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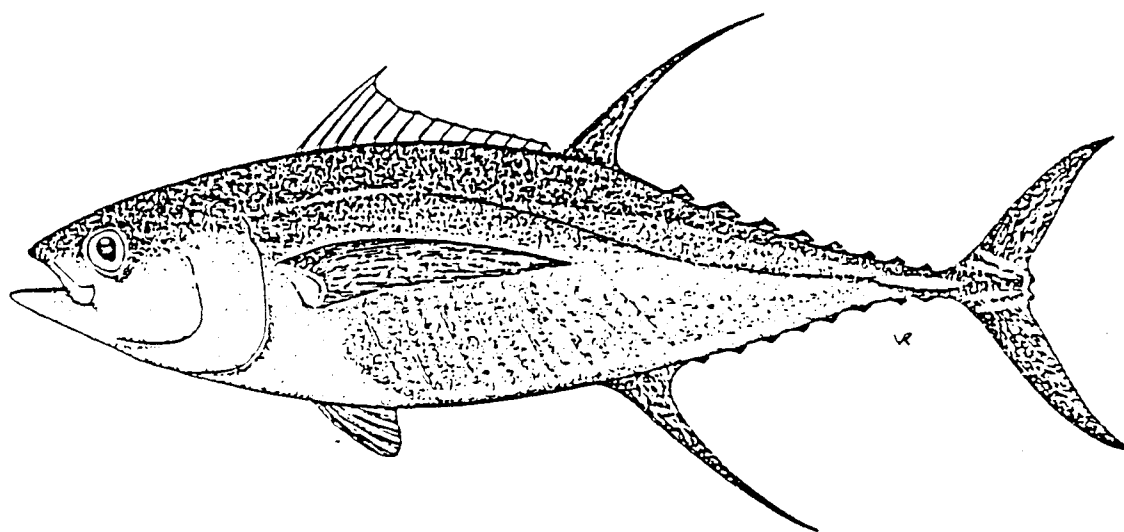
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URGENCY IN FORMULATING EFFECTIVE INTERNATIONAL MANAGEMENT
BODY FOR TUNA RESOURCES IN THE WESTERN AND CENTRAL PACIFIC

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Urgency in formulating effective international management body
for tuna resources in the western and central Pacific

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1. INTRODUCTION

Western and central Pacific has a biggest share of the world tuna production. The total catch of major tunas (skipjack, yellowfin, bigeye, albacore, bluefin and southern bluefin) in 1989 from this region is about 1.2 million tons which corresponds to 45 % in the world tuna production of 2.6 million tons (Table 1). Skipjack and yellowfin tuna are two dominant species in the catch which showed a remarkable increase from 1975 to 1989, the former is the year before development of surface fisheries and the latter for the latest year with available world wide statistics (FAO 1991). Purse seining by distant water fishing nations (DWFN) and various small scale coastal fisheries in the southeast Asian countries are of main factors for the increase of the total catches.

It is astonishing to realize that this region, despite of the world's biggest tuna fishing ground, has no effective international management body for tuna and related resources open to all fishing countries on an equal basis (Suzuki 1991a). At the same time, it should also be realized that in this region there are very complex factors which tend to defer the formulation of such international body. Conflict of opinions over the utilization of the resources between the coastal nations and the DWFN is one of the factors.

2. BRIEF DESCRIPTION ON STOCK STATUS OF KEY STOCKS OF TUNA SPECIES IN THE WESTERN AND CENTRAL PACIFIC

Stock status of tuna resources in the western and central Pacific Ocean is largely unknown for most of the stocks. This is mainly due to lack of basic fisheries statistics and of biological information which appears to be related with the lack of centralized coordinated international body for data and information collection system. Documents presented to FAO expert consultation on interaction of Pacific tuna fisheries held in 1991 are rare comprehensive references available which provide latest information of the recent stock status. Most of the following descriptions are the excerpt from those documents.

