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Abstract

The Korean tuna longline fishery has shown a decreasing trend from the late 1970s to recent years in both number of fishing vessels and annual catches. In 2004, total catch amounted to 7,735 mt by 36 longliners, which is the record high in Korean longline fishery in this area as compared to 2003. This was mainly due to the shift of longliners from the Pacific to the Indian Ocean 2002. Catch consists of 114 mt of southern bluefin tuna, 4,068 mt of yellowfin tuna, 2,466 mt of bigeye tuna, 757 mt of other tunas and 330 mt of billfishes. The National Fisheries Research and Development Institute (NFRDI) began to operate fisheries observer program in 2004 to monitor Korean distant-water fisheries for tunas and to meet the requirements of regional fisheries bodies. At the initiated stage, size of the observer program is fairly small to cover for the longliner fisheries to be urgently implemented but will be gradually developed to cover all required areas of the fisheries.

General Fishery Statistics

Catch

Korean tuna fishery has operated its longline fleet in the Indian Ocean since the mid-1960s. Major target species of tunas include yellowfin, bigeye and albacore tunas. However, in recent years albacore tuna remains as a minor species whereas southern bluefin tuna was enlisted in one of the target species of Korean longliners.

Catches by longline fishery has shown a decreasing trend from a peak at 71,100 tons in 1978 to 2002 (Table 1) and then increasing to 2004. In 2004, annual total catch amounted to 7,735 mt, which is the record low in Korean longline fishery in this area. Catch consists of 114 mt of southern bluefin tuna, 4,068 mt of yellowfin tuna, 2,466 mt of bigeye tuna and 757 mt of other tunas and 330 mt of billfish species (Table 2 and Fig. 1). Catch of southern bluefin tuna decreased by more than 65% to the previous year but yellowfin tuna, bigeye tuna and albacore increased in 2004 but remained similar to 2000. This was mainly due to the shift of longliners from the Pacific to the Indian Ocean.

The traditional fishing grounds of Korean tuna longline fishery were mainly formed in the central tropical area between 20^{o}N and 20^{o}S. From 1991 onward some longliners moved to the south (43 ^{o}N) of the Indian Ocean where they target southern bluefin tuna, yellowfin tuna, bigeye tuna and albacore catch were also recorded (Fig. 2).

Size composition data

Fishermen on board are encouraged to collect size data of main target species, bigeye and yellowfin tuna. Fig. 3 showed the size distribution of YFT and BET caught by Korean longliners during the past 3 years. Size composition in 2004 ranges from 96 to 176cm Fork length (FL) for YFT and from 102 to 192 cm FL for BET, respectively. The mean FL of YFT was 131.0cm with mode 130~132 cm and that of BET was 129.0cm

with mode 122~124 cm and have shown slightly decreasing trend.

Fleet structure

Number of Korean tuna longline fishing vessel in the Indian Ocean has shown a decreasing trend from a peak at 185 in 1975. In 2004, only 36 vessels were active in the Indian Ocean, which is a increase by 11 vessels compared to 2003. This is the main cause of the increase in total annual catch for the year 2004. The size of Korean tuna longliners ranges from 298 to 525 gross tonnage classes.

National data collection system

Korean longline fisheries in the Indian Ocean usually have operated in all year round since the fishery started. Thus, fisheries statistics are collected and reported for a calendar year. Coverage rate in catch of all species was 52 to 69% during the 1981-1985 period, but it increased to the highest level of 91% in 1987. In recent years, the coverage rates maintained over 50% reaching at around 70% in certain years.

There are two systems for the collection of Korean tuna fisheries data. The first system has been operated by the Korean Deep-Sea Fisheries Association to collect total catch by species. All Korean distant-water fishing vessels report their catch records in terms of weight by species to their companies once a week or at 10-day intervals. The Association compiles the data by month and by FAO fishing area to submit to the Ministry of Maritime Affairs and Fisheries for the final review and publication. Both the Association and the Ministry publish the catch statistics for official use annually.

The second data collection system is to sample catch and effort data based on the logbooks. This system was lawful in 1977 by the Ministry of Agriculture and Fisheries. 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).

Implementation of recommendations

As a responsible fishing nation, Korea has implemented recommendations and resolutions adopted by regional fisheries organizations. Legislation of domestic regulations, initiation of observer program, and submission of fisheries statistics are among its efforts to meet the requirements by various fisheries bodies including IOTC.

