A BRIEF REPORT ON TAIWANESE TUNA LONGLINE FISHERIES OPERATE IN THE INDIAN OCEAN

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ABSTRACT

Number of Taiwanese frozen tuna longline vessels in the Indian Ocean, on average, was about 340 during 1998-2001. Mean annual catch of tuna and tuna-like fishes was stable and maintained at about 100,000 mt over the past 5 years. Major species caught were albacore, bigeye and the yellowfin tunas accounting for more than 76% of the total catch. The major fishing grounds of this fleet were distributed in areas of 10°S-10°N / 30°E-95°E and 25°S-35°S / 30°E-95°E. Number of fresh tuna longline vessels was estimated to be about 1700 during 1997-2000 (including vessels operate in both the Pacific and the Indian Oceans). Total catch of bigeye and yellowfin tunas unloaded in foreign bases in Indian Ocean were stable and estimated to be about 9,300 mt, on average, for bigeye tuna, and about 14,500 mt for yellowfin tuna during 1997-2001. Implementation of several management measures including bigeye catch certificate, vessel monitoring system and observer program also were reported.

INTRODUCTION

The Indian Ocean is one of the earliest fishing grounds explored by the tuna longline fisheries of Taiwan. The exploration started from mid-50's in the north and the eastern Indian Ocean, and subsequently expanded to three major Oceans (Chang and Liu, 2000). Catches during late 60's to early 70's were mainly yellowfin tuna, but shifted to albacore during mid-70's, and then bigeye tuna from 80's as super cold freezer were developed and equipped in larger new-built vessels. In recent years (i.e., after 1992) swordfish also become one of the target species in the Indian Ocean.

Except for the frozen tuna longline (FTLL) fishery indicated above, the fresh and/or chilled tuna longline (CTLL) fishery, which operates in the surrounding waters of Taiwan originally, has also expanded their fishing activities to far distant fishing grounds in the Pacific and the Indian Oceans in recent decades. These small vessels mainly target on bigeye and yellowfin tunas for fresh sashimi market.

In this report, the current status of tuna longline fisheries operate in the Indian Ocean were described.

THE FROZEN TUNA LONGLINE FISHERY

The FTLL vessels refer to those vessels mostly, greater than 100 gross registered tons (GRT) and operate in the distant waters outside EEZ of Taiwan including high seas and foreign EEZ. Their catches were sold in frozen form. Number of vessels operated in the Indian Ocean, on average, was about 340 during 1998-2001 (Table 1). 90% of them were greater than 200 GRT. A slight decrease in number of vessel in 2001 was reported due to a gradually shift of fishing ground of some deep longliners (i.e., mostly those equipped with super-cold freezer) from Indian Ocean to the Pacific Ocean.

The mean annual catch of tuna and tuna-like fishes in the Indian Ocean was in general, stable and maintained at about 100,000 mt over the past five years (Table 2) from 1997 to 2001. Major species caught were albacore, bigeye and the yellowfin tunas accounting for more than 76% of the total catch (Figure 1). Except for these species, catch of the swordfish also was very abundant accounting for another 15% of the total catch in this Ocean.

For individual species, albacore catch, in general, showed an increasing trend from 1997 (about 15,000 mt) to a relative stable level at about 22,000 mt during 1998-2000 period, and increased again (to 26,000 mt) in 2001. The bigeye catch however, showed a dramatic increase from 1997 (about 34,000 mt) to 1998 (about 40,000 mt), but maintained at a stable level (about 36,000 mt) in recent three years ; Yellowfin tuna showed a dramatic increase (~5000 mt) from 1997 to 1998, but remained stable at about 17,500 mt during 1999-2000, and increased again (to 18,860 mt) in 2001. Catch of the swordfish actually decreased steadily from about 17,000 mt in 1997 to around 12,000 mt in 2001. An overall increase in three major tuna species in 2001 may have been related to change of fishing condition in the Ocean.

