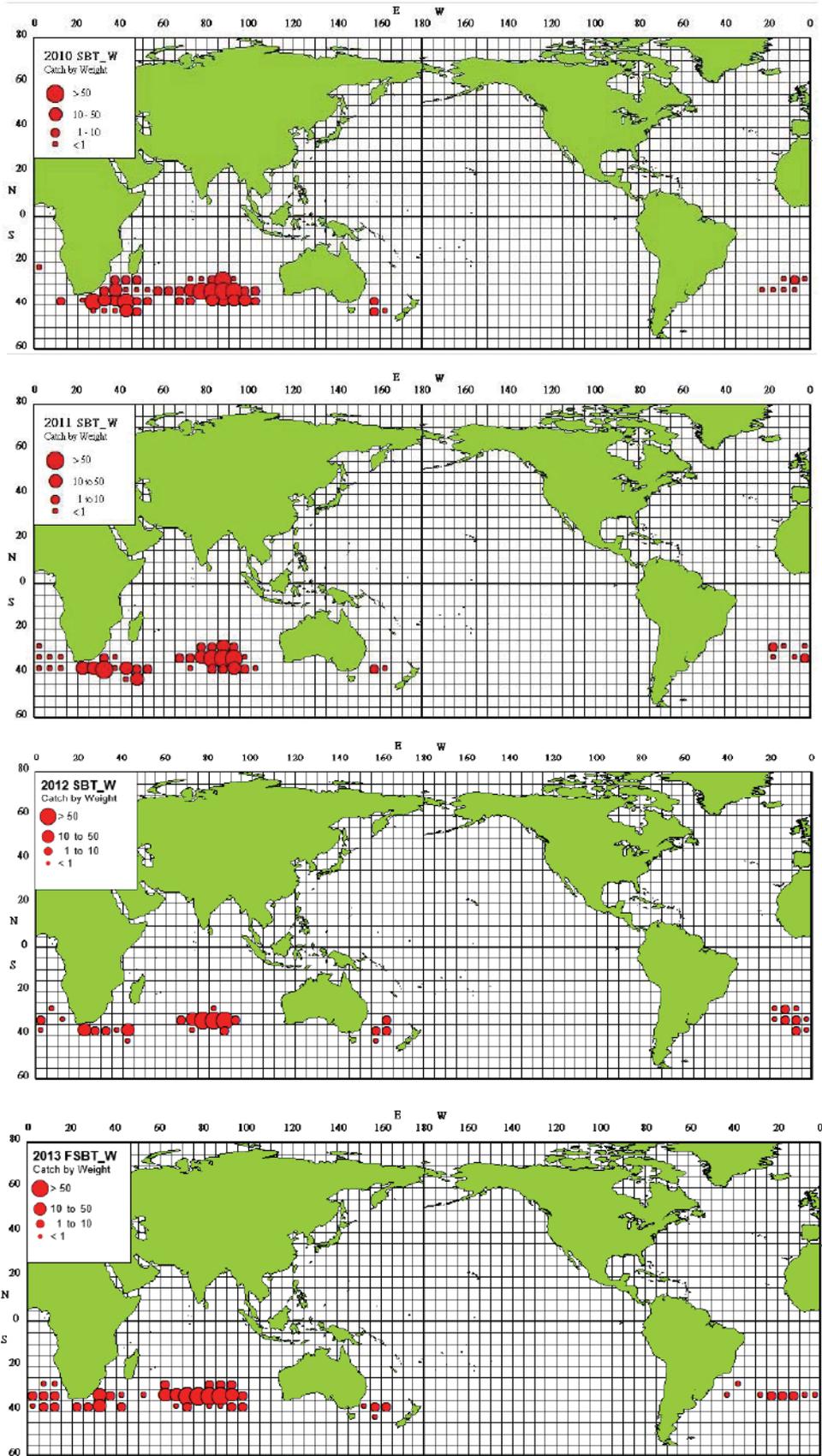


Fig. 1 Distribution of SBT catch by Taiwanese longline fishery from 2010 to 2013
(Data in 2013 is preliminary.)

