

RECENT STATUS OF TAIWANESE LONGLINE FISHERIES IN THE ATLANTIC*Hsu¹, C.C., Y.C. Chern²**¹Institute of Oceanography, National Taiwan University, Taipei, Taiwan**²Department of Fishery, Council of Agriculture, Taipei, Taiwan***SUMMARY**

In 1994, 172 Taiwanese longliners (93 conventional and 69 with super-cold freezers, and 10 small longliners) operated in the Atlantic Ocean and Mediterranean Sea. A total catch of 61,648 MT was made by those vessels. Of these catches, albacore (4,967 MT for the north stock and 23,921 MT for the south stock, for a total of 28,888 MT, bigeye tuna (19,479 MT) and yellowfin tuna (6,260 MT) were the main target species (about 88.6% of the total), and there were 724 MT of bluefin tuna caught in the Mediterranean Sea. Comparatively, there was about 15,359 MT production growth of tunas and tuna-like species from 1993.

The Department of Fisheries, Council of Agriculture has introduced ICCAT management measures to the national regulations, such as the ICCAT Bluefin Tunas Statistical Document Program, the closed fishing season in the Mediterranean Sea, a total allowable catch of bluefin tuna, and the reduction of conventional longline effort in the south Atlantic, etc. Due to a considerable change in processing fishery data, it was decided to transfer this work from the Institute of Oceanography, National Taiwan University to the Overseas Fisheries Development Council. More detail information on the Taiwanese fishery is given in the text.

RESUMÉ

En 1994, 172 palangriers taiwanais (93 traditionnels, 69 avec équipement de surgélation, et 10 petits palangriers) ont pêché dans l'Atlantique et en Méditerranée. Une prise totale de 61.648 TM a été effectuée par ces bateaux. Ces captures étaient constituées de germon (4.967 TM du stock nord et 23.921 TM du stock sud, soit un total de 28.888 TM), de thon obèse (19.479 TM) et d'albacore (6.260 TM) en tant qu'espèces principales (88,6 % environ du total), et d'une prise de 724 TM de thon rouge dans la Méditerranée. La production de thon rouge et d'espèces voisines s'est comparativement accrue de 15.359 TM par rapport à 1993.

Le Department of Fisheries du Council of Agriculture a mis en place par législation nationale les mesures de réglementation de l'ICCAT, telles que le Programme ICCAT de Document statistique Thon rouge, la période d'interdiction de la pêche en Méditerranée, le total des prises admissibles de thon rouge, et la réduction de l'effort palangrier traditionnel dans l'Atlantique Sud, etc. Une profonde modification du traitement des données de pêche a été décidée pour transférer ce travail de l'Institute of Oceanography de la National Taiwan University à l'Overseas Fisheries Development Council. Le texte fournit une information plus détaillée sur la pêche taiwanaise.

RESUMEN

En 1994, 172 palangreros de Taiwan (93 convencionales, 69 con equipos de gran congelación, y 10 de pequeño tamaño) operaron en el Atlántico y Mar Mediterráneo. Estos barcos obtuvieron una captura total de 61.648 t. De estas capturas, el atún blanco (4.967 t del stock norte, y 23.921 del stock sur, hacen un total de 28.888 t), el patudo (19.479 t), y el rabil (6.260 t) son las principales especies-objetivo (en torno al 88.6% del total), y 724 t de atún rojo capturadas en el Mar Mediterráneo. Comparativamente, hay un crecimiento de la producción de túnidos y especies afines de 15.359 t desde 1993.

El Department of Fisheries, Council of Agriculture, ha introducido las medidas de ordenación de ICCAT en las regulaciones nacionales, tales como el Sistema de Documento Estadístico ICCAT, ha prohibido un período de pesca en el Mar Mediterráneo, captura total admisible de atún rojo y reducción del esfuerzo palangrero convencional en el Atlántico sur, etc. Se ha decidido un gran cambio en el proceso de datos, transfiriendo esta tarea desde el Institute of Oceanography, National Taiwan University, a Overseas Fisheries Development Council. En el texto se facilita información más detallada acerca de la pesquería de Taiwan.