Major fishing ground (Figure 2) of the DWLL fleet in general, was similar from 1995 to 2000, and was distributed in areas of 10^{o}S-10^{o}N/30^{o}E-95^{o}E and 25^{o}S-35^{o}S/30^{o}E-95^{o}E. High efforts also can be found in waters off Calcutta, India and Oman. However, there was a distinctive difference in catch distribution (Figure 3) of three major tuna species caught in this fishery. The albacore was mainly caught in area south of 15^{o}S while bigeye and yellowfin tunas were mainly found in area north of 15^{o}S although some of them also can be found in areas west of Madagascar and off Australia (Figure 3). High catch of yellowfin tuna in waters off Oman and Bay of Bengal also were evident in all years, indicating a good traditional fishing ground of the species.

THE FRESH AND/OR CHILLED TUNA LONGLINE FISHERY

The CTLL vessels include those vessels operate in coastal and offshore waters of Taiwan and in general, smaller than 100 GRT. However, in recent decades, the fishing pattern of this fleet has been changed. Some of the vessels are now operating not only in coastal and offshore areas but also in distant waters (high seas or foreign EEZ) depending upon size and facilities equipped. This makes it difficult to classify the scale of this fishery as some of the OSLL vessels are actually operate in a similar pattern as those of the FTLL vessels. In addition, these vessels also changed their fishing ground and target species based upon fishing season or catch. Thus, monitoring of the fishing activities of these vessels became very difficulty.

Number of registered CTLL vessels was estimated to be about 1700 during 1997-2000 period (including vessels operated in both the Pacific and the Indian Oceans). Total catch of tuna and tuna-like species by this fleet can be separated into two different types: those landed in Taiwan and those landed in foreign bases. Because of geographical location of Taiwan, catches landed in Taiwan are believed to be mostly from vessels operated in the Pacific region including surrounding waters of Taiwan, although an unknown number of these vessels may actually have operated in the Indian Ocean depending upon seasons.

In addition to the domestic landing, catches of bigeye and yellowfin tunas unloaded in foreign bases in Indian Oceans were in general, stable (or slightly increased) and were estimated to be about 9,300 mt, on average, for bigeye tuna, and about 14,500 mt for yellowfin tuna during 1997-2001 period (Table 3). Catch of bigeye tuna showed relatively more fluctuation than the yellowfin tuna when a steady increase in catch from 1997 to 2001 was evident.

MANAGEMENT MEASURES IMPLEMENTED

Implement of new regulation on bigeye catch from July 1, 2002

The new regulation on catch of bigeye tuna will be implemented by Fisheries Administration to ensure the accuracy of catch statistics on this species. The statistical document will be required for selling each of the bigeye tunas caught in all Oceans from July 1 of 2002. It is expected that logbook recovered will be improved substantially in the next few years.

THE VESSEL MONITORING SYSTEM

The experimental vessel monitoring system (VMS) was implemented continuously from previous year for the purpose of better management of our distant water longline

fishing vessels. The government has encouraged FTLL vessels to install the VMS through an incentive program since July 1996. Currently, more than 135 vessels operated in the Indian have installed such a system. Although installation of this system and reporting vessel position through VMS are not compulsory at this time, the government recognizes that as a major fishing nation, it is our obligation to play a leading role in the region not only to be in line with the international trend on management of fishery resources in the Indian Ocean, but also to achieve the goal of the sustainable use of these resources in the region.

THE OBSERVER PROGRAM

In addition to the vessel monitoring system, for purposes of understanding the bycatch issue of the longline fishery and in line with the international trend on conservation of marine living resources, the government has lunched an experimental observer program in 2001. Observations covered by this program include: bycatch, sharks, seabird, sea turtle, discards, dolphins and whales. In 2002, the program has expanded to include 6 observers in three major Oceans. It is expected that data obtained from this program will eventually be used for better understanding of the magnitude of bycatch in the longline fishery operate in the region.

Table 1. Number of Taiwanese frozen tuna longline vessel operated in the Indian Ocean during 1998-2001.

Size(GRT) Year	< 50	50-100	100-200	200-500	> 500	Sum
1998	21	12	3	181	126	343
1999	23	17	2	170	129	341
2000	23	16	1	173	126	339
2001*	22	16	2	170	125	335
Mean	22	15	2	174	127	340

* a preliminary estimate

Table 2. Catch (mt) of tuna and tuna-like species by Taiwanese frozen tuna longline vessels operated in the Indian Ocean during 1997-2001.