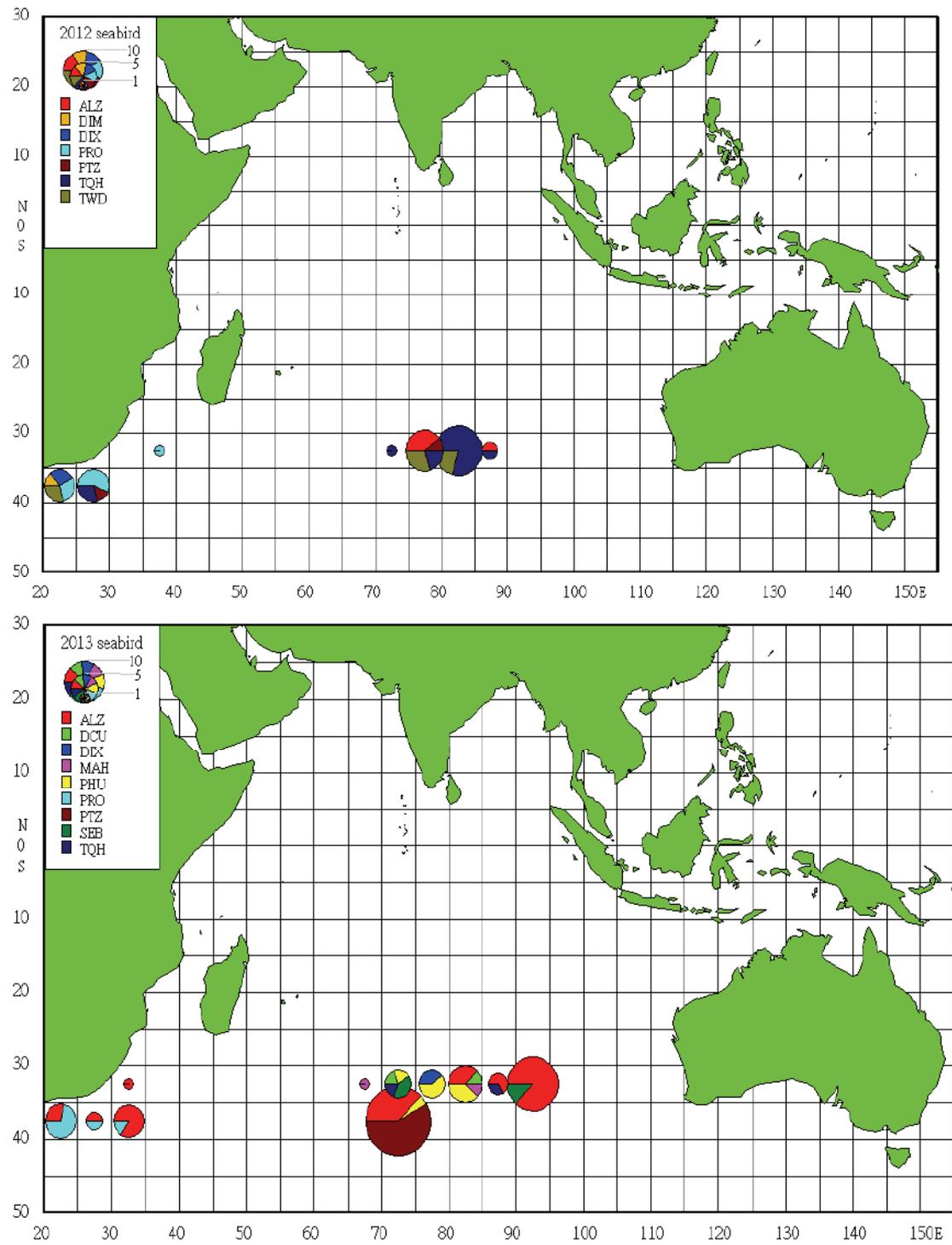


Fig. 2 Distribution of the Seabirds observed by observer from 2012 to 2013. (Data in 2013 is preliminary.)

