

Review of Korean SBT Fishery of 2005/2006

Doo-Hae An, Seon-Jae Hwang, Dae-Yeon Moon, and Soon-Song Kim

National Fisheries Research and Development Institute, Republic of Korea

1. Introduction

Southern bluefin tuna (SBT) fishery is the most recently developed tuna fishery by Korean distant-water fishing industry. The SBT catch made by Korean longline fleet reached a maximum in 1998, followed by continuous decrease until recent years. Species composition of the catch shows that target species accounted for 5.6% in 2005 and 48.0% in 2006 of the total catch and remaining consisted of tunas, billfishes, sharks and other fish species. Korean longline fleet has voluntarily deployed a tori line and other several on-board measures to reduce seabird bycatch by longline fishing.

2. Review of SBT Fisheries

Fleet size and distribution

Korean SBT fishery commenced in 1991 with a few longliners shifted from tropical waters where they targeted bigeye and yellowfin tuna. Thus, in the early years of this fishery, SBT did not attract Korean fishing industry, but because of higher market price number of longliners rapidly increased to reach a maximum fleet size of 19 longliners in 1998. However, by the voluntary regulation of fleet size among fishing industries, annual fleet size for SBT fishery never exceeded 16 registered number since then and number of longline vessels active was 7 in 2005 and 9 in 2006. Annual number of fishing vessels for SBT largely depends on Japanese market price for SBT and fishing condition on the fishing grounds.

Distribution of catch and effort

Typically fishing season of Korean SBT longline fishery usually started in March and ends by November or December. In the first half of fishing season from March to July or August, usually Korean longliners are fishing on the high seas of the western Indian Ocean off South Africa, with occasional expanded operation to the southeastern Atlantic, while in the second half they move to the eastern Indian Ocean off the western Australia. This fishing pattern and fishing

grounds have rarely been changed for the past 15 years of fishing history for SBT except for 1991, but in 2005 and 2006, some catches were also taken from the western and central fishing grounds from March to September.

In 2005, 7 out of 16 registered longliners fished for SBT and made a catch of 33 mt (reported as processed weight), showing a decrease by about 71% from 2004. In 2006, 9 out of 16 registered longliners fished for SBT and made a catch of 130 mt. SBT catches in 2006 by Korean longliners were mainly caught from July to December (Table 1) and the fishing was formed in the eastern South Africa (Fig 1). The reason why the Korean fishing ground was formed in the area periodically was that the Korean longliners were mainly operated targeting the yellowfin and bigeye tunas recently in the Indian Ocean near the South Africa and Mozambique.

Catch per unit effort of Korean longline fishery for SBT has shown a decreasing trend from a peak at 8.4 fish/1,000 hooks in 1994. However, CPUE appeared to be more or less stable between 2.3 and 4.1 fish/1,000 hooks in recent years. CPUE in 2005 and 2006 were 0.6 fish/1,000 hooks and 3.1 fish/1,000 hooks, respectively.

Table 1. Monthly catch of SBT by Korean tuna longliners in 2006.

Month	Tot	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Catch	130	1	2	3	6	9	8	19	81	37	18	11	13

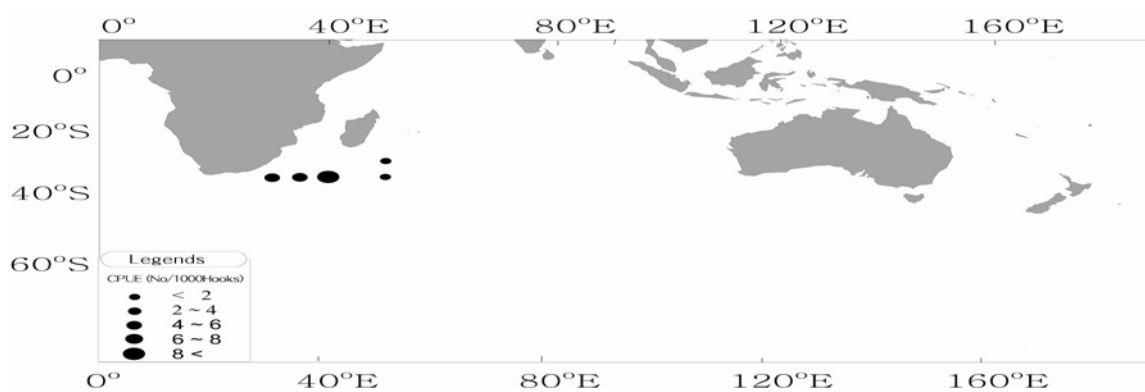


Fig. 1. CPUE (No./1,000 hooks) distribution of SBT by Korean tuna longliners in 2006.

3. Fisheries Monitoring for each fleet

Fisheries statistics are collected and reported for a calendar year. Catch and effort data based on the logbooks are routinely collected through a fisheries data collection system which was lawful in 1977. According to this domestic regulation, distant-water fishing vessels have to submit the reports of their fishing operations within 30 days (home-based) or 60 days (foreign-based) after completion of their operations to the National Fisheries Research and Development Institute (NFRDI).

Korea initiated a fisheries observer program for distant-water fisheries including tuna fisheries in 2002. The purpose of this program is to meet the requirements of relevant regional fishery bodies and therefore the mission of trained observers is similar to those set out in the convention of the fishery bodies.

