CATCH STATUS OF TROPICAL TUNAS AND SWORDFISH BY TAIWAN DEEP SEA TUNA FISHERY IN THE INDIAN OCEAN IN 1999

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ABSTRACT

There were about 341 deep-sea longliners operating in the Indian Ocean (small longliners operating in the northeast Indian Ocean were not included) in 1999, about the same level to 1998. The total catch made by these longliners was roughly estimated as 99,000 MT, a decrease of about 11,000 MT from 1998. The drop of yellowfin tuna by 5,700 MT was the main cause, followed by decreases of bigeye tuna by 2,600 MT and swordfish by 2,100 MT. This decrease in catch might be due to the unfavorable fishing condition around the traditional fishing grounds in the Indian Ocean. In general, the total catch of tunas and billfishes was around 93,000-110,000 MT from 1992 to the present except the relatively high catch in 1993.

1. FISHERY INFORMATION

1.1 General overview

Taiwan's deep-sea longline fishery commenced in the mid-1950s, firstly in the North and East Indian Ocean and expanded extensively to the three major oceans. During late 1960s to the early 1970s, the main catch was yellowfin tuna. Later the main target species was albacore. Since 1980s, some of the longliners, together with newly built larger vessels with super cold freezers (below -60°C), started to shift the target to bigeye and yellowfin tunas. In recent years, swordfish and southern bluefin tuna have also become seasonal target species to some of the vessels.

Fig. 1 shows the effort distribution of Taiwanese longline fishery. Fishing effort of the fishery in recent year was mainly concentrated in the tropical waters of the West Indian Ocean for bigeye and yellowfin tunas (Fig. 2), and the temperate waters of the South Indian Ocean for albacore. Two extra small fishing grounds were also noted in the Arabian Sea for yellowfin tuna and the southwest waters off Madagascar for swordfish and bigeye tuna.

Besides longline fishery, gillnet fishery was also operated in the Indian Ocean during the mid-1980s targeting on albacore on a seasonal basis. The fishery was banned in 1992 in accordance with the UN moratorium.

In 1999, there has been 341 deep-sea longliners operating in the Indian Ocean (not including small longliners operating in the North-east part of the Indian Ocean), about the same level to 1998 (Table 1). Most of them (299 boats) were larger than 200 GRT. The total catch made by these longliners was preliminarily estimated as 99,000 MT, a decrease of about 11,000 MT from 1998. The drop in yellowfin catch was the main cause of the decrease. In general, except for 1993 when high yellowfin catch was observed, the total catch of tunas and billfishes was around 93,000-110,000 MT from 1992 to the present.

1.2 Tropical tunas

Yellowfin tuna was the major catch in the early 1970s, and then bigeye catch became larger during 1977-1986 (Table 2). After 1986, yellowfin was the dominant tropical species until 1994, with a burst of 88,000 MT observed in 1993. Bigeye catch was again become higher than yellowfin thereafter. In 1999, estimated yellowfin catch (round weight) was 17,700 MT, about 5,700 MT less than 1998. Estimated bigeye catch was 37,000 MT, about 2,600 MT less than 1998.

Decrease of yellowfin catch was mainly due to the unfavorable fishing condition of recent years in the waters around Oman and Pakistan and thus fewer boats have applied for licenses to fish there. Though bigeye catch in 1999 has decreased from 1998, the catch was still higher than the years before 1998 due to increasing of bigeye-targeting vessels, with exception of 1993 in which year the high catch was associated with the burst of yellowfin catch. Many traditional albacore-targeting longliners also reformed to be equipped with super-cold freezers for fishing and keeping bigeye catches.

The decline of number of albacore-target longliners: Traditionally, this kind of longliners was smaller and older than the bigeye-target one. During these years, some of these longliners faded out in the fishing ground and the new built one was all larger and equipped with super-cold freezers capable of catching and keeping 'sashimi' grade fish. Besides, as mentioned above, some longliners have reformed to be equipped with the freezers to be bi-target longliners. These have resulted in the decrease of albacore catch when the price of 'sashimi' catch is more favorable.