Table1 The number of active vessels fishing for SBT during 2002-2013 calendar year

Year	No. of seasonal target vessels	No. of by-catch vessels	Total vessels
2002	21	50	71
2003	76	24	100
2004	79	18	97
2005	49	8	57
2006	33	3	36
2007	27	3	30
2008	35	6	41
2009	34	33	67
2010	65	17	82
2011	28	28	56
2012	12	24	36
2013	39	37	76

Table 2 Annual SBT catches by gear for Taiwanese fishing vessels during 1969-2013

Unit: MT

Calendar Year	Catch by Longliner (MT)		Taiwan Gillnet
	Calendar year	Quota year	
1969	80		
1970	130		
1971	30		
1972	70		
1973	90		
1974	100		
1975	15		
1976	15		
1977	5		
1978	80		
1979	53		
1980	64		
1981	92		
1982	171		11
1983	149		12
1984	244		0
1985	174		67
1986	433		81
1987	623		87
1988	622		234
1989	1,076		319
1990	872		305
1991	1,353		107
1992	1,219		3
1993	958		
1994	1,020		
1995	1,431		
1996	1,467		
1997	872		
1998	1,446		
1999	1,513		
2000	1,448		
2001	1,580		
2002	1,137		
2003	1,128		
2004	1,298		
2005	941		
2006	846		
2007	841		
2008 ¹	913	926	
2009	921	949	
2010	1,208	1,140	
2011	533	502	
2012	494	496	
2013	1,044*	1032*	

¹ Quota year was applied since 2008.

* Preliminary value and landed weight

Table 3 Summary of results for scientific observer programs by area and month during 2012-2013

(a) 2012 (calendar year)

Area	Month	Numbers of vessels observed	Numbers of all vessels	Cover rate for the number of vessels	Number of hooks used by observed vessels	Number of hooks by all vessels	Cover rate for the number of hooks	Number of SBT observed	Number of SBT by all vessels	Cover rate for the number of SBT
Area2	Total	6	8	75.0%	621401	1915536	32.4%	4083	12192	33.5%
	4	-	1	0.0%	-	22000	0.0%	-	4	0.0%
	5	-	4	0.0%	-	167900	0.0%	-	352	0.0%
	6	3	6	50.0%	45180	420400	10.7%	320	2122	15.1%
	7	6	8	75.0%	359195	724024	49.6%	2503	6347	39.4%
	8	6	8	75.0%	208626	475652	43.9%	1247	2894	43.1%
	9	2	3	66.7%	8400	105560	8.0%	13	473	2.7%
Area9	Total	2	11	18.2%	663624	3273955	20.3%	148	1312	11.3%
	1	2	2	100.0%	104293	121400	85.9%	-	-	-
	2	1	4	25.0%	71741	113450	63.2%	2	98	3.1%
	3	1	6	16.7%	95744	462140	20.7%	-	8	0.0%
	4	1	9	11.1%	68474	547585	12.5%	-	41	0.0%
	5	1	6	16.7%	82740	543980	15.2%	2	5	40.0%
	6	1	7	14.3%	63588	307200	20.7%	5	89	5.6%
	7	1	3	33.3%	86030	222500	38.7%	138	261	52.9%
	8	1	2	50.0%	84910	167700	50.6%	-	27	0.0%
	9	1	2	50.0%	6104	177200	3.4%	-	72	0.0%
	10	-	2	0.0%	-	239800	0.0%	-	-	-
	11	-	2	0.0%	-	179000	0.0%	-	217	0.0%
	12	-	2	0.0%	-	192000	0.0%	-	494	0.0%
Area14	Total	7	8	87.5%	449598	1088224	41.3%	1741	3644	47.8%
	1	-	1	0.0%	-	17244	0.0%	-	-	-
	2	-	1	0.0%	-	18600	0.0%	-	-	-
	3	-	2	0.0%	-	36800	0.0%	-	-	-
	4	-	1	0.0%	-	14000	0.0%	-	-	-
	5	-	4	0.0%	-	78900	0.0%	-	11	0.0%
	6	-	1	0.0%	-	36000	0.0%	-	-	-
	7	1	3	33.3%	83550	206360	40.5%	13	263	4.9%
	8	6	8	75.0%	216157	433240	49.9%	1148	2050	56.0%
	9	4	6	66.7%	149891	247080	60.7%	580	1320	43.9%
Grand Total		8	36	22.2%	1734623	6277715	27.6%	5971	17148	34.8%

*The areas which had observer deployed were appeared.