INTRODUCTION

Taiwan is one of the most important tuna fishing nations using longline gear in the Atlantic and Mediterranean Sea. During the past three decades, Taiwanese longliners operated conventionally in the Atlantic and targeted on albacore, then the albacore fishery has become minor in the north Atlantic since 1987 due to economic reason, although the albacore is still the main target in the south Atlantic, Taiwanese longliners started at the

same time to shift the most parts of fishing effort on tropical species around both sides of Equatorial Atlantic and a minor parts on cold water species, such as southern bluefin tuna around the waters far off the south and southeast Cape Town. And Taiwanese longliners fish bluefin tuna in the Mediterranean Sea began in 1993 fishing season.

The fishery data collection started from 1970, and later those data have been traced backward to 1967. Those data were regularly submitted to relevant organizations. The Institute of Oceanography, National Taiwan University was in charge of the responsibility for the data processing, compilation and submission from 1970 to 1994 under the governmental granting support, then the Overseas Fisheries Development Council will take over completely the responsibility from 1996 fiscal year (July, 1996), and during the 1995 fiscal year, all the original data base should gradually be transferred to Overseas Fisheries Development Council.

This report elucidates the recent status of Taiwanese longline fishery operated in the Atlantic and Mediterranean Sea, the adoption of management measures, data collection, processing and sessions participation.

STATUS OF FISHERY

(1) Fishing vessels

Taiwanese longliners use two fishing patterns in the Atlantic, those are conventional and deep longline patterns which are generally operated by so called 'regular longline vessels' and 'longline vessels equipped with super-cold freezer', respectively. Since 1990's those two kinds of vessels are sometimes operated with mixture of two fishing patterns, depending upon the captain's and fishing master's experiences and whether the equipment of super-cold freezer or not, this case is mostly that the regular longliners targeting traditionally albacore operated in sometimes to target bigeye tuna and yellowfin tuna by using deep fishing pattern. This phenomenon can be investigated from new logbooks, distributed by the Department of Fisheries, Council of Agriculture to the fishermen, that have a new item for setline depth and hooks per basket.

Since 1990's the annual total number of longline vessels operated in the Atlantic Ocean has been under control on a very stably slightly increasing level. The slight increase is due to the new entry of the super-cold freezer vessels in the Atlantic to target on bigeye tuna and yellowfin tuna and in the Mediterranean Sea to target on bluefin tuna initially from 1993, it is obvious that those vessels in Mediterranean Sea are from 6 in 1993 to 14 in 1994, and governed on 14 in 1995 to maintain the stable effort and catch for

bluefin tuna in the Mediterranean Sea. The trend of number of Taiwanese vessels operated in the Atlantic and Mediterranean Sea is shown in Fig. 1.

A several small longliners (less than 100 GRT) operated in the Caribbean Sea from 1989 to 1995. These vessels ported mostly in Trinidad. The boat number were 5, 8, 8, 10, 10, 10, and 11 from 1989 to 1995, respectively. The catches were chilled and transported by air. The catch were also incorporated into ICCAT catch statistics.

(2) Fishing effort

Due to variation of fishing pattern for different target species, the annual nominal efforts (used hooks) for targeting albacore which is the main target by Taiwanese longliners traditionally were estimated. As shown in Fig. 2, the nominal fishing efforts increased before 1974, then largely fluctuate around the level of 70-80 million hooks. In 1991 and 1992, a historical high nominal fishing effort made by Taiwanese longliners was reached over 110 million hooks.

After 1987 the most nominal fishing efforts were made in the southern Atlantic, although those in northern Atlantic have shown slightly increasing from 1991. The trend of fishing effort using in the southern Atlantic is very similar to that of total fishing effort (Fig. 2). As the result, it can be inferred that most Taiwanese longliners operated in the southern Atlantic during recent years.

(3) Landings (Task I)

The 1993 landings of tunas and tuna-like species by Taiwanese longliners are finalized in Table 1. Of those figures, new information is found for the landings of bigeye tuna and yellowfin tuna, so a revision of the landings of these two species has been done as 11,881 MT for bigeye tuna and 3,714 for yellowfin tuna (Table 1) at this moment. The landings of marlins have been also shown in Table 1, which are striped marlin 616 MT, blue marlin 686 MT, black marlin 11 MT, and other billfishes including spear fish and sailfish 643 MT, and sharks combined are landed 590 MT. Under this situation, the landing of albacore is estimated about 6,300 MT for the north stock and 19,400 MT for the south stock. Owing to the revision of landings of bigeye tuna and yellowfin tuna and new fishery in the Mediterranean Sea for the current year, the annual landings for all species in the Atlantic and Mediterranean Sea are estimated about 46,289 MT which is made by 152 vessels (98 out of 152 are conventional longliners, 44 equipped with super-cold freezer, and 10 are small longliners).