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1.3 Swordfish

Preliminary catch estimate for swordfish was 14,700 MT in 1999, a decrease of 2,100 MT from 1998. Indian Ocean swordfish was a by-catch before 1990s and became increasingly important thereafter, notably with the catch increased to 9,000 MT in 1992 and over 10,000 MT after 1993. The catch after year 1995 with historical high record has shown a gentle decreasing trend. This trend was probably due to the unfavorable catch condition in Somalia waters and has caused the southward movement of vessels for this species.

2. STATISTICS COLLECTING SYSTEM AND RESEARCH

1.4 Statistics

Taiwan reorganized the catch statistics compiling group in 1996. OFDC is commissioned to be in charge of the data compilation and processing system and has proposed changes in the data system in late 1996. The revision on historical Indian longline statistics has been proposed and finished in 1998. Major changes for the total catches were due to the re-estimation of landings of bigeye and yellowfin tunas for six years based on the Japanese import information, recovery of sales records of swordfish and application of conversion factors to processed weight reported previously. Major changes for catch/effort data were mainly due to detailed screening of the logbook data and recalculated new coverage rates. The size data of albacore, yellowfin, bigeye and swordfish were also carefully reviewed on boat-time basis and adjusted new size data sets have been created. Detail of the revision was reported in the document of TWS/98/17.

There are four types of fishery data currently collected and compiled in OFDC:

1. Annual catches: Annual catches of five major tuna species (albacore, bigeye, yellowfin, northern bluefin and southern bluefin tunas), swordfish, three major marlins (striped marlin, blue marlin and black marlin), other marlins (mainly sailfish), skipjack and sharks. These data are compiled from commercial landing information on boat basis.
2. Aggregated catch/effort data: Catch and effort data of the above species on monthly, 5-degree-square fishing area basis, aggregated from detail logbook data with information of trips, fishing date, 1-degree fishing area, hooks, hooks per basket (after 1994), sea surface temperature, bait used and catches both in number and weight of the 14 tuna and tuna-like species.
3. Size data: Length measurements of the first 30 fish (independent of species) of a day's catch o centimeter basis.
4. Fishing craft information: Total number of longliners operating in the Ocean by major tonnage (GRT) categories.

1.5 Researches

There are several research projects ongoing on the stock assessments of albacore, bigeye, yellowfin and swordfish, as well as on the relationship between tuna catch and their oceanographic environments, in 1999. To improve the knowledge on stock structures, there are also three independent research projects designed, on the Indian Ocean yellowfin stock, the Indian Ocean and South Atlantic albacore stocks and the Indian Ocean swordfish stock. Results will be provided for discussions when the researches are done in the future.

Table 1. Total number of Taiwanese longliners having been operating in the Indian Ocean, by tonnage, during 1996-1999. (Note: vessels operating partly of the year have been counted in the number.)

TONNAGE	1996	1997	1998	1999
- 200 GRT	22	25	36	42
201-500 GRT	149	183	181	170
501- 1000 GRT	121	121	126	129
TOTAL	292	329	343	341

Table 2. Total catches (round weight, MT) of albacore, bigeye and yellowfin tunas and swordfish, by Taiwanese longline and gillnet fisheries in the Indian Ocean, 1981-1999