(b) 2013 (calendar year)

Area	Month	Number s of vessels observed	Number s of all vessels	Cover rate for the number of vessels	Number of hooks used by observed vessels	Number of hooks by all vessles	Cover rate for the number of hooks	Number of SBT observed	Number of SBT by all vessels	Cover rate for the number of SBT
Area2	Total	9	28	32.1%	954970	6431709	14.8%	3567	20657	17.3%
	4	-	3	0.0%	-	67570	0.0%	-	1	0.0%
	5	2	11	18.2%	15292	423608	3.6%	51	442	11.5%
	6	4	16	25.0%	162738	1370308	11.9%	403	2905	13.9%
	7	9	25	36.0%	330975	1885079	17.6%	1800	7858	22.9%
	8	7	23	30.4%	315431	2065364	15.3%	1094	7215	15.2%
	9	3	10	30.0%	130534	619780	21.1%	219	2236	9.8%
Area8	Total	4	14	28.6%	99249	1364455	7.3%	6	252	2.4%
	3	-	4	0.0%	-	177539	0.0%	-	-	-
	4	1	8	12.5%	57720	612450	9.4%	1	13	7.7%
	5	4	14	28.6%	41529	530286	7.8%	5	207	2.4%
	6	-	2	0.0%	-	44180	0.0%	-	32	0.0%
Area9	Total	2	28	7.1%	447182	7182016	6.2%	29	1284	2.3%
	1	-	2	0.0%	-	109000	0.0%	-	386	0.0%
	2	-	4	0.0%	-	288825	0.0%	-	-	-
	3	1	9	11.1%	14415	637649	2.3%	-	-	-
	4	2	14	14.3%	82491	1122718	7.3%	-	9	0.0%
	5	2	19	10.5%	125298	1260779	9.9%	1	87	1.1%
	6	2	14	14.3%	56670	797021	7.1%	12	136	8.8%
	7	1	13	7.7%	50708	715690	7.1%	2	212	0.9%
	8	1	13	7.7%	57652	663690	8.7%	7	262	2.7%
	9	1	12	8.3%	59948	636520	9.4%	7	154	4.5%
	10	-	5	0.0%	-	458720	0.0%	-	1	0.0%
	11	-	5	0.0%	-	332944	0.0%	-	22	0.0%
	12	-	3	0.0%	-	158460	0.0%	-	15	0.0%
Area14	Total	7	44	15.9%	967332	6775498	14.3%	2028	12210	16.6%
	1	-	3	0.0%	-	41800	0.0%	-	-	-
	2	-	4	0.0%	-	27200	0.0%	-	-	-
	3	-	5	0.0%	-	66956	0.0%	-	-	-
	4	-	7	0.0%	-	149465	0.0%	-	-	-
	5	5	21	23.8%	158064	807828	19.6%	117	177	66.1%
	6	7	28	25.0%	275168	1503299	18.3%	350	1081	32.4%
	7	6	28	21.4%	197521	1434777	13.8%	745	3697	20.2%
	8	6	29	20.7%	189660	1488598	12.7%	652	4529	14.4%
	9	5	24	20.8%	146919	848545	17.3%	164	2726	6.0%
	10	-	5	0.0%	-	81126	0.0%	-	-	-
	11	-	4	0.0%	-	231184	0.0%	-	-	-
	12	-	3	0.0%	-	94720	0.0%	-	-	-
Grand Total		10	76	13.2%	2468733	21753678	11.3%	5630	34403	16.4%

*The areas which had observer deployed were appeared.

Table 4 Incidental catch of seabirds recorded by observers deployed on Taiwanese SBT vessels
 Country: Taiwan Year (calendar year): 2012