Other relevant information

The National Fisheries Research and Development Institute (NFRDI) began to operate fisheries observer program in 2004 to monitor Korean distant-water fisheries including those for tunas and to meet the requirements of regional fisheries bodies. At the initial stage, the size of observer program will be fairly small to cover only for the fisheries to be urgently implemented such as SBT longline fishery in CCSBT Convention Area but will be gradually developed to a bigger scale to cover all required areas of fisheries. The goal of the first stage of observer program development from 2004 to 2006 is to establish a domestic training system to educate national observers. In 2005, a total of 5 observer candidates received a trainship from Korean longline observer program provided by NFRDI. Among those 5 trainees, four observers joined 2-months on-board Korean commercial fishing vessels in 2005, as part of the on-board training practices that will be continued in 2006.

Table 1. Number of vessel, catch (ton) and CPUE (no. of fish/100 hooks) by Korean longline fishery in the Indian Ocean, 1966 ~2004. * Catch included FAO area 51, 57 and 58

Year	No. of vessel	Catch (ton)	CPUE (No of fish / 100 hooks)	Year	No. of vessel	Catch (ton)	CPUE (No of fish / 100 hooks)
1966	3	761		1991	19	6,317	1.38
1967	46	6,594		1992	50	10,311	1.42
1968	33	11,596		1993	50	14,198	1.20
1969	41	18,612		1994	52	14,581	1.08
1970	36	8,808		1995	52	10,905	1.15
1971	52	16,786		1996	62	18,432	1.34
1972	75	20,967		1997	58	18,100	1.30
1973	112	29,799		1998	59	8,411	0.88
1974	173	41,958		1999	31	3,836	0.82
1975	185	47,908	1.64	2000	38	6,888	0.83
1976	128	43,497	1.86	2001	23	4,033	0.92
1977	165	66,015	2.48	2002	11	1,259	0.47
1978	151	71,123	2.37	2003	25	3,840	1.12
1979	169	46,176	1.66	2004	36	7,735	1.42
1980	174	38,085	1.28				
1981	142	36,138	1.47				
1982	146	42,531	1.60				
1983	115	36,975	1.38				
1984	75	24,613	1.32				
1985	62	28,185	1.49				
1986	66	30,639	1.73				
1987	81	30,904	1.78				
1988	112	34,469	1.49				
1989	87	23,610	1.00				
1990	77	20,335	1.00				

Table2. Annual catch by species and FAO statistical are for Korean longline fishery in the Indian Ocean, 1992-2004

	FAO area	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Southern Bluefin tuna	51	15		98	216	314	1,402	1,415	463	328	363	513	215	75
	57				99	597	181	147	210	112	347	136	6	39
	58								563	456				
	sub-tot						1,583	1,562	1,236	896	710	649	221	114
Yellowfin tuna	51	3,861	4,681	3,608	2,426	3,426	3,607	2,218	718	991	1,240	242	1,679	2,744
	57	224		14	18	17	35	47	85	73	161	90	421	1,324
	58								105	747				
	sub-tot	4,085	4,681	3,622	2,444	3,443	3,642	2,265	908	1,811	1,401	332	2,100	4,068
Albacore	51	5	4	9	3	14	102	118	26	85	31	7	56	126
	57			4	3			4	1			3	39	224
	58									10				
	sub-tot	5	4	13	6	14	102	122	27	95	31	10	95	350
Bigeye tuna	51	4,382	7,146	8,179	6,106	10,737	10,129	3,154	608	1,677	1,145	178	854	1,778
	57	154		60	48	48	77	33	479	129	256	8	267	688
	58								258	1,414				
	sub-tot	4,536	7,146	8,239	6,154	10,785	10,206	3,187	1,345	3,220	1,401	186	1,121	2,466
Other tunas	51	464	796	584	577	1,036	1,199	705	182	171	294	22	99	173
	57	58				46	5	19	18		29			5
	58								44	358				
	sub-tot	522	796	584	577	1,082	1,204	724	244	529	323	22	99	178
Swordfish	51	60	20	17	74	51	196	147	8	42	18	9	50	120
	57				2		8	2	14		19	3	35	135
	58								7	21				
	sub-tot	60	20	17	76	51	204	149	29	63	37	12	85	255
Blue marine	51	32		3	7	1	75	101	10	79	16		11	43
	57							2	6					1
	58													
	sub-tot	32		3	7	1	75	103	16	79	16		11	44
Striped marine	51		3	2	38		65	43		12	2		3	17
	57								1	8	1		3	11
	58													
	sub-tot		3	2	38		65	43	1	20	3		6	28
Sailfish	51	6				3	5							
	57													
	58													
	sub-tot	6				3	5							
Black marine	51	2			21	8	40	20	2	12	10	4	16	55
	57								7		13	2	20	59
	58								4	13				
	sub-tot	2			21	8	40	20	13	25	23	6	36	114
Other billfishes	51	978	1,548	2,003	1,242	2,125	939	217	4	124	74	38	30	42
	57	58			25	9	22	15	8	1	4	4	36	74
	58								5	23				
	sub-tot	1,036	1,548	2,003	1,267	2,134	961	232	17	148	78	42	66	116
Sharks	51						13	4			10			
	57	12												1
	58									2				
	sub-tot	12					13	4		2	10			1
Total	51	9,805	14,198	14,503	10,710	17,715	17,772	8,142	2,021	3,521	3,203	1,013	3,013	5,174
	57	506	0	78	195	717	328	269	829	323	830	246	827	2,561
	58								986	3,044				
	total	10,311	14,198	14,581	10,905	18,432	18,100	8,411	3,836	6,888	4,033	1,259	3,840	7,735

