

2013 Annual Report to the Ecologically Related Species Working Group (ERSWG)

Republic of Korea

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1. Introduction

Korean fleet is using only longline gear to fish southern bluefin tuna, *Thunnus maccoyii*, (SBT) in the CCSBT convention area. Korean tuna longline fishery in the Indian Ocean started with a small experimental operation in the 1957 and since then has targeted bigeye tuna, yellowfin tuna and albacore tuna. The Korean SBT fishery commenced in 1991 with a few vessels shifting from the Indian Ocean tuna longline fleet because of higher market price. In 2012, SBT catch of Korean tuna lonline fishery was 922 mt and the number of active fishing vessel was 7. Fishing occurs mainly in the area of 25°S-45°S and 15°-115°E, of which mainly in the western Indian Ocean from March to July/August and in the eastern Indian Ocean from July/August to December. In recent years, the Korean SBT is strictly controlled by the Government in terms of catch and the number of vessels in order to fulfill the conservation and management of the stock by the CCSBT. This report describes information and data on Ecologically Related Species (ERS) of Korean SBT fishery collected by scientific observer program up to 2012.

2. Review of SBT Fisheries

Korean longline fleet for the SBT is all deep freezers. The size ranges from 200 to 500 gross tonnage. The annual numbers of vessel were fluctuated from 8 in 1996 to 19 in 1998, 2008 and 2009. Since 2011, 7 of active vessels for fishing SBT have operated so as to be equivalent to the national quota (Table 1).

The catch was low at the beginning, but it increased up to 1,320 mt in 1996, peaked at 1,796 mt in 1998, and then showed a largely decreasing up to below 200 mt in the mid-2000s. Since 2007 it increased again, and is showing a level of about 1 thousand mt in recent years.

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 limit until 2007. It was mostly attributed to the availability of vessels as well as low market price and high fuel price. Since 2008, the annual catch ranged from 705 mt to 1,134 mt, which was well commensurate with the national catch limit. In 2012 fishing year, Korea was set at 911 mt as the yearly total allowable SBT catch, and a total of 889 mt was caught (922 mt in calendar year) (Table 1).

The geographical distribution of nominal CPUE (no. of fish/1,000hooks) showed two fishing grounds, of which one was located in the western Indian Ocean over the eastern Atlantic Ocean and the other was in the eastern Indian Ocean (Fig. 1). The CPUE was generally higher in the western Indian Ocean than in the eastern Indian Ocean. Fishing occurred from April to July/August in the western Indian Ocean and from July/August to December in the eastern Indian Ocean.

3. Fisheries Monitoring for Each Fleet

Korea initiated scientific observer program 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 fishery bodies. The recent observer coverages of Korean SBT longline fishery are shown in Table 2. For 2012, 3 observers had deployed onboard, of which the data of one observer need to be further checked for species identification, particularly for sharks and seabirds. The observer coverage in 2012 was 12%. During the trip, they observed and collected information such as the amount catch and discard/release for SBT as well as bycatch, species composition, catch and effort by set, gear characteristics, fishing strategy, biological data, etc.

Catch and effort data on SBT have been daily recorded in the logbook and reported to the National Fisheries Research and Development Institute (NFRDI) since the early of 1970s. To address the increasing data collection and reporting requirement by the tuna RFMOs such as the inclusion of discards/release, ecologically important species and bycatch mitigation, etc. the Act on Fisheries Information and Data Reporting was established and put into effect from December 2012. Along with the Act, the NFRDI developed a program being able to monitor submission of data from fishing vessel in real time and to manage/cross-check the data.

4. Seabird

Total number, CPUE and mortality of seabird by species incidentally caught by Korean SBT longline fishery are shown in Table 3. In 2012, a total of 16 individuals, 4 species were recorded by the Korean observer program for Korean SBT longline fishery, of which one individual, cape petrel, *Daption capense* was alive and released, 15 individuals were dead and discarded, and the dominant species was black-browed albatross, *Thalassarche melanophrys*.

5. Other Non-target Fish

Total number, CPUE and mortality of sharks by species incidentally caught by Korean SBT longline fishery are shown in Table 4. In 2012, a total of 1,682 individuals, 4 species were recorded by the Korean observer program for Korean SBT longline fishery, of which 14 individuals of thresher shark, *Alopias vulpinus* alive and released, and the dominant species was blue shark, *Prionace glauca*.

6. Marine Mammal and Marine Reptile

No species for marine mammals and reptiles was caught by Korean SBT longline fishery. Observers also reported that any marine mammals or reptiles were not caught incidentally by

Korean SBT longline fishery.