Stratum (CCSBT Statistical Areas or finer scale)	Fishery						Observed						Estimate
	Total Effort ¹	Species	Total Observed Effort ¹	Observer Coverage ² (%)	Captures (Number)	Capture Rate ³ (Number/ Thousand Hooks)	Mortalities (Number)	Mortality Rate ³ (Number/ Thousand Hooks)	Live releases (Number)	Estimated total mortalities (Number)			
2	1915536	TQH	621401	32.44	12	0.0193	12	0.0193	0				
2	1915536	TWD	621401	32.44	3	0.0048	3	0.0048	0				
2	1915536	ALZ	621401	32.44	1	0.0016	1	0.0016	0				
9	3273955	DIM	663624	20.27	1	0.0015	0	0.0000	1				
9	3273955	TQH	663624	20.27	2	0.0030	0	0.0000	2				
9	3273955	DIX	663624	20.27	2	0.0030	1	0.0015	1				
9	3273955	TWD	663624	20.27	2	0.0030	1	0.0015	1				
9	3273955	PRO	663624	20.27	6	0.0090	6	0.0090	0				
9	3273955	PTZ	663624	20.27	1	0.0015	0	0.0000	1				
14	1088224	TQH	449598	41.31	3	0.0067	3	0.0067	0				
14	1088224	TWD	449598	41.31	3	0.0067	3	0.0067	0				
14	1088224	ALZ	449598	41.31	4	0.0089	4	0.0089	0				
14	1088224	PRO	449598	41.31	1	0.0022	1	0.0022	0				
14	1088224	PTZ	449598	29.46	1	0.0022	1	0.0022	0				

¹ For longline provide number of hooks, for purse seine provide number of sets.

² For longline provide as a percentage of the number of hooks, for purse seine provide as a percentage of the number of shots.

³ For longline provide as captures per thousand hooks, for purse seine provide as captures per set.

Table 5 Incidental catch of seabirds recorded by observers deployed on Taiwanese SBT vessels
 Country: Taiwan Year (calendar year): 2013

Stratum (CCSBT Statistical Areas or finer scale)	Fishery						Observed						Estimate
	Total Effort ⁴	Species	Total Observed Effort ⁴	Observer Coverage ⁵ (%)	Captures (Number)	Capture Rate ⁶ (Number/Thousand Hooks)	Mortalities (Number)	Mortality Rate ⁶ (Number/Thousand Hooks)	Live releases (Number)	Estimated total mortalities (Number)			
2	6431709	PHU	954970	14.85	2	0.0021	2	0.0021	0	0			
2	6431709	TQH	954970	14.85	1	0.0010	1	0.0010	0	0			
2	6431709	DIC	954970	14.85	1	0.0010	0	0.0000	1	1			
2	6431709	TWD	954970	14.85	1	0.0010	1	0.0010	0	0			
2	6431709	ALZ	954970	14.85	18	0.0188	14	0.0147	4	4			
2	6431709	MAH	954970	14.85	1	0.0010	1	0.0010	0	0			
2	6431709	SEB	954970	14.85	2	0.0021	1	0.0010	1	1			
8	1364455	PHU	99249	7.27	1	0.0101	1	0.0101	0	0			
8	1364455	ALZ	99249	7.27	9	0.0907	8	0.0806	1	1			
8	1364455	PTZ	99249	7.27	14	0.1411	10	0.1008	4	4			
9	7182016	ALZ	447182	6.23	8	0.0179	8	0.0179	0	0			
9	7182016	PRO	447182	6.23	6	0.0134	6	0.0134	0	0			
14	6775498	PHU	967332	14.28	5	0.0052	5	0.0052	0	0			
14	6775498	TQH	967332	14.28	1	0.0010	1	0.0010	0	0			
14	6775498	DIX	967332	14.28	2	0.0021	2	0.0021	0	0			
14	6775498	TWD	967332	14.28	1	0.0010	1	0.0010	0	0			
14	6775498	ALZ	967332	14.28	1	0.0010	1	0.0010	0	0			
14	6775498	PRO	967332	14.28	1	0.0010	1	0.0010	0	0			
14	6775498	MAH	967332	14.28	1	0.0010	1	0.0010	0	0			
14	6775498	SEB	967332	14.28	2	0.0021	2	0.0021	0	0			

⁴ For longline provide number of hooks, for purse seine provide number of sets.

⁵ For longline provide as a percentage of the number of hooks, for purse seine provide as a percentage of the number of shots.

⁶ For longline provide as captures per thousand hooks, for purse seine provide as captures per set.

