

# 2024 Annual Report to the Ecologically Related Species Working Group (ERSWG)

Republic of Korea

Jung Hyun LIM, Youjung KWON, Heewon PARK, Jeong Ho PARK and Jaebong LEE

*National Institute of Fisheries Science (NIFS)*  
*216 Gijanghaean-ro, Gijang-eup, Gijang-gun, Busan 46083, Republic of Korea*

## 1. Introduction

Korean longline fleets have engaged in fishing for southern bluefin tuna, *Thunnus maccoyii* (SBT) in the CCSBT convention area. This fishery commenced with a small experimental operation in the Indian Ocean in 1957, mainly fishing for bigeye tuna, yellowfin tuna and albacore tuna but shifted targeting SBT in 1991. In 2022, SBT catch in calendar year of Korean tuna longline fishery was 1,173 mt (1,173 mt in fishing year) with 9 vessels in active. In general, fishing occurs between 35°S-45°S and 20°E-120°E, in the western Indian Ocean (Area 9) from April to July/August and in the eastern Indian Ocean (Area 8) from July/August to December. However, since 2014 SBT fishing vessels have moved westward than previous years, and mainly operated in the western Indian Ocean and eastern Atlantic Ocean between 20°W-35°E (Area 9). Until the early 2010s the CPUE was low and since 2012 it has increased. In general, the CPUE in Area 9 is higher than in Area 8. In particular, during 2017-2019 there has been no fishing in Area 8.

This paper describes information and data on Ecologically Related Species (ERS) caught by Korean longline vessels fishing for SBT, which have been collected by scientific observer program.

## 2. Review of SBT Fisheries

Korean longline vessels fishing for the SBT are all deep freezers with a range from 200 to 500 gross tonnage. After 1996 the annual number of fishing vessels is fluctuated from 4 to 19. Since 2010, annually 7 to 12 fishing vessels have operated in active for fishing SBT so as to be equivalent to the national quota, and 9 vessels operated to fish for SBT in 2022 (Table 1).

SBT catch of Korean longline fisheries was low with less than 400 mt at the beginning during 1991-1995, and increased up to 1,796 mt in 1998 but largely decreased to below 200 mt in the mid-2000s. Korea became the member of the CCSBT Commission in 2001 and was allocated to 1,140 mt of annual catch limit as membership, while Korean SBT catches were much lower than the national catch until 2007. Since 2008 the annual catch ranged from 705 mt to 1,268 mt, which was well commensurate with the national catch limit (Table 1). In 2022 calendar year, SBT catch by Korean longline fisheries was 1,173 mt (1,173 mt in fishing year).

As for the distribution of SBT CPUE of Korean longline fisheries, fishing vessels generally operated between 35°S-45°S and 20°E-120°E, in the western Indian Ocean (20°E-50°E) of area 9 from April to July/August and in the eastern Indian Ocean (90°E-120°E) of area 8 from July/August to December. After 2014, however, they moved further westward than previous years, which mainly operated in the western Indian Ocean and in the eastern Atlantic Ocean between 20°W-35°E.

### 3. Fisheries Monitoring for Each Fleet

Korea initiated scientific observer programs for distant-water fisheries in 2002 and has been applied to the SBT longline fishery since 2004. The tasks of observer are the same as those adopted by the RFMOs. The recent observer coverages of Korean SBT longline fisheries are shown in Table 2. In 2022, 2 observers were placed onboard 2 longline vessels targeting SBT. They observed the SBT catch of 168 mt and the effort of  $543 \times 10^3$  hooks in 187 sets in fishing area, which the observer coverage was 23% in fishing efforts. Regarding 2020-2021, observers were not placed onboard Korean longline vessels targeting SBT due to the spread of the COVID-19.

The data collected by observer programs are vessel and gear attributes, setting and catch details (including discards/releases), incidental catch and interaction of ERS (ecologically related species), biological measured information, sighting of marine mammals, etc.

In terms of data collection and reporting requirements, the Act on Fisheries Information and Data Reporting was revised and put into effect from December 2012. It includes data collection and reporting requirements recently adopted by the tuna RFMOs regarding especially ecologically important species, discard/release and bycatch mitigation, etc. Since 1<sup>st</sup> September 2015, the Act on Fisheries Information and Data Reporting has obliged fishers to report the catch statistics every day to National Institute of Fisheries Science (NIFS) through the Electronic Reporting (ER) system in order to manage/cross-check the data in real time.

SBT catch statistics are obtained from two sources of data reporting. Korea Overseas Fisheries Association (KOFA) collects total SBT catch by month and vessel through Catch Documentation Scheme (CDS) issued by National Fishery Products Quality Management Service (NFQS). NIFS collects logbook data through ER system filled out by captain onboard. The data collected are verified and confirmed through cross-checking between NIFS and KOFA.