Year Species	1997	1998	1999	2000	2001*
ALB	15,204	21,572	22,514	21,650	26,141
BET	34,145	39,698	37,093	36,411	37,015
YFT	18,374	23,416	17,686	17,367	18,860
SWO	17,163	16,829	14,727	15,171	12,284
MLS	2,109	2,262	1,739	1,622	1,297
BLZ	2,990	3,711	2,855	3,292	2,155
BLM	320	457	360	537	250
BILL	830	742	613	601	600
SKJ	57	85	83	58	10
SHK	1,028	599	403	448	2,243
OTH	1,615	1,820	1,928	1,822	1,601
SUM	93,835	111,191	100,001	98,977	102,456

* A preliminary result OTH: included other fishes

Table 3. Estimated catch (in mt, round weight) of tuna and tuna-like species for Taiwanese fresh tuna longline vessels based on foreign ports in Indian Ocean.

Species\Year	1997	1998	1999	2000	2001*	Mean
BET	9087	9939	9327	8575	9463	9278
YFT	12117	13669	12895	15150	18577	14482
Sum	21204	23609	22222	23725	28041	23760

* a preliminary estimate

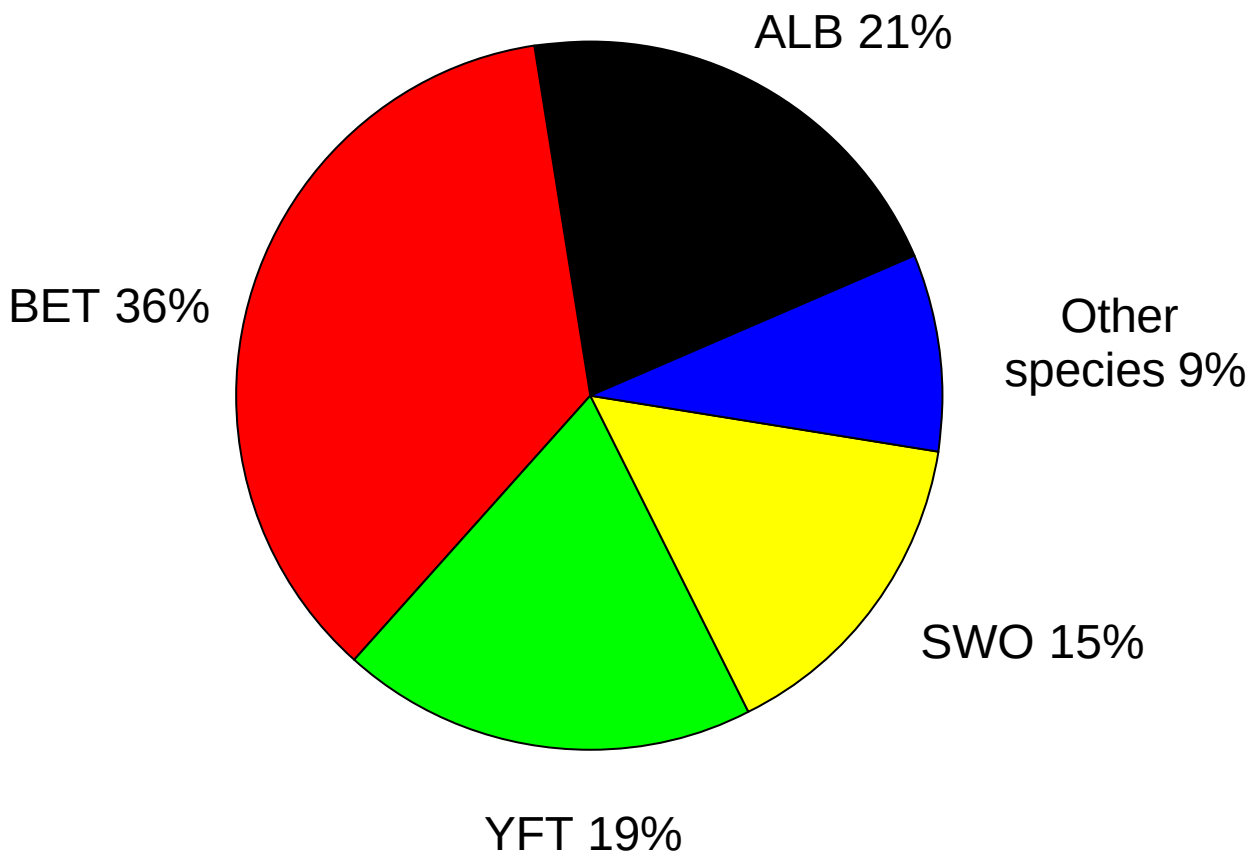

Figure 1. Mean catch composition of Taiwanese frozen tuna longline vessels operated in the Indian Ocean during 1997-2001.