Skipjack stock in the western and central Pacific was considered in the early 1980s capable of increase in catch (Kleiber et al. 1987). Skipjack has been predominantly caught by purse seine and baitboat fisheries both in the coastal waters and high seas. Since that period with the catch approximately 260,000 tons, the total catch of this species has further increased substantially reaching about 620,000 tons in SPC statistical area in 1990 mainly due to increase of purse seine catch (SPC 1991). Although there appears to be room for further increase of sustainable catch of this species in this area and an apparent increasing trend of CPUE has been observed in recent years for skipjack caught by the purse seine and baitboat fisheries (SPC 1990), present exploitation level and the MSY are necessary to be re-estimated.

Yellowfin tuna in the western Pacific at least west of 180° is hypothesized to belong to different stock from that in further eastern Pacific. It is also hypothesized that yellowfin in the Philippine and Pacific areas of Indonesian waters has some significant mixing with that in the offshore oceanic western Pacific (Suzuki 1991b). Catch of yellowfin tuna available to longline fishery had a peak in the late 1970s at about 90 thousand tons followed by decrease due to reduction of the fishing effort whereas the total catch of yellowfin tuna has been increasing mainly due to purse seine catch and coastal fisheries in the Philippines and Indonesia. The total catch from the SPC statistical area and the Philippine and Indonesian waters doubled from about 170 thousand tons in 1980 to 340 thousand tons in 1990 (SPC 1991). The longline CPUE decreased about a half from the early 1950s to the middle of the 1970s but the declining trend appears stopped since that time to 1989 despite of remarkable increase of purse seine catches during that period. The purse seine CPUE has been showing increasing trend since the early 1980s when the fishery developed significantly.

There is little evidence as of 1989 that the small fish fisheries such as purse seining gave adverse impact to the large fish fishery, i.e., longline fishery judging from catch rate and size of the fish taken by the longline fishery (Suzuki 1991c). However, there is concern to further increase of the total catch, especially the purse seine catch, on the longline fishery since the longline catch rate in recent years has been in a low level although stable and the catch rate of yellowfin taken by the Japanese longline fishery showed a characteristic spatial pattern of decrease in the areas where the purse seining is active (Fig. 1).

The Pacific albacore stock is considered to be formed by two stocks, south and north Pacific stocks, divided approximately by the equator. The north Pacific albacore has been caught traditionally by longline and surface fisheries, mainly baitboat and jig fisheries. In the 1980s, drift net fishery developed and took a significant share in the total catches. The total catch has peaked in the middle of 1970s with about 110 thousand tons but after that it has been decreasing to 40 thousand tons in 1989. Baitboat catch used to be a major component in the total catch but the catch decreased sharply during the 1980s due to reduction in fishing effort. A decline in catch rate in the longline fishery in the 1980s along with ever decreasing jigboat CPUE with respect to nearly concomitant increase in driftnet catch caused concerns on the stock status. Although the stock status is not clear, it is considered that the stock is now producing at a lower level than in the middle 1970s (Bartoo and Forman 1991). The south Pacific albacore used to be predominantly caught by the longline fishery with average catch of approximately 30 thousand tons. In the late 1980s, surface fisheries, first jigboat fishery and later driftnet fishery has developed and total surface catch appears to have exceeded the longline catch although the driftnet catches are inaccurate.

The rapid increase of the total catch in 1988 above at least 60 thousand tons due to increase of driftnet fishery is of major concerns for this stock (Murray 1991). Impact of drift net fishery on longline fishery largely remains unknown for both south and north Pacific stocks mainly because of lack of reliable driftnet statistics. However, the adverse effect on longline fishery, if any, should be reflected in the fishery data after the end of the driftnet fishery in 1992. In this respect, cautious monitoring of the albacore fisheries should be continued.

