

Review of Korean SBT Fishery in the 2008 Fishing Season

1. Introduction

Southern bluefin tuna (SBT) fishery is the most recently developed tuna fishery in Korean distant-water fishing industry. After reaching the maximum level in 1998, the SBT catch of Korean longline fleet had continuously decreased until 2005. From 2006 Korean longliners targeting SBT have increased and the catches of SBT recorded 130 mt in 2006. Species composition of the catch shows that, among total catch including tunas, billfishes, sharks and others, SBT accounted for 19.3% in 2007 and 15.7% in 2008. Annual number of fishing vessels for SBT largely depends on Japanese market prices for SBT and fishing condition on the fishing grounds.

2. Operational constraints on effort

Korea became a member of the CCSBT in 2002, and agreed to limit its annual catch of SBT to 1,140 mt. There is no restriction to fish SBT for Korean distant water tuna longliners which have the license issued by the Ministry for Food, Agriculture, Forestry & Fisheries (MIFAFF). Korean tuna fishing companies, however, have restricted the number of fishing vessels and have allocated individual quota by fishery companies by themselves.

In order to collect SBT catch information in a timely manner and to control the total SBT catch not to exceed the catch limit, every vessel that catches SBT is required to submit weekly report on its catch of SBT by weight as well as its fishing location to the fishery authority through her company. And then the authority report the monthly catches of SBT to CCSBT Secretariat.

3. Catch and Effort

In 2008, 19 out of 20 registered longliners fished for SBT and made a catch of 986 mt. SBT catches in 2008 by Korean longliners were mainly caught from May to November (Table 1). Catch per unit effort of Korean longline fishery for SBT in 2008 was 3.6 fish/1,000 hooks.

4. Catch and effort in the past

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 2.4 and 3.9 fish/1,000 hooks in recent years. CPUE in 2007 was 2.4 fish/1,000 hooks.

Fishing season of Korean SBT longline fishery usually starts in March and ends in November or December. In the first half of fishing season, from March to July or August, usually Korean longliners fish 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 16 years of fishing history for SBT except for 1991. However, in 2007 and 2008, some catches were also taken from the western and central fishing grounds from March to December. In 2007, 12 out of 17 registered longliners fished for SBT and made a catch of 453 mt (reported as processed weight).

5. Annual scale and distribution of fishing fleet

In 2008, 19 out of 20 registered longliners fished for SBT and the fishing ground 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.

6. Scale and distribution of fishing fleet in the past

Korean SBT fishery commenced in 1991 with a few longliners shifted from tropical waters where they targeted bigeye and yellowfin tuna. In the early years of this fishery, SBT fishery was not active in Korean fishing industry, but because of higher market prices the 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 has never exceeded 18 registered numbers since then and the number of longline vessels active was 9 in 2006 and 12 in 2007. Annual number of fishing vessels for SBT largely depends on Japanese market prices for SBT and fishing condition on the fishing grounds.

7. Monitoring of fishing

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 put into legislation 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 2007, one observer was deployed to monitor tuna longline fishery including by-catch species in the southwestern Indian Ocean, between 27°-39°S and 40°-48°E for three months starting from the end of August to early December (Table 2). The observer recorded a total catch of 746 inds. of yellowfin and bigeye tunas, and a total catch of 497 inds. of SBT during 95 days of observation period (Table 3). Ratio of SBT was 13.8% of total catch in number and sharks were 20.9%, which was more than SBT. In 2008, no observer was deployed. In 2009, two observers were deployed to monitor tuna longline fishery including by-catch species in the southwestern Indian Ocean, between 30S°-43°S and 11E°-43°E for four months starting from the end of March to early June (Table 2). The observer recorded a total catch of 60 inds. of yellowfin and bigeye tunas, and a total catch of 1,068 inds. of SBT during 109 days of observation period. The ratio of SBT was 18.2% of total catch in number and sharks were 38.9%.

All Korean tuna longliners of distant water fishery installed satellite-based Vessel Monitoring System (VMS) for transmitting the position of vessels four times a day to the monitoring center.

Korea has implemented the Trade Information Scheme (TIS) since 2000, enacting the Ministerial Decree named “Guideline to Certify Trade Information on Southern Bluefin Tuna”.

There were no transshipments for the SBT in 2009.

8. Others

Mandatory Measures for Each Fleet

Article 6 of the Constitution of the Republic of Korea provides that treaties duly concluded and promulgated under the Constitution and the generally recognized rules of international law shall have the same effect as the domestic laws of the Republic of Korea. The Distant Water Fishery Development Act of 2008 also set comprehensive obligations of fishermen operating in any waters managed by Regional Fisheries Management Bodies to comply with the provisions of the treaties and the conservation and management measures adopted by the RFMO. Therefore, any resolutions adopted by the Commission shall bind fishermen in principle.

Seabird Bycatch Mitigation Measure

Korean longline vessels use tori line to reduce seabird bycatch. 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 recent scientific observation trip from March to June in 2009, two observers reported that there were 107 incidental catches of seabirds although fishermen used several on-board voluntary measures to avoid seabird bites

such as hook-casting before dawn, tori line installing, using heavy weight and thawed baits, etc.