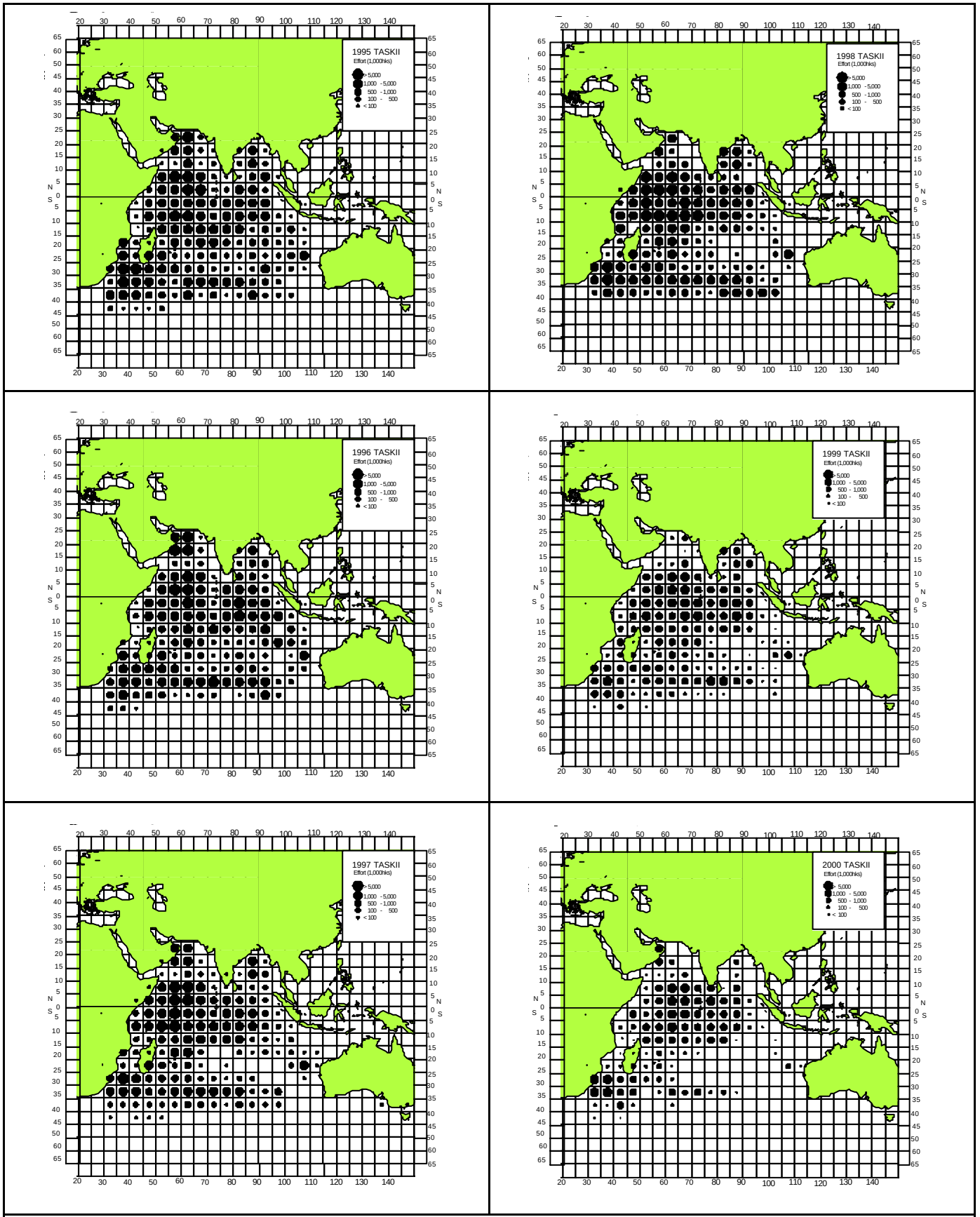

Figure 2. Effort distributions of Taiwanese frozen tuna longline vessels operated in the Indian Ocean during 1995-2000.