In 1994, the total landing is estimated as 61,648 MT which is made by 172 vessels (class above 500 GRT has 66 vessels, between 200-500 GRT has 90 vessels, and smaller than 200 GRT has 16 vessels. 69 vessels out of 172 has equipped with super-cold freezer, which was 44 vessels in 1993 and the rest 98 are conventional, 10 are small longliners). This amount is about 15,359 MT higher than that of 1993. Observing those figures in Table 1 for 1994, the landing of albacore (28,888 MT) about 12.4% higher than that in previous year, and is broken down to 4,967 MT and 23,921 MT for the northern and the southern stocks, respectively; the landings of bigeye tuna, yellowfin tuna, bluefin tuna and swordfish increase apparently, those are from 11,881 MT in 1993 to 19,479 MT in 1994 for bigeye tuna, from 3,714 MT to 6,260 MT for yellowfin tuna, from 334 MT to 724 MT for bluefin tuna (all from Eastern Atlantic and Mediterranean Sea), and from 750 MT to 2,582 MT for swordfish.

In primary, the landing of swordfish was estimated as 2,582 MT (about 4.2% of total catch) in 1994, and can be broken down to 630 MT and 1,952 MT from northern and southern Atlantic, respectively.

The landings of marlin species (Table 1) remain at a very stable level.

(4) Catch composition

The catch composition of Taiwanese longliners shows that albacore is the main target, and then bigeye tuna and yellowfin tuna are the second and third place, The percentages of albacore, bigeye tuna and yellowfin tuna are 55.52%, 25.67% and 8.02% in 1993, and 46.86%, 31.69% and 10.15% in 1994, respectively. The catches of bigeye tuna and yellowfin tuna increase during recent years because the vessels with super-cold freezer slightly increase in comparison with a slight decreasing of conventional longline vessels. The abrupt increase of bigeye tuna and yellowfin tuna after 1993 is apparently having an underestimate of landings which result from that most data are coming from chandlers (trade agencies of conventional longliners) and that a few data are reported by the super-cold freezer vessels (deep longliners) before 1992, this drawback has been improved by incorporation with Shin Nihon Kentei Kyokai through the understanding between Japan Fisheries Agency and the Department of Fisheries of Council of Agriculture from 1994 onward.

Under the governmental grant by project, the Tuna Research Center, Institute of Oceanography, National Taiwan University are in charge of responsibility for the Taiwanese distant-water tuna fishery catch data processing, meanwhile the Fishery Bureau, Department of Agriculture and Forestry, Taiwan Province Government was responsible for logbook collection before 1991, and after that time the Department of Fishery, Construction Bureau, Kaohsiung City Government then takes over the responsibility of logbook collection because almost all the Taiwanese distant-water longline boats are managed under the Department. Those logbooks are transferred to the Institute of Oceanography, National Taiwan University for processing and compilation.

During the previous year Taiwan had concrete contact with regional management organizations, this made Taiwan improving the techniques of processing catch statistics and organizing the research group. Moreover, 1982 United Nations Convention on the Law of The Sea was in effect in November, 1994, and the United Nations Conference on highly migratory and straddling species concluded a global treaty in August 1995, the Department of Fisheries, Council of Agriculture has decided to reorganize a group for data processing and other for research group for Taiwanese tuna fisheries. The member of those groups include officials, scholars and employers concerning tuna fisheries. With a view of this point, the responsibility of data processing has been gradually transferred to Overseas Fisheries Development Council, who is sponsored by the Department of Fisheries, Council of Agriculture, from the Tuna Research Center, Institute of Oceanography, National Taiwan University from 1995 fiscal year (July, 1995), and this movement will be completed from the start of 1996 fiscal year (July, 1996), at the meantime the Tuna Research Center will stop running. As the consequence, concerning the catch data explanation and submission of Taiwanese distant-water tuna fishery, the Director, Department of Fishery, Council of Agriculture will be corresponded.