Non-target Fish

During the scientific observation trip in 2007, incidental catches of sharks caught by 245,641 size-4.0 traditional J hooks in Indian Ocean were 749 inds., comprising 7 species. The dominant species were blue shark (82.0% of the total shark catch in number), mako shark (8.8%), and salmon shark (6.9%), taken in surface layer (Table 4). Overall catch rates of sharks were 3.0 sharks/1,000 hooks in the Indian Ocean. The fins comprised, on average, 3.4% in wet weight of the total body weight in Indian Ocean. So, we could estimate the round weight of certain sharks species used for fin production. 20 species of other bycatch species were recorded, which were escolar (27.8% of total catch of other species in number), oilfish (22.1%) and opah (14.1%) (Table 5).

During the scientific observation of central Indian Ocean in 2009, a total of 97 longline sets (one set per day) with total 311,069 hooks were monitored. 7 species of 2,288 sharks were caught. The dominant species were blue shark (80.4% of the total shark catch in number), salmon shark (17.5%), and mako shark (1.8%) (Table 4). 25 species were recorded as bycatches, which were opah (43.0% of total catch of other species in number), sickle pomfret (15.6%) and Brama pomfret (12.8%) (Table 5).

Public relations

To avoid or reduce the mortality of seabird and sea turtle by tuna longline vessels, guidebooks, information booklets and posters for the information and release manual of these bycatch species were distributed to fishing boats including tuna longliners in 2007, 2008 and 2009.

The NFRDI has provided training sessions for fishing vessel captains as they make a visit to Korean Tuna Longline Fishing Association before they begin their fishing trip. Last year, 5 training sessions were taken for fishing captains. The session largely includes reporting of fishing activity, target species and implementation of international regulation. Also, the importance of bycatch reporting is emphasized.

Table 1. Monthly catch of SBT by Korean tuna longliners in 2007-2008.

Month Year	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	453	0	0	14	75	33	37	34	49	56	94	28	33
2008	986	9	10	14	65	99	126	200	135	86	85	91	66

Table 2. Summary of observed catch and effort coverage by Korea in 2005-2009.

Year	Sector	Observers Deployed	Sea Days	Sets/Tows Observed	Observed Vessels	Observed Effort (%, units)	Observed Catch (%, units)	Total Cost (Won)
2005	Longline	1	29	20	9%	2% (hooks)	-	6,459,000
2006	Longline	1	24	21	9%	2% (hooks)	-	8,400,000
2007	Longline	1	95	76	9%	2% (hooks)	27.5%	16,350,000
2009	Longline	2	109	97	10%	-	-	37,300,000

* In 2008 : No observed data

Table 3. Species composition (%) of the Korean longline fishery targeting southern bluefin tuna, 2007 and 2009

Year	Unit	SBT	ALB	YFT	BET	STM	SWO	BLM	SHA	OTH	TOTAL
2007	Number	497	449	523	223	1	31	2	749	1,115	3,590
	Ratio %	13.8	12.5	14.6	6.2	0.0	0.9	0.1	20.9	31.1	100.0
2009	Number	1,068	1,152	14	46	0	4	0	2,288	1,307	5,879
	Ratio %	18.2	19.6	0.2	0.8	0.0	0.1	0.0	38.9	22.2	100.0

SBT : southern bluefin tuna ALB : albacore tuna YFT : yellowfin tuna BET : bigeye tuna

STM : striped marlin SWO : swordfish BLM : black marlin SHA : sharks OTH : other fishes

Table 4. Shark species composition (%) of the Korean longline fishery targeting southern bluefin tuna, 2007 and 2009

Species	2007		2009	
	Number	Ratio (%)	Number	Ratio (%)
Blue shark	614	82.0	1,840	80.4
Shortfin mako shark	66	8.8	41	1.8
Salmon shark	52	6.9	401	17.5
Silky shark	12	1.6	0	0.0
Crocodile shark	3	0.4	0	0.0
Velvet dogfish	1	0.1	0	0.0
Whitetip shark	1	0.1	0	0.0
Dusky shark	0	0.0	2	0.1
Mackerel shark	0	0.0	2	0.1
Pelagic Thresher shark	0	0.0	1	0.0
Shmalltooth and tiger	0	0.0	1	0.0
Total	749	100.0	2,288	100.0

Table 5. Bycatch species composition (%) of the Korean longline fishery targeting southern bluefin tuna, 2007 and 2009