7. Mitigation Measures to Minimise Seabird and Other Species Bycatch

According to the effective mitigation measures recently adopted by the tuna-RFMOs to reduce the incidental catch of seabird, Korean tuna longline fishery operating south of 25°S has been required to use 2/3 options (night setting, seabirds scaling line and weighted line). In July 2013, a sea trial was conducted to facilitate the implementation of this measure and further investigate as to how this measure affects the Korean vessel for fishing SBT in collaboration with BirdLife International.

To mitigate the impact of fishing operations on sea turtles, Korean tuna longline fishery should retain and use some necessary equipment and take care of appropriate release of sea turtles caught incidentally, including de-hooking, line cutting tools and scoop nets.

8. Public Relations and Education Activities Public Relations Activities

To avoid or reduce mortality of ecologically related species by tuna longline vessels, guidebooks, booklets and posters for the information, and releasing manual of these species have been distributed to fishing vessels since 2007. NFRDI 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.

9. Information on other ERS (non-bycatch) such as prey and predator species

Nothing

10. Others

Nothing

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

Korea has been implemented NPOA-Sharks since late 2011 and Korean government carried out education for fishermen including the SBT fishery. NPOA-Seabirds is under drafting so as to complete in late 2013.

Table 1. The annual number of active Korean tuna longline vessels fishing for SBT and their annual SBT catches in the CCSBT convention area, 1991-2012

Year	Number of longline vessel	Catch (mt)	Year	Number of longline vessel	Catch (mt)
1991	3	246	2002	10	746
1992	1	41	2003	4	254
1993	1	92	2004	7	131
1994	1	137	2005	7	38
1995	3	365	2006	9	150
1996	8	1,320	2007	12	521
1997	14	1,424	2008	19	1,134
1998	19	1,796	2009	19	1,117
1999	16	1,462	2010	9	867
2000	13	1,135	2011	7	705
2001	10	845	2012	7	922

Table 2. Observer coverages of SBT catch and hooks observed through the Korean observer program, 2008-2012

Year	Trips observed	Effort observed (X1,000)	Total effort estimated (X1,000)	Catch observed of SBT (mt)	Coverage (%)
2008	-	-	-	-	-
2009	2	446	5,419	92	8
2010	2	389	3,537	95	11
2011	-	-	-	-	-
2012	3	421	3,473	162	12