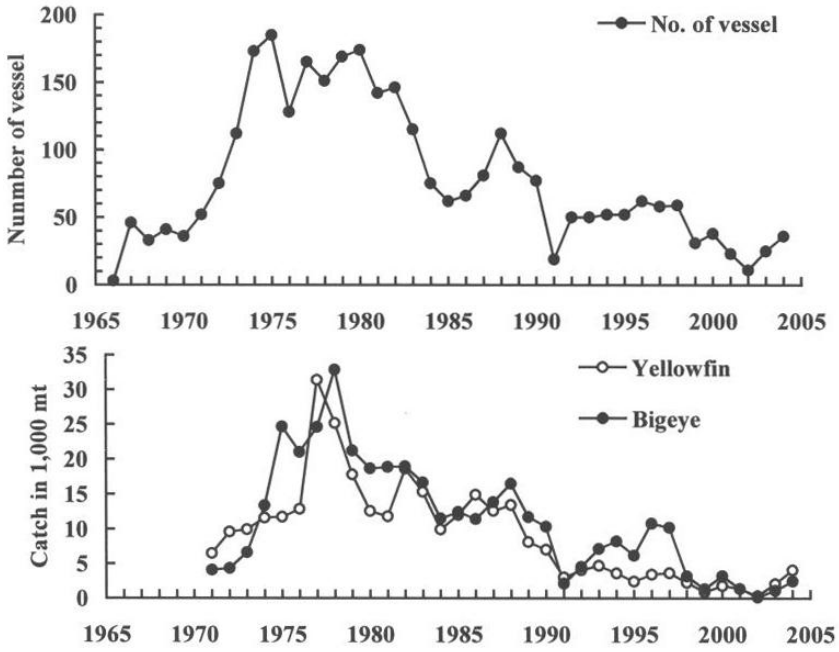

Figure 1. Annual number of fishing vessels and nominal catch for the Korean tuna longline fishery in the Indian Ocean, 1966-2004.