	Longline				Gillnet				Longline+Gillnet			
Year	ALB	BET	YFT	SWO	ALB	BET	YFT	SWO	ALB	BET	YFT	SWO
1981	12,326	6,840	4,101	1,092					12,326	6,840	4,101	1,092
1982	21,930	11,313	4,715	1,452					21,930	11,313	4,715	1,452
1983	16,958	11,322	5,580	1,910					16,958	11,322	5,580	1,910
1984	13,932	10,862	5,812	1,725					13,932	10,862	5,812	1,725
1985	6,155	12,185	7,321	1,988	721	16	-	-	6,876	12,201	7,321	1,988
1986	11,052	16,836	16,216	3,049	15,176	275	33	182	26,228	17,111	16,249	3,231
1987	13,137	17,637	22,313	3,768	12,179	103	52	63	25,316	17,740	22,365	3,831
1988	11,048	19,365	22,730	5,127	14,441	1,919	35	274	25,489	21,284	22,765	5,401
1989	7,097	19,934	22,388	3,949	14,357	465	37	121	21,454	20,399	22,425	4,070
1990	5,756	20,747	31,550	3,739	21,142	168	88	105	26,898	20,915	31,638	3,84
1991	13,102	28,958	30,707	4,672	9,001	117	6	43	22,103	29,075	30,713	4,715
1992	11,103	24,007	55,987	8,987	1,322	17	1	6	12,425	24,024	55,988	8,993
1993	11,890	39,542	88,026	15,345					11,890	39,542	88,026	15,345
1994	14,407	27,732	33,984	12,454					14,407	27,732	33,984	12,454
1995	14,209	32,645	23,069	18,261					14,209	32,645	23,069	18,261
1996	16,930	29,820	27,850	17,620					16,930	29,820	27,850	17,620
1997	15,204	34,145	18,374	17,163					15,204	34,145	18,374	17,163
1998	21,572	39,698	23,416	16,829					21,572	39,698	23,416	16,829
1999*	22,514	37,093	17,686	14,727					22,514	37,093	17,686	14,727

* preliminary

APPENDIX TO THE REVIEW ON "CATCH STATUS OF TROPICAL TUNAS AND SWORDFISH BY TAIWAN DEEP SEA TUNA FISHERY IN THE INDIAN OCEAN IN 1999"

Observer Program

To increase the accuracy of the catch statistics and better understanding of the fishery, we have designed pilot observer programs for the three Oceans since 1998. The first trip that was supposed to start in the beginning of 1998 in the Indian Ocean failed. A re-arranged trip has started in mid-October 1998, on a longliner with super-cold freezer operating in the Atlantic for bigeye tuna. This year another trip is conducted in the waters around South Africa.

By-catch Statistics

The shark statistics reported by fishermen on the logbook system were lump sum catch of all possible species. Besides of sharks, to collect information on other by-catch species including seabird, sea turtle and dolphin/whale, and to improve the statistics system, projects were also planned and adopted since 1998.

Vessel Monitoring System

The Council of Agriculture (COA) established a project for the development of vessel monitoring system incorporated with the function of logbook transmission in 1994. OFDC was commissioned to carry out the investigation, development, and promotion of the system in 1996. Development of the system was completed and experiments were successfully carried out on vessels operating in the high seas. As from July 1997, the system with Inmarsat-C has been extended to tuna and squid fisheries. Up to now, 440 vessels operating in the three Oceans have set up the system, including longliners, purse seiners and squid jiggers.

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MANAGEMENT MEASURES

Gillnet fishery was one of the biggest fisheries in the Indian Ocean. To implement the UN moratorium on large-scale driftnet fishery on the high seas, Taiwan government ordered to prohibit this fishery as from January 1993. Much effort has also been exerted to help fishermen shift to other fishing gears.

Although Taiwan is not a member country of FAO, Taiwan has zealously been joining the activities of IPTP and continuously providing catch statistics since 1970s. Also, as one of the countries utilizing the tuna resources of the Indian Ocean, Taiwan has always been and will continue to be cooperative and endeavor to implement any regulations adopted by international fisheries organizations for the conservation of the tuna stocks. However, despite of our great efforts in fisheries scientific research and our responsibilities of fishery management as a major fishing nation, it is a deep regret that due consideration is not taken into account for the status of our participation in the forum for the conservation of the Indian Ocean tuna stocks. It is even more regretful that Taiwan has been excluded from the First and Second Session of Scientific Meeting and the Third and Fourth Session of IOTC. For the purpose of proper management of tuna resources in the Indian Ocean, we would like to reiterate that Taiwan's participation in IOTC will be a great contribution, just the same role as we have been playing in other international fisheries organizations.