### 4. Seabird

Total bycatch, CPUE and mortality of seabirds by species incidentally caught by Korean SBT longline fisheries are shown in Table 3. In 2021, no seabird was bycaught by Korean SBT longline fisheries. In 2022, a total of 33 individuals belonging to 7 species which were shy albatross (*Thalassarche cauta*), grey-headed albatross (*Thalassarche chrysostoma*), black-browed albatross (*Thalassarche melanophrys*), king penguin (*Aptenodytes patagonicus*), hall's giant petrel (*Macronectes halli*), sooty shearwater (*Puffinus griseus*) and sooty albatross (*Phoebastria fusca*) were recorded by the Korean observer programs for Korean SBT longline fisheries.

## 5. Shark

Total bycatch, CPUE and mortality of sharks by species incidentally caught by Korean SBT longline fishery are shown in Table 3. In 2021, 4,558 individuals which was blue shark (*Prionace glauca*) were bycaught and data were compiled by fishing vessels because observers were not placed onboard Korean longline vessels targeting SBT due to the COVID-19. In 2022, a total of 2,326 individuals belonging to 6 species which were blue shark (*Prionace glauca*), salmon shark (*Lamna ditropis*), porbeagle (*Lamna nasus*), shortfin mako (*Isurus oxyrinchus*), velvet dogfish (*Scymnodon squamulosus*), and whitetail dogfish (*Scymnodalotias albicauda*) were recorded by the Korean observer programs for Korean SBT longline fisheries.

The sharks mainly bycaught by Korean SBT longline fisheries were blue shark, porbeagle and salmon shark, of which the dominant species was blue shark.

## 6. Marine Mammal and Marine Reptile

No marine mammal or reptile was caught by Korean SBT longline fisheries during 2021-2022. Observers also reported that marine mammal or reptile was not caught incidentally by Korean SBT longline fisheries.

## 7. Mitigation Measures to Minimise Seabird and Other Species Bycatch

### 7.1. Mandatory Measures

According to the conservation and management measures on reducing seabird bycatch adopted by the tuna-RFMOs (ICCAT, IOTC and WCPFC), Korean longline fisheries operating south of 25°S are obligated to use 2/3 options (night setting, seabirds scaring line and weighted line).

For compliance monitoring, Korea has implemented the scientific observer programs and the ER system that fishermen should record not only catch information but also seabird mitigation measures used.

Korea has fully implemented ERS mitigation measures, and most of fishing vessels have used seabirds scaring line and weighted line for mitigating the mortality of seabirds.

### 7.2. Voluntary Measures

To mitigate the impact of fishing operations on marine reptiles, Korean tuna longline fisheries have to retain and use necessary equipment, including de-hooking, line cutting tools and scoop nets, for appropriate release of marine reptiles caught incidentally and non-target shark species. The measures implemented are monitored through the observer programs.

## 8. Public Relations and Education Activities Public Relations Activities

To avoid or reduce mortality of ERS by Korean longline vessels, guidebooks, booklets and posters for the information, and releasing manual of these species have been distributed to fishing vessels since 2007. The NIFS has conducted a regular education for vessel captains by visiting the Korean Tuna Longline Fishing Association before the beginning of their fishing trip. The education largely includes recording and reporting of fishing activity, information of target species and ERS, newly adopted measures and better practices from

tuna RFMOs concerned.

To increase awareness of seabirds, especially albatrosses, and their conservation, NIFS and BirdLife South Africa hosted an education workshop on the use of best practice seabird bycatch mitigation measures for fisherman in Korea, 2018.

### **9. Implementation of the IPOA-Seabirds and IPOA-Sharks**

Korea established and has implemented the NPOA-Sharks since August 2011, and the NPOA-Seabirds was established in January 2014.

### Summary of papers submitted to ERSWG

In 2022, the number of active vessels was 9 for longline fishery. With this fishing capacity, Korean tuna longline fishery caught 1,173 mt in 2022 calendar year. In general, fishing occurs between 35°S-45°S and 20°E-120°E, in the western Indian Ocean (Area 9) from April to July/August and in the eastern Indian Ocean (Area 8) from July/August to December. However, since 2014 SBT fishing vessels have moved further westward than previous years, and mainly operated in the western Indian Ocean and eastern Atlantic Ocean between 20°W-35°E (Area 9). Since 2012 the CPUE has increased. In general, the CPUE in Area 9 is higher than in Area 8. During 2020-2021, national scientific observers were not dispatched onboard Korean longline vessels targeting SBT for implementing observer program due to the spread of the COVID-19. In 2022, 2 observers were placed onboard 2 longline vessels.