It has been assumed that the Pacific bigeye consists of one stock. The catch is predominantly from the longline fishery with a very small amount of juvenile fish caught incidentally by the surface fisheries. The stock is exploited near the optimum level (Miyabe 1991a). The total catch from the whole Pacific has increased from 106 thousand tons in 1975 to 150 thousand tons in 1987. The catch in 1988 has dropped to 119 thousand tons probably due to adverse effect of anti El Nino on longline fishery. Juvenile bigeye tuna caught by the surface fisheries tends to be included in juvenile yellowfin catch to a significant degree. Since juvenile yellowfin catch is big in the purse seine catch, there is potentially a serious problem in exploitation of small fish by the purse seine fishery on large fish longline fishery (Miyabe 1991b).

North Pacific bluefin tuna is exploited in the western Pacific by a variety of fisheries around Japan such as purse seining, jigging and longlining and in the eastern Pacific by purse seining. There is only one spawning ground in the western Pacific for this species. Total catch in the two areas has shown a large fluctuation without any clear trend. The big fluctuation of the catch appears related to occurrence of strong year classes. There is some suggestion that the change in catch of the eastern Pacific bluefin is related to portions of western Pacific fish which migrate to the eastern Pacific (Bayliff 1991). The total catch of this stock in the Pacific is 17000 tons in 1975 and 9000 tons in 1989.

Southern bluefin tuna has been heavily fished first by longline and later surface and the longline fisheries. This species is composed of a single stock which originates in the tropical waters of the eastern Indian Ocean. The stock size of spawning fish has been declining and the projections for future spawning stock size ranges widely from recovery to collapse in extreme case. There is a sign of significant increase in juvenile fish due probably to the reduction of the surface catch in recent years. Accordingly, annual quota regulation for three major fishing countries has been introduced since 1986. The total catch decreased from 33 thousand tons in 1975 to 16 thousand tons in 1989 (Ishizuka 1991). It is expected in the near future to have international treaty for conservation for this species.

In general, stock condition of the major tunas in the

western and central Pacific is limitedly known except for southern bluefin stock which is heavily overfished. However, skipjack, yellowfin and bigeye stocks appear to be in a healthy condition. It may be possible to increase overall skipjack and yellowfin catch further but as mentioned previously, there is a lingering concern about interaction between the purse seine and longline fishery. In addition to yellowfin tuna, same kind of interaction on bigeye should be born in mind, especially for the western and central Pacific where log associated purse seining with higher mixed catch of juvenile bigeye tuna is common. Bluefin stock seems to be subject to a large fluctuation in the stock size caused by change in environmental conditions rather than the fishing judging from the fact that the fishing effort and fishing pattern for this species remains more or less the same for the western and central Pacific for a long time. As for albacore, aside from lack of information on stock status, there will be less concern for the future of the stock because of cessation of the driftnet fishing by the end of 1992.

3. COMPARISON OF HISTORICAL DEVELOPMENT OF THE TUNA FISHERIES WITH OTHER EXISTING INTERNATIONAL MANAGEMENT BODY

The IATTC (Inter-American Tropical Tuna Commission) entered into force, first among the international tuna management bodies, in 1950 covering the eastern Pacific. About 20 years later, the ICCAT (International Commission for the Conservation of Atlantic Tunas) started functioning as an international management organization for entire Atlantic in 1969. In the Indian Ocean, the IOTC (Indian Ocean Tuna Commission) is agreed to be established in the very near future. Increase in the catch of yellowfin tuna by surface fishery either baitboat or purse seine fisheries is a common motivation for establishing the management body in these regions. Table 2 shows the catches of yellowfin tuna as well as total catches of the major six tunas previously mentioned at the period of the establishment of each organization. The relevant catch data in 1989 are also shown in the table for reference.