Species	2007		2009	
	Number	Ratio (%)	Number	Ratio (%)
Escolar	310	27.8	31	2.4
Oilfish	246	22.1	58	4.4
Opah	157	14.1	562	43.0
Wahoo	114	10.2	1	0.1
Lancetfish	78	7.0	0	0.0
Shortbill spearfish	65	5.8	0	0.0
Dolphinfish	40	3.6	1	0.1
Stingray	26	2.3	0	0.0
Indo-Pacific sailfish	16	1.4	3	0.2
Skipjack	15	1.3	3	0.2
Sickle pomfret	13	1.2	204	15.6
Snake mackerel	6	0.5	3	0.2
Shortnose lancetfish	6	0.5	2	0.2
Ocean sunfish	5	0.4	0	0.0
Pomfret	4	0.4	101	7.7
Indo-pacific marlin	4	0.4	2	0.2
Crested oarfish	4	0.4	1	0.1
Great barracuda	4	0.4	0	0.0
Patagonian toothfish	1	0.1	5	0.4
Slender suckerfish	1	0.1	0	0.0
Brama pomfret	0	0.0	167	12.8
Butterfly kingfish	0	0.0	132	10.1
Rough pomfret	0	0.0	16	1.2
Other species	0	0.0	4	0.3
Sharptail mola	0	0.0	3	0.2
Pelagic stingray	0	0.0	2	0.2
Roudi's escolar	0	0.0	2	0.2
Common dolphinfish	0	0.0	1	0.1
Common mola	0	0.0	1	0.1
Slender tuna	0	0.0	1	0.1
Tapertail ribbonfish	0	0.0	1	0.1
Total	1,115	100.0	1,307	100.0

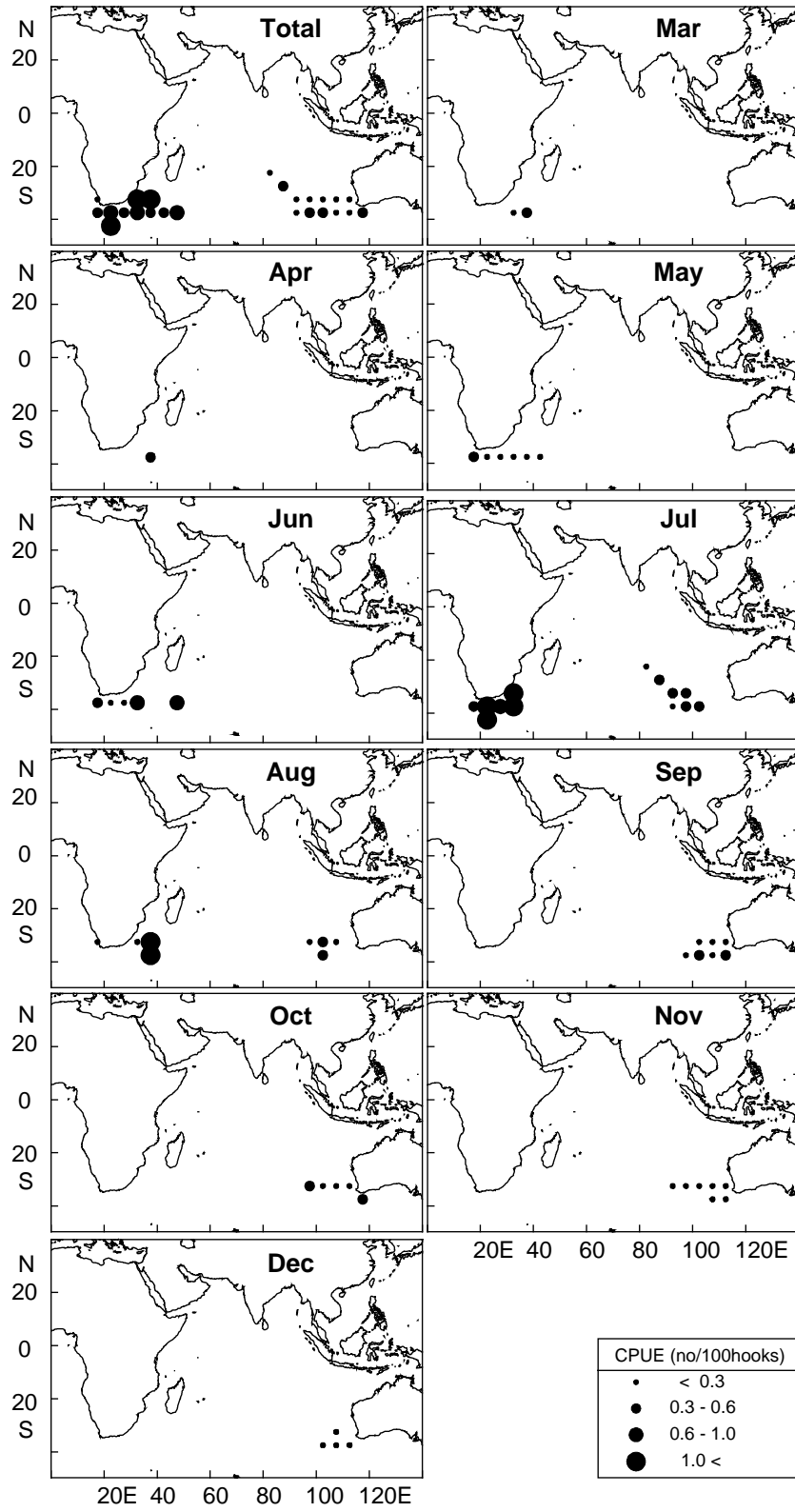


Fig. 1. CPUE (No./100 hooks) distribution of SBT by Korean tuna longliners in 2008.