The data collected by observer programs are vessel and gear attributes, setting and catch details (including discards/releases), incidental catch and interaction of ERS (ecologically related species), biological measured information, sighting of marine mammals, etc. The sharks mainly bycaught by Korean SBT longline fisheries were blue shark, porbeagle and shortfin mako, of which the dominant species was blue shark.

According to the conservation and management measures on reducing seabird bycatch adopted by the tuna-RFMOs (ICCAT, IOTC and WCPFC), Korean longline fisheries operating south of 25°S are obligated to use 2/3 options (night setting, seabirds scaring line and weighted line). Korea has fully implemented ERS mitigation measures, and most of fishing vessels have used seabirds scaring line and weighted line for mitigating the mortality of seabirds. Korea established and has implemented the NPOA-Sharks since August 2011, and the NPOA-Seabirds was established in January 2014.

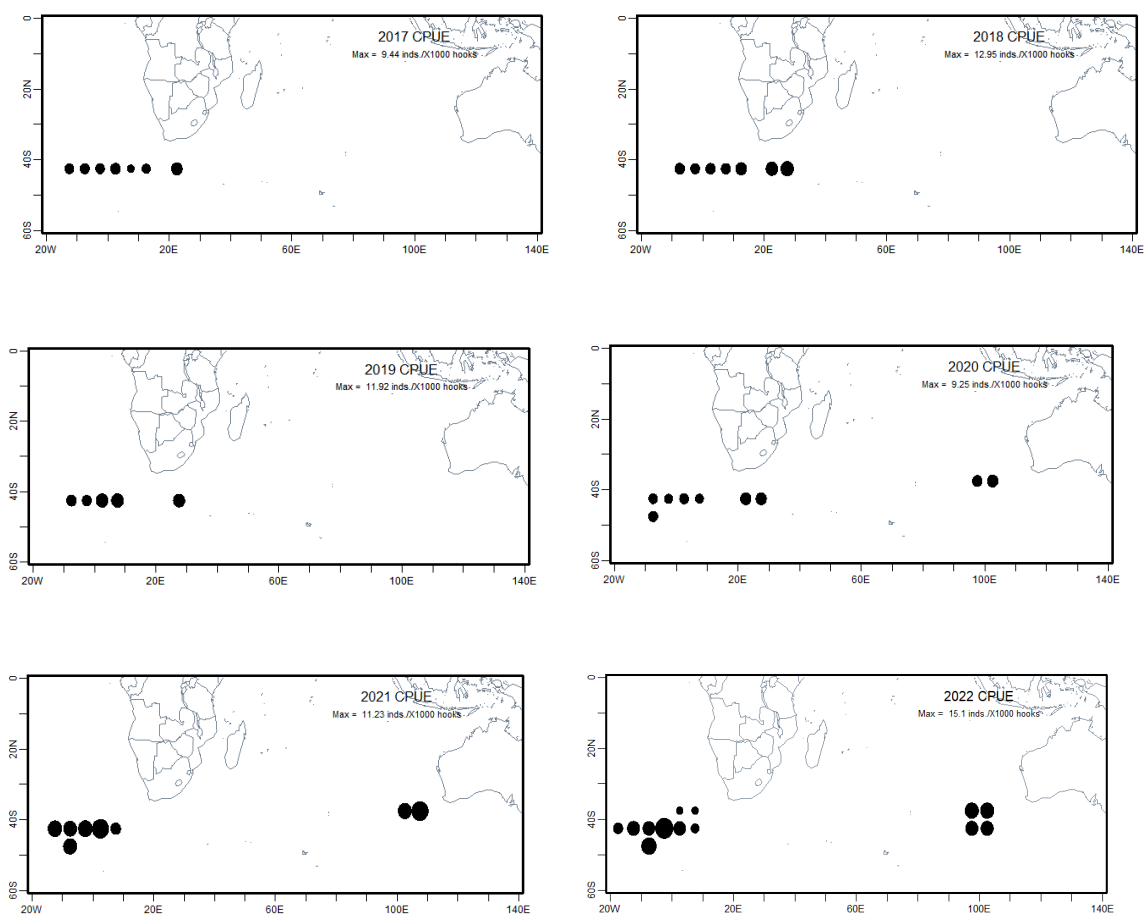


Fig. 1. The distributions of nominal SBT CPUE of Korean longline fisheries, 2017-2022.