In 2004-2005, two observers were initially deployed on Korean SBT longline fishing vessel operating in the EEZ of South Africa and adjacent waters of Mozambique. Scientific observation continued for about two months starting from the mid-August 2004 and November 2005. During the trip, observers monitored catch of target and by-catch species. In 2006, one observer was deployed to monitor tuna longline fishery in the central Indian Ocean, between 5°-8°S and 49°-55°E. The observer recorded a total catch of 11.6 mt of yellowfin and bigeye tunas during 24 days of observation period. No SBT catch was reported in the central Indian region.

4. Seabird

According to fishermen, some seabird species (unidentified) are usually encountered as they set longlines. However, no documentation on seabird bycatch has been available. During the scientific observation trip from August to October in 2006, observer reported that there was no incidental catch of seabirds because of several on-board voluntary measures to avoid seabird bites such as hook-casting before dawn, tori line installing, using heavy weight and defrozen baits, etc.

5. Other Non-target Fish

During the scientific observation of central Indian Ocean in 2006, a total of 21 longline sets (one set per day) with total 62,657 hooks were monitored. A total of 21 species (406 in number) were observed, among which sharks (46.3%), lancetfish (24.6%), escolar (13.3%), barracuda (6.4%) and dolphinfish (4.9%) were dominant. Especially, according to longline fishermen, the fishing condition of that year was very bad, but lancetfish as a incidental fish species (exception of sharks) was most dominant in number. During hauling the longline sets, about 20% of

lancetfish was taken on-board, however 80% of that was dropped in the surface layer.

Sharks data are usually collected into a “sharks” category because detailed on-board identification was difficult to fishermen without a good guide and knowledge in biology. According to fishermen’s identification, it seems that blue sharks and mono sharks are dominant species among shark bycatch in 2004-2005. However, during the scientific observation trip in 2006, incidental catches of sharks caught by 62,657 size-4.0 traditional J hooks in central Indian Ocean were 188, comprising 12 species. The dominant species were silky shark (51.6% of the total catch in number), blue shark (20.7%), white-tip shark (9.0%), smooth hammerhead shark (6.4%) and mako shark (4.8%). These species were composed of dominant sharks species and mostly taken in surface layer. Overall catch rates of sharks were 3.0 sharks/1,000 hooks in the Indian Ocean. The fins comprised, on average, 4.6% in wet weight and 0.53% in dried weight of the total body weight in Indian Ocean. So, we could estimate the round weight of certain sharks species used for fin production (Table 2).

Table 2 . Species composition (%) of the Korean longline fishery targeting southern bluefin tuna, 2005-2006

Year	Unit	SBT	ALB	YFT	BET	BUM	STM	SWO	BLM	SHA	OTH	TOTAL
2005	Weight (mt)	26.7	45.3	245.8	139.6	0.4	0.5	11.7	0.2	3.0	-	473.2
	%	5.6	9.6	51.9	29.5	0.1	0.1	2.5	0.1	0.6	-	100
2006	Weight (mt)	9.5	1.8	0.7	6.5	-	-	0.8	-	0.4	-	19.7
	%	48.0	9.3	3.7	32.8	-	-	4.0	-	2.2	-	100

SBT : southern bluefin tuna ALB : albacore tuna YFT : yellowfin tuna BFT : bigeye tuna BUM : blue marlin
STM : striped marlin SWO : swordfish BLM : black marlin SHA : sharks OTH : other fishes

6. Marine Mammal and Marine Reptiles

No data is available for marine mammals or reptiles incidentally caught by Korean SBT longline fishery. During the scientific observation trip in 2006, sighting of whales were not recorded and there was no incidental catch of sea turtle.

7. Mitigation Measures

Current Measures

Mandatory Measures for Each Fleet

Currently there are no mandatory measures taken by Korean Government to reduce the incidental catch of seabird by its tuna longline fishery. However, the Ministry of Maritime Affairs and Fisheries (MOMAF) is developing the National Plans of Action for the reduction of seabird and shark bycatch from longline fisheries and the preliminary NPOA-seabird and sharks is under compilation. It completed the NPOA-IUU fishing and reported to FAO in 2005.

Voluntary Measures for Each Fleet

While no mandatory measures to reduce seabird bycatch was taken by the Korean Government, fishermen voluntarily adopted seabird deterrent device called tori line. Based on fishermen's interview, it was around 1990s when Korean longliners voluntarily began to deploy tori line to deter seabirds from baited hooks. Fishermen recognize from their experiences that deterring seabirds from contacting baits during SBT longline sets is beneficial not only to reduce seabird mortality but to their fishery by reducing bait and effort loss.

In 2006 and 2007, MOMAF and NFRDI published guidebooks, information booklets and posters to educate fisherman through recent information and identification key for bycatch species in tuna fisheries.

8. Public Relations and Education Activities

To avoid or reduce mortality of seabird and sea turtle by tuna longline vessels, guidebooks, information booklets and posters for the information and release manual of these species were distributed to fishing boats including tuna longliners in 2006 and 2007.

NFRDI opens a training session for fishing vessel captains as they make a visit to Korean Tuna Longline Fishing Association before they begin their fishing trip. Last year, 8 training sessions were taken for fishing captains. The session largely includes reporting of fishing activity, target species and implementation of international regulation. However, the importance of bycatch reporting is also emphasized and encouraged.

9. Other Research Activities

Comparison of circle hooks and J hooks catch rates for target and bycatch species was conducted in the Korean tuna longline fishery in Pacific Ocean in 2005 and 2006. The results of circle hooks test were already reported to the Scientific Committee of WCPFC in 2006. In 2007, these research activities of circle hooks will be continued by NFRDI from July to September in WCPFC convention area.