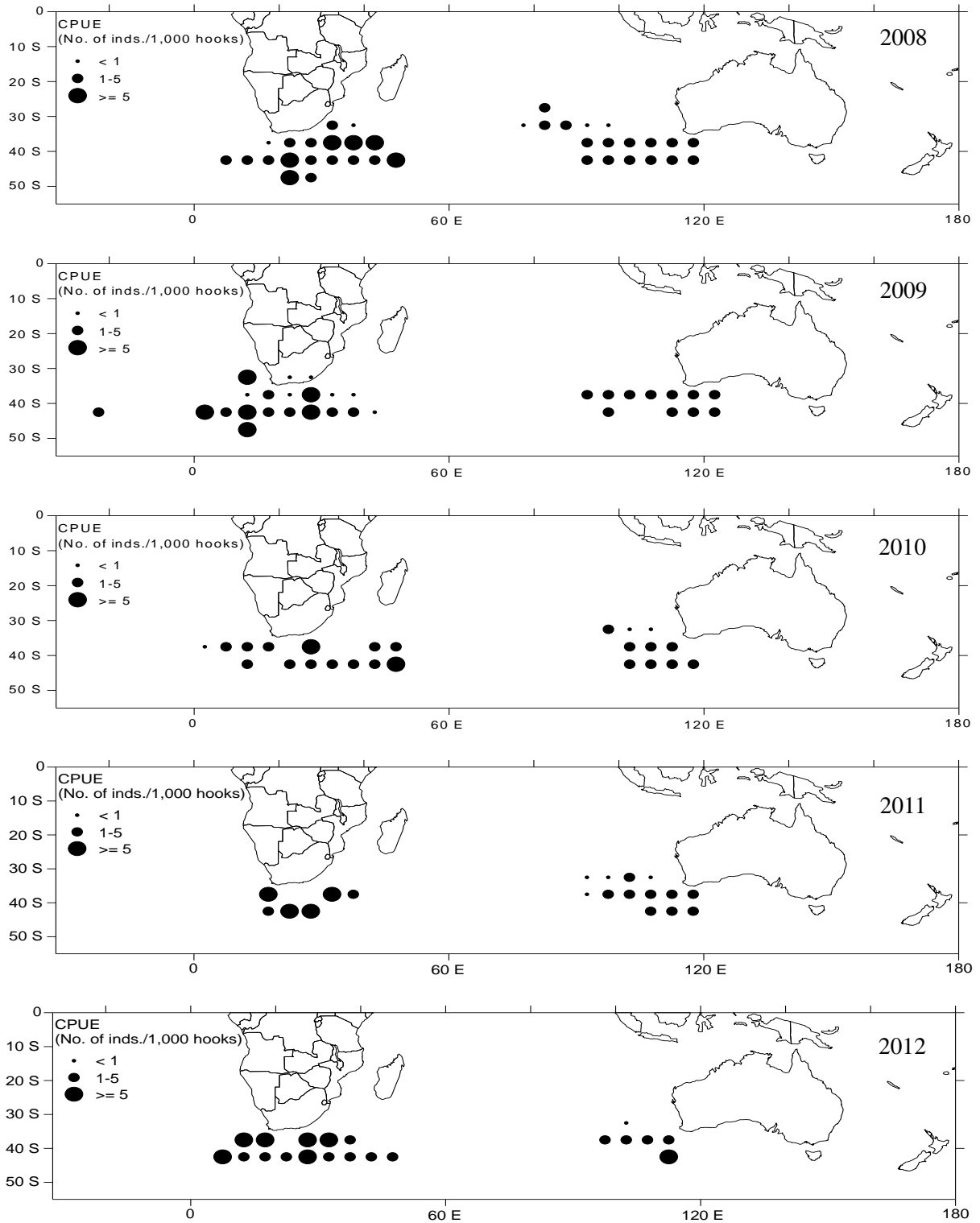


Fig. 1. The distributions of nominal CPUE of SBT caught by Korean tuna longline fisheries, 2008-2012.

Table 3. Estimation of total mortality of seabirds caught incidentally by Korean tuna longline fisheries in the CCSBT convention area, 2010-2012

Year	Stratum	Total effort	Observed								Estimate
			Total observed effort	Observed coverage	Species (or group)	Capture (number)	Capture Rate	Mortalities (number)	Mortality Rate	Live Releases (number)	Estimated total mortalities (number)
2010	9	1,557,056	389,042	25.0	<i>Thalassarche cauta</i>	3	0.008	3	0.008	0	12
					<i>Thalassarche bulleri</i>	9	0.023	9	0.023	0	36
					<i>Thalassarche chrysostoma</i>	2	0.005	2	0.005	0	8
					<i>Thalassarche melanophrys</i>	24	0.062	24	0.062	0	96
					<i>Diomedea exulans</i>	11	0.028	11	0.028	0	44
					<i>Macronectes giganteus</i>	1	0.003	1	0.003	0	4
					<i>Daption capense</i>	1	0.003	1	0.003	0	4
					<i>Diomedea chlorhynchos</i>	15	0.039	15	0.039	0	60
					10	0.026	9	0.023	1	36	
2012	9	1,767,642	282,931	16.0	<i>Daption capense</i>	2	0.007	1	0.004	1	6
					<i>Thalassarche melanophrys</i>	10	0.035	10	0.035	0	62
					<i>Diomedea exulans</i>	3	0.011	3	0.011	0	19
					<i>Macronectes giganteus</i>	1	0.004	1	0.004	0	6

* For 2011, no observer was deployed onboard.

** For 2012, 3 observers had deployed onboard, but the data of one observer was not included in this table due to the need of data to be checked further.

Table 4. Estimation of total mortality of sharks caught incidentally by Korean tuna longline fisheries in the CCSBT convention area, 2010-2012

Year	Stratum	Total effort	Observed							Estimate	
			Total observed effort	Observed coverage	Species (or group)	Capture (number)	Capture Rate	Mortalities (number)	Mortality Rate	Live Releases (number)	Estimated total mortalities (number)
2010	9	1,557,056	389,042	25.0	<i>Alopias vulpinus</i>	1	0.003	0	0.000	1	0
					<i>Prionace glauca</i>	3,879	9.971	148	0.380	37	592
					<i>Alopias superciliosus</i>	3	0.008	1	0.003	2	4
					<i>Carcharhinus galapagensis</i>	2	0.005	1	0.003	0	4
					<i>Carcharhinus plumbeus</i>	3	0.008	0	0.000	0	0
					<i>Carcharhinus falciformis</i>	1	0.003	0	0.000	0	0
					<i>Lamna nasus</i>	439	1.128	87	0.224	4	348
					<i>Isurus oxyrinchus</i>	87	0.224	19	0.049	1	76
2012	9	1,767,642	282,931	16.0	<i>Alopias vulpinus</i>	15	0.053	1	0.004	14	6
					<i>Prionace glauca</i>	1,413	4.994	175	0.619	0	1,093
					<i>Lamna nasus</i>	68	0.240	8	0.028	0	50
					<i>Isurus oxyrinchus</i>	186	0.657	58	0.205	0	362

* For 2011, no observer was deployed onboard.

** For 2012, 3 observers had deployed onboard, but the data of one observer was not included in this table due to the need of data to be checked further.