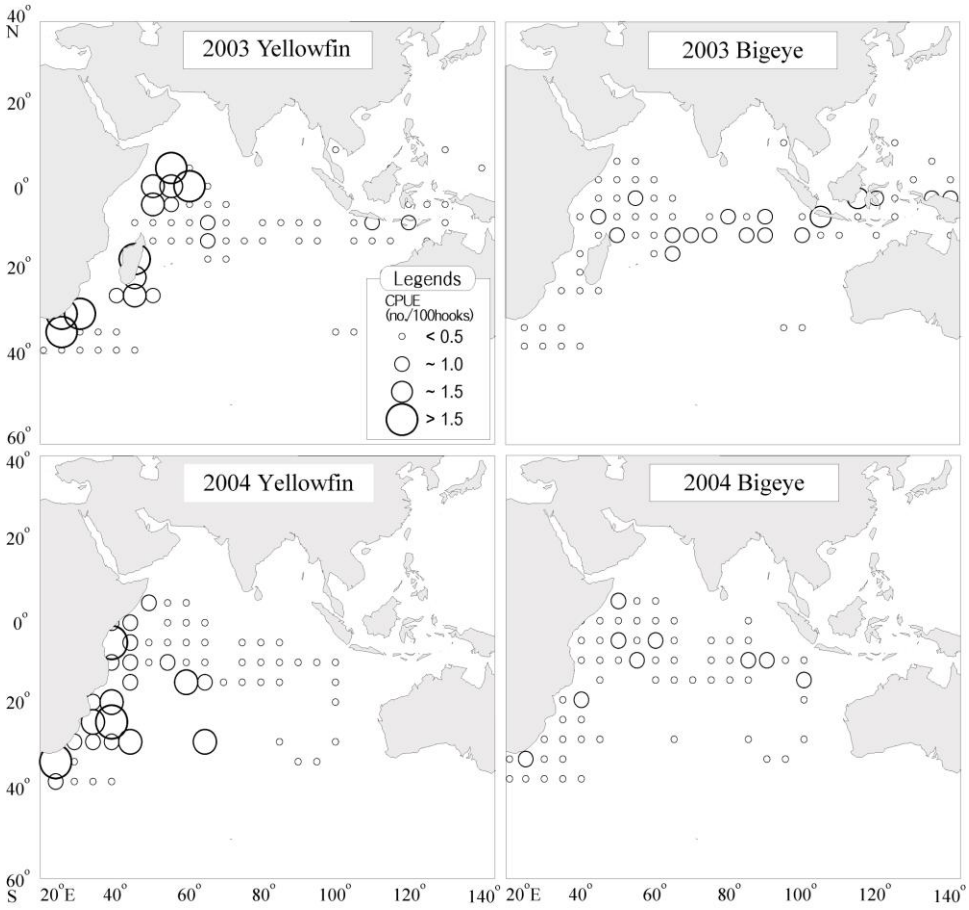

Fig. 2. Korean tuna longline fishery operation area in 2003 and 2004.

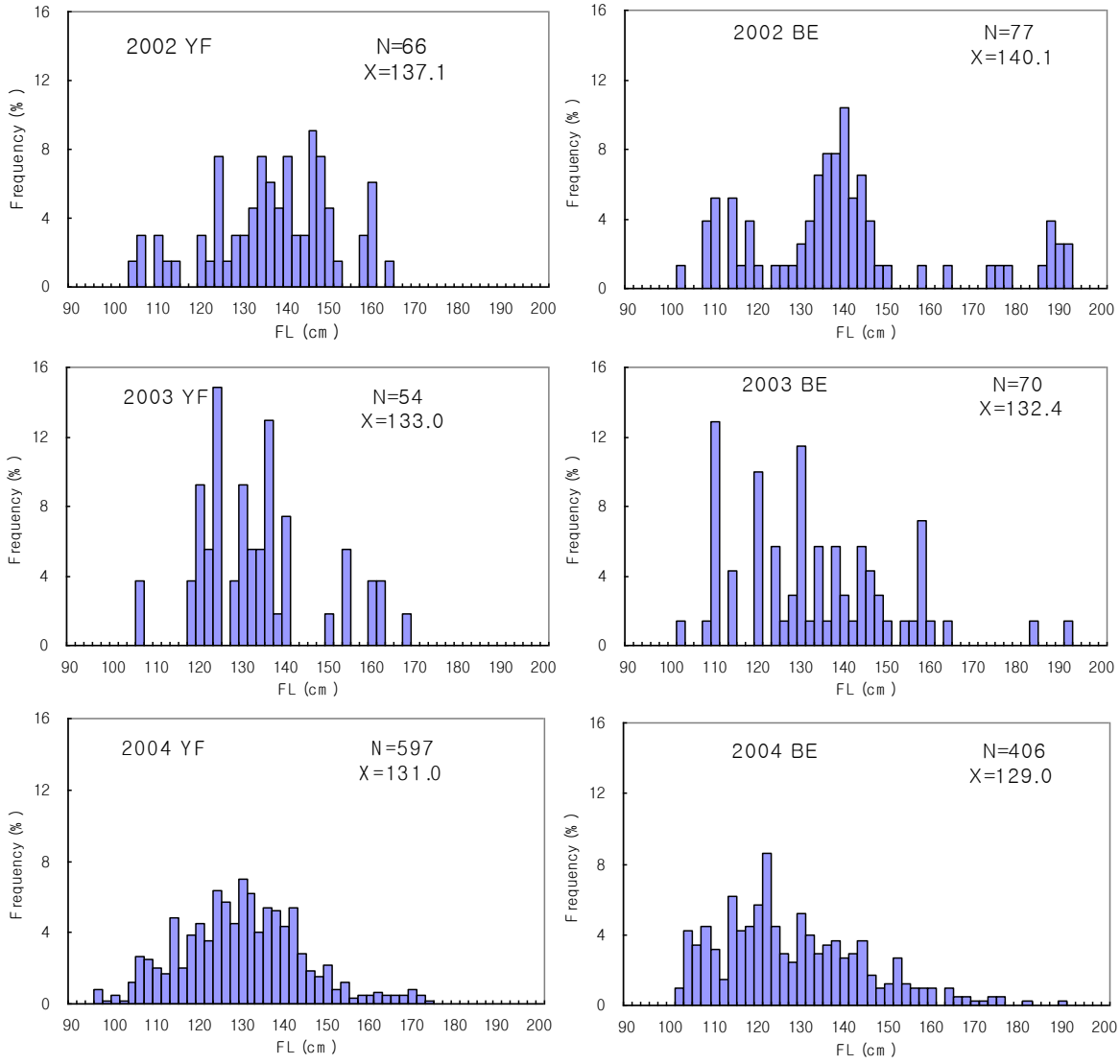

Fig. 3. Length frequency distribution of yellowfin tuna (YF) and bigeye tuna (BE) caught by Korean longliners from 2002 to 2004 in the Indian Ocean.