Over the past 40 years since the establishment of the IATTC, there has been a remarkable increase of harvest of tunas in all major tuna fishing areas in the world. The IATTC area is only area where at the time of establishment the surface fishing was already dominant before the development of the longline fishery. Ratio of yellowfin catch(tons) by surface fisheries to that by longline fishery at the time of establishment of the ICCAT (ICCAT 1982) and IOTC (1989 statistics, (IPTP 1991)) is 1.8 (51994/29546) and 2.8 (101750/36721) whereas it is 4.4 (160544/36480) in 1989 for the SPC statistical area which roughly corresponds to main fishing ground of yellowfin in the Western and central Pacific (SPC 1991). As the ratio for the Western and central Pacific does not include the Philippine and Indonesian statistics in which surface fisheries dominate, the ratio will be higher than 4.4. It is noticed from the comparison that the Western and central Pacific is quite different from the rest of the areas in the lack of effective international management body with respect

to its huge magnitude of yellowfin harvest. In addition, the overall catch of tropical tunas by the purse seine and coastal fisheries appears still to increase in this area.

4. DESIRABLE MANAGEMENT BODY

It is obvious for any fish stocks that establishment of management body should not wait for overfishing of the populations. Brief review of the tuna fishery in the western and central Pacific clearly indicates that improvement of comprehensive data collection system and stock assessment urgently necessary for continuation of responsible fisheries. Management body which covers a whole aspect of the fishery from scientific activities to regulatory measures must be established so that timely management of the stocks are made.

At present the SPC's TBAP (Tuna and Billfish Assessment Programme) has been working as a scientific body for data collection with cooperation of the non-SPC member countries. Although a considerable improvement of statistic collection has been made through the TBAP, there is still membership problem, especially for the DWFN and southeast Asian Countries. Also there is no formal arrangement between the FFA which represents interest of the coastal countries and the all member of the DWFN. Therefore, even if the TBAP plays an important role to bridge between the member and non-member countries for research activities including data collection, there is dichotomy in the existing system because the FFA membership is smaller than the SPC. Therefore, it is desirable to have formal arrangement with which any fishing nations are able to exchange their views and reach impartial agreement.

Another aspect of inadequacy in the existing systems in the western and central Pacific is that some species such as bigeye has much wider distribution than that covered by any single management body. North Pacific albacore and bluefin tuna are in the similar situation. In addition, the industrial tuna fleets are highly mobile and capable of change target species. Long-line fleet is a perfect example. Therefore, to have species or stock specific management body will probably not function effectively and even could be detrimental for management of the tuna stocks judging from biological nature of tunas and characteristics of tuna fleets. Southern bluefin tuna may be only one exception because it needs strict management of the fishery, the distribution of the species spreads to the three Oceans with little overlap with that of other tuna species and countries engaged in the fishing is so far limited to a few countries.

From the previous viewpoints, it is concluded that formulation of new management body, or at least arrangement, is desirable which covers all species of tunas and tuna-like species possibly including by-catch species in the whole western and central Pacific. Joint assessment or division of works with

other international conservation organizations will become necessary for several species like bigeye, albacore and bluefin tuna.

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Table 1. Catches of major tunas in the western and central Pacific and in the world (with parentheses) in 1975 and 1989.

Unit: 1000 tons							
	Skipjack	Yellowfin	Bigeye	Albacore	Bluefin	Southern bluefin	Total
1975	347	115	52	81	7	10	612
1989	720 (1180)	279 (905)	41 (229)	132 (243)	7 (30)	2 (19)	1181 (2607)

Catches of the western and central Pacific are sum of FAO fishing areas 61, 71 and 81 (FAO, 1978; 1991)

Table 2. Catches of yellowfin tuna and the total catches of major tunas in the year of establishment of management body and those in 1989 with parentheses.

Unit: 1000 tons			
	Year entered into force	Yellowfin catch	Total catches of major tunas
IATTC	1950	93(289)	150(386)
ICCAT	1969	94(155)	319(417)
IOTC	-	(160)	(470)
Western and central Pacific	-	(279)	(1181)

Data for IATTC, ICCAT, IOTC and Western and central Pacific are IATTC(1961,1992), ICCAT(1982,1