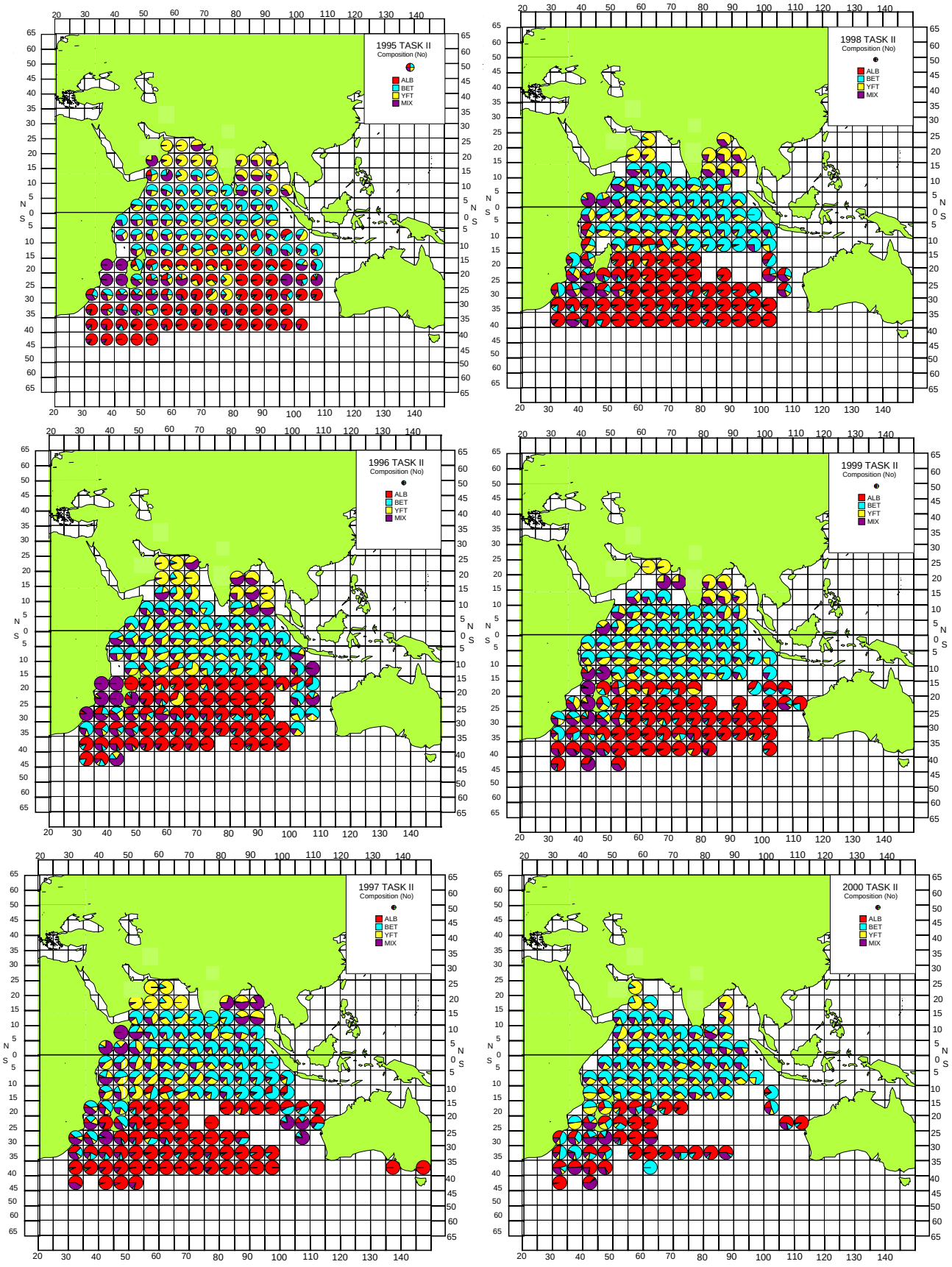

Figure 3. Catch distribution of major tuna species from Taiwanese frozen tuna longline vessels operated in the Indian Ocean during 1995-2000.