Table 6 Incidental catch of sharks recorded by observers deployed on Taiwanese SBT vessels in 2012

Fishery		Country: Taiwan Year (calendar year): 2012										Estimate
		Observed					Estimated					
Stratum (CCSBT Statistical Areas or finer scale)	Total Effort ⁷	Species	Total Observed Effort ⁷	Observer Coverage ⁸ (%)	Captures (Number)	Capture Rate ⁹ (Number/ Thousand Hooks)	Mortalities (Number)	Mortality Rate ⁹ (Number/ Thousand Hooks)	Live releases (Number)	Estimated total mortalities (Number)		
2	1915536	BSH	621401	32.44	1475	2.3737	1435	2.3093	40			
2	1915536	SMA	621401	32.44	11	0.0177	10	0.0161	1			
9	3273955	BSH	663624	20.27	1177	1.7736	332	0.5003	845			
9	3273955	BTH	663624	20.27	4	0.0060	0	0.0000	4			
9	3273955	FAL	663624	20.27	3	0.0045	0	0.0000	3			
9	3273955	LMA	663624	20.27	2	0.0030	1	0.0015	1			
9	3273955	PSK	663624	20.27	4	0.0060	2	0.0030	2			
9	3273955	SMA	663624	20.27	66	0.0995	32	0.0482	34			
9	3273955	SPL	663624	20.27	1	0.0015	0	0.0000	1			
9	3273955	SPZ	663624	20.27	1	0.0015	0	0.0000	1			
14	1088224	BSH	449598	41.31	973	2.1642	846	1.8817	127			
14	1088224	SMA	449598	41.31	7	0.0156	7	0.0156	0			

⁷ For longline provide number of hooks, for purse seine provide number of sets.

⁸ For longline provide as a percentage of the number of hooks, for purse seine provide as a percentage of the number of shots.

⁹ For longline provide as captures per thousand hooks, for purse seine provide as captures per set.

Table 7 Incidental catch of sharks recorded by observers deployed on SBT vessels in 2013
 Country: Taiwan Year (calendar year): 2013

Stratum (CCSBT Statistical Areas or finer scale)	Fishery			Observed							Estimate
	Total Effort ¹⁰	Species	Total Observed Effort ¹⁰	Observer Coverage ¹¹ (%)	Captures (Number)	Capture Rate ¹² (Number/ Thousand Hooks)	Mortalities (Number)	Mortality Rate ¹² (Number/ Thousand Hooks)	Live releases (Number)	Estimated total mortalities (Number)	
2	6431709	BSH	954970	14.85	780	0.8168	725	0.7592	55		
2	6431709	ISB	954970	14.85	1	0.0010	0	0.0000	1		
2	6431709	LMA	954970	14.85	35	0.0367	34	0.0356	1		
2	6431709	PSK	954970	14.85	1	0.0010	0	0.0000	1		
2	6431709	SMA	954970	14.85	20	0.0209	20	0.0209	0		
2	6431709	WSH	954970	14.85	18	0.0188	16	0.0168	2		
8	1364455	BSH	99249	7.27	196	1.9748	192	1.9345	4		
8	1364455	BTH	99249	7.27	1	0.0101	1	0.0101	0		
8	1364455	LMA	99249	7.27	10	0.1008	10	0.1008	0		
8	1364455	PSK	99249	7.27	19	0.1914	0	0.0000	19		
8	1364455	SMA	99249	7.27	2	0.0202	2	0.0202	0		
9	7182016	BSH	447182	6.23	577	1.2903	564	1.2612	13		
9	7182016	FAL	447182	6.23	1	0.0022	1	0.0022	0		
9	7182016	LMA	447182	6.23	6	0.0134	5	0.0112	1		
9	7182016	SMA	447182	6.23	39	0.0872	33	0.0738	6		
14	6775498	BSH	967332	14.28	609	0.6296	425	0.4394	184		
14	6775498	BTH	967332	14.28	1	0.0010	0	0.0000	1		
14	6775498	LMA	967332	14.28	66	0.0682	49	0.0507	17		
14	6775498	PSK	967332	14.28	1	0.0010	0	0.0000	1		
14	6775498	SMA	967332	14.28	16	0.0165	16	0.0165	0		

¹⁰ For longline provide number of hooks, for purse seine provide number of sets.

¹¹ For longline provide as a percentage of the number of hooks, for purse seine provide as a percentage of the number of shots.

¹² For longline provide as captures per thousand hooks, for purse seine provide as captures per set.