Taiwanese distant-water tuna fishery logbook collection and data processing were elucidated in the previous year's document SCRS/94/43. In addition, the measurement certificates by boats and by species are provided by Shin Nihon Kentei Kyokai, those informations improve the estimation of landings of deep longliners, in particular for bigeye tuna and yellowfin tuna. The Chandler's reports also improve the estimation of conventional longliner's landings. The latter reports are processed by the Department of Fishery, Constructive Bureau, Kaohsiung Municipal City Government, and the former by the Institute of Oceanography, National Taiwan University.

The biological and assessing researches of tuna are pursued by tuna research group who is granted by the Department of Fishery, Council of Agriculture project by project.

The new research group is establishing and attempting to operation from July, 1995 (the 1995 fiscal year). Beside, in customary the tuna researches have been pursued by professors of Institute of Oceanography, National Taiwan University. Since 1995, with respect to the issues of the Department of Fisheries, Council of Agriculture, Research items relevant tunas, tuna-like species, sharks and marine mammals are granted to interested scientists. However, the fishery-related scientists of Institute of Oceanography, National Taiwan University still play important roles in the tuna catch statistics and research.

MANAGEMENTS

Taiwan is not a contracting party of International Commission for the Conservation of Atlantic Tunas, however, the Department of Fisheries, Council of Agriculture has introduced management measures of ICCAT to the national regulations.

Four management effects of Taiwanese longline fishery in compliance with ICCAT management measures resolved by the last Commission Meeting are obtained:

(1) To fulfill the ICCAT Statistical Document:

1995 is the second year that the ICCAT Statistical Document was implemented by Taiwan Fishery Authority. In compliance with the document, a new form of logbook was designed and distributed to fishermen who fish in the Mediterranean Sea for bluefin tuna from the fishing season, 1995. There are very clear items including all possible informations of operation in the new form, indicating that those informations are much helpful in improving the statistical data collection and management measures. Vessels operated in the Mediterranean Sea should report their position, catches, size measurements for all species caught each day.

(2) To maintain the catch level of bluefin tuna in the eastern Atlantic and Mediterranean Sea as whichever the highest of 1993 and 1994 catch, and prohibition of operation from June 1 to July 31:

In 1995 fishing season, the catch of bluefin tuna in the eastern Atlantic and Mediterranean Sea is 478 MT in accord with the ICCAT Statistical Document and reports of fishermen. This 478 MT in comparison with the catches of 1993 (334 MT) and 1994 (724 MT) is legal in following the management measure adopted during 1994 Commission Meeting.

There are 14 Taiwanese longline vessels which are the same amount and the similar vessels operating for bluefin tuna, and all the vessels have been instructed to prohibit operating after 31 May. No any violating the management measures was investigated during 1995 fishing season for Taiwanese longline boats fished in this regulated area.

(3) To reduce effort targeting on southern Atlantic albacore in 1995

In accordance to the 1994 Commission's resolution of southern Atlantic albacore management measure, the Department of Fisheries, Council of Agriculture has reduced fishing effort to target on albacore in the southern Atlantic from 1995. Under this implementation of management measure, 1995 preliminary estimate of southern Atlantic albacore catch should be approximately 15,000 MT (see Table 2 and refer next section). Although it is possible to increase landings of albacore during the latter half year of 1995, 1995 total southern Atlantic albacore landings may not exceed 17,000 MT, which is equivalent to 86.7% of the average (19.4 Thousand MT) between 1989 and 1993 catches in the south Atlantic.

(4) To maintain the catch level of swordfish in the Atlantic

Swordfish is one of by-catch species by Taiwanese longline fishery in the Atlantic. There were less than 1,000 MT catch each year before 1993. In 1994 and perhaps by preliminary estimate in 1995, the swordfish in the Atlantic were almost as double as before, those estimated about 2,582 MT in 1994 and 1,506 MT in 1995 that occupied less than 4.2% of both the 1994 and 1995 total catch.