Table 1. The annual number of active Korean tuna longline vessels fishing for SBT and their annual SBT catches in the CCSBT convention area, 1991-2022

Year	Number of longline vessel	Catch (mt)	Year	Number of longline vessel	Catch (mt)
1991	3	246	2007	12	521
1992	1	41	2008	19	1,134
1993	1	92	2009	19	1,117
1994	1	137	2010	9	867
1995	3	365	2011	7	705
1996	8	1,320	2012	7	922
1997	14	1,424	2013	9	918
1998	19	1,796	2014	9	1,044
1999	16	1,462	2015	10	1,051
2000	13	1,135	2016	11	1,121
2001	10	845	2017	12	1,080
2002	10	746	2018	10	1,268
2003	4	254	2019	11	1,238
2004	7	131	2020	9	1,231
2005	7	38	2021	9	1,241
2006	9	150	2022	9	1,173

Table 2. Observer coverage for the Korean SBT fisheries through the Korean observer programs, 2018-2022

Year	Trips observed	Effort observed (X1,000)	Total effort estimated (X1,000)	Catch observed of SBT (mt)	Coverage (%)
2018	3	573	2,738	243	21
2019	4	530	2,427	208	22
2020	-	-	2,395	-	-
2021	-	-	2,608	-	-
2022	2	543	2,413	168	23

\* During 2020-2021, observers were not placed onboard Korean longline vessels targeting SBT due to the spread of the COVID-19.

Table 3. Estimation of total mortality of ERS caught incidentally by Korean SBT fisheries, 2021-2022

Country Republic of Korea Year (calendar year) 2021

Stratum (CCSBT Statistical Areas or finer scale)	Human Observer / EM <sup>2</sup>	Total & Observed Effort <sup>1</sup>			Species <sup>5</sup>	Observed Captures				Proportion of observed effort with specific mitigation measures								
		Total Effort <sup>3</sup>	Total Observed Effort <sup>3</sup>	Observer Coverage <sup>4</sup>		Fate (numbers)				TP + NS <sup>6</sup>	TP + WB <sup>6</sup>	NS + WB <sup>6</sup>	TP + WB + NS <sup>6</sup>	TP <sup>6</sup>	NS <sup>6</sup>	WB <sup>6</sup>	NIL	Others <sup>7</sup>
						Retained (dead)	Discarded (dead)	Released (live)	Other <sup>8</sup>									
8	Fishing vessel	353,326	-	-	BSH	-	192	2,144	-		100							
9	Fishing vessel	2,254,725	-	-	BSH	-	2,211	11	-		100							
TOTAL		2,608,051	-	-		-	2,403	2,155	-									

<sup>1</sup> Values in these shaded cells will be repeated for all species within a strata.

<sup>2</sup> Use codes OBS = Human observers, EM = Electronic monitoring. The ERSWG recognised that there was no agreement that EM replace the requirement for 10% observer coverage, and that the proposed inclusion of the option to report on EM results was not intended to imply any such agreement but only to clarify the source of any data that were reported.

<sup>3</sup> For longline provide number of hooks, for purse seine provide number of sets.

<sup>4</sup> For longline provide as a percentage of the number of hooks, for purse seine provide as a percentage of the number of shots.

<sup>5</sup> Use FAO's 3 alpha species codes.

<sup>6</sup> TP = tori poles, NS = night setting, WB = weighted branchline.

<sup>7</sup> Add extra columns for other categories of mitigation measures, if required.

<sup>8</sup> All other captures not included in the columns for Retained (dead), Discarded (dead), and Released (live), e.g. released with undetermined life status.



Table 3. Continued

Country Republic of Korea Year (calendar year) 2022

Stratum (CCSBT Statistical Areas or finer scale)	Human Observer / EM	Total & Observed Effort			Species	Observed Captures				Proportion of observed effort with specific mitigation measures								
		Total Effort	Total Observed Effort	Observer Coverage		Fate ( <i>numbers</i> )				TP + NS	TP + WB	NS + WB	TP + WB + NS	TP	NS	WB	NIL	Others
						Retained (dead)	Discarded (dead)	Released (live)	Other									
9	OBS	2,300,046	542,696	24%	BSH	-	260	1,619	-		100							
9	OBS	2,300,046	542,696	24%	DCU	-	1	-	-		100							
9	OBS	2,300,046	542,696	24%	DIC	-	11	-	-		100							
9	OBS	2,300,046	542,696	24%	DIM	-	9	-	-		100							
9	OBS	2,300,046	542,696	24%	KPY	-	2	1	-		100							
9	OBS	2,300,046	542,696	24%	LMD	-	41	118	-		100							
9	OBS	2,300,046	542,696	24%	MAH	-	1	-	-		100							
9	OBS	2,300,046	542,696	24%	PFG	-	1	-	-		100							
9	OBS	2,300,046	542,696	24%	PHU	-	7	-	-		100							
9	OBS	2,300,046	542,696	24%	POR	-	23	177	-		100							
9	OBS	2,300,046	542,696	24%	SMA	-	-	4	-		100							
9	OBS	2,300,046	542,696	24%	SSQ	-	1	76	-		100							
9	OBS	2,300,046	542,696	24%	YSA	-	2	5	-		100							