This normal increasing landing of swordfish is not related to increasing fishing efforts targeting on swordfish, it, however, may be relevant with the increasing fishing efforts of super-cold freezer vessels that target on bigeye tuna and yellowfin tuna. The Department of Fisheries, Council of Agriculture has completely implemented the resolution of management measure made during 1994 Commission Meeting and made note to fishermen not directly targeting on swordfish in the Atlantic. And no evidence was investigated from logbooks so far to point out that any Taiwanese longliners has directly targeted on swordfish in the Atlantic. However, it is possible that some vessels operate joint ventures with coastal nations and target sometimes on swordfish.

PRELIMINARY ESTIMATES OF 1995 CATCH

Based on the measurement of unloading in Japan, provided by Shin Nihon Kentei Kyokai, and the chandler's report, the 1995 preliminary landings are estimated as in Table 2.

The preliminary estimation of 1995 landings was computed by the sum of two informations mentioned above during January, 1995 to June, 1995 multiplying a raising factor 2. The results show that total 42,000 MT landings are estimated, of those, in comparison with landings of 1994, the landings of albacore and swordfish show significant decreasing from about 28,888 MT (Table 1) to 17,032 MT (Table 2) and from 2,582 MT (Table 1) to 1,506 MT (Table 2), respectively. The 1995 estimated landing of albacore can be divided into 2,154 MT and 14,878 MT for the northern and southern stock, respectively. Concerning the species of tropical tunas (bigeye tuna, yellowfin tuna and skipjack) and marlins, the landings remain at a very stable level lower than those in 1994.

In Table 2, the landing of bluefin tuna, that mainly fished from Eastern Atlantic and Mediterranean Sea, are summed directly from ICCAT Statistical Document and reports of each fishing boats, the figure summed multiplies an appropriate raising factor that the bluefin tuna were treated. Although the fishing season in the Mediterranean Sea was closed by the end of May, 1995 for Taiwanese longline vessels, all the logbooks that have already been submitted by all 14 fishing boats have not processed yet, there is likely no significant difference between the estimated landings (Task I) and estimated catch (Task II). Hence the landing (catch) of bluefin tuna that fish in the eastern Atlantic and Mediterranean Sea is 2,101 fish and is estimated preliminarily about 487 MT in total round weight. The 1995's catch is compliance with the regulation concluded in 1994. The regulation set an allowable catch that 1995's is not greater than the higher level of 1993's and 1994's, i.e., 724 MT (1994).

Therefore the total preliminary amount of landing is estimated about 42,749 MT for 1995, produced by Taiwanese longline fishery in the Atlantic and Mediterranean Sea.

Table 1. Annual landings of Taiwanese longline fishery in the Atlantic and Mediterranean Sea in 1993 and 1994. (unit: MetricTon, MT)

Year	Total	Albacore	Bigeye tuna	Yellowfin tuna	Bluefin tuna	Southern Bluefin tuna	Swordfish
1993	46289	25700	11881	3714	334	407	750
1994	61648	28888	19479	6260	724	238	2582

Young tuna	Striped marlin	Blue marlin	Black marlin	Billfishes	Skipjack	Sharks	Other fishes
202	616	686	11	643	11	590	744
?	860	444	18	195	6	748	1206

? represents no data available, however, 202 MT in 1993 for this young tunas category seems to be the small either bigeye tuna or yellowfin tuna, or mixed.

Table 2. The preliminary estimate of 1995 landings of Taiwanese longline fishery in the Atlantic and Mediterranean Sea. The following landings are summed from chandlers' report and Shin Nihon Kentei Kyokai measurement certificates landed from January 1995 to June, 1995.

	Albacore	Bigeye tuna	Yellowfin tuna	Bluefin tuna	Southern Bluefin tuna	Swordfish	Skipjack
North	1077	5547	1502		0	329	0
South	7439	1782	793		98	424	4
Total	8516	7329	2295		98	753	4
Estimated landings = total x 2	17032	14658	4590		196	1506	8

Striped marlin	Blue marlin	Black marlin	Billfishes	Sharks	Other fishes	Young tunas	Total **
297	170	1	13	206	302	0	9444
174	67	50	25	413	418	0	11687
471	237	51	38	619	720	0	21131
942	474	102	76	1238	1440	0	42262

* The landing of bluefin tuna is estimated from reports of fishing boats and ICCAT Statistical Document, this amount is not used in estimating total landings, thus the total landings in this table should add the landing of bluefin tuna in this column.

** Amounts in this column are excluded the bluefin tuna.

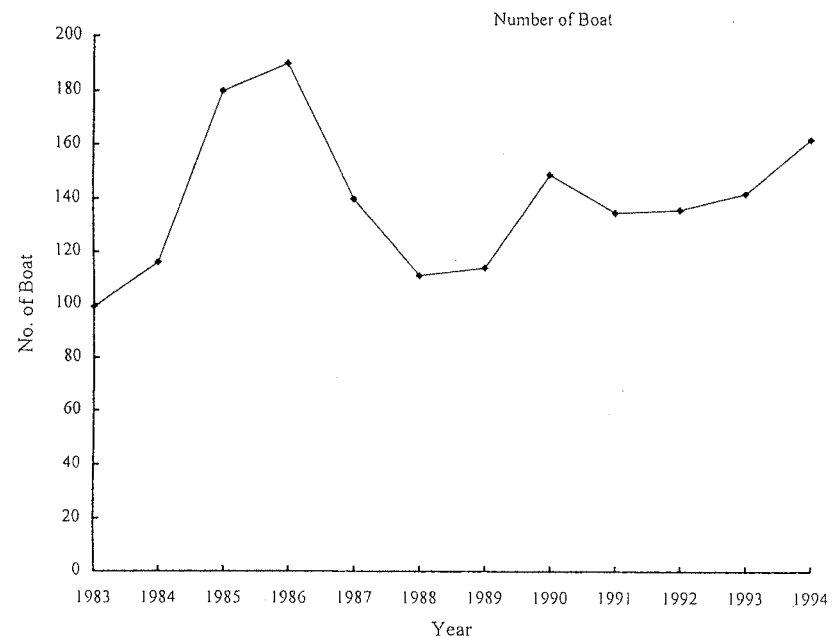


Fig. 1 The trend of Taiwanese longliners operating in the Atlantic from 1983 to 1994.

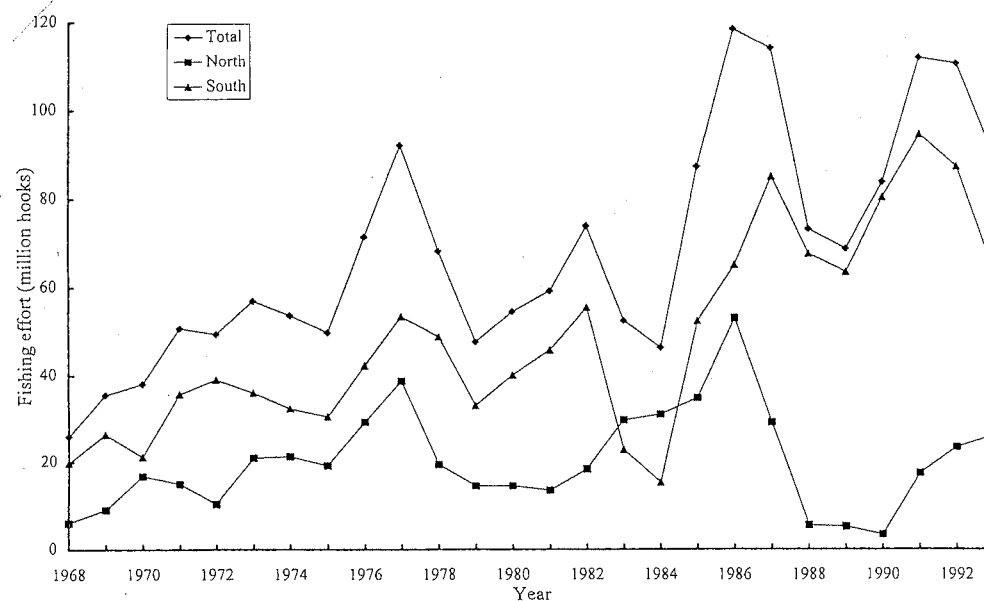


Fig. 2 The trend of fishing efforts of Taiwanese longliners operating in the Atlantic and targeting on albacore for the north, south and total Atlantic from 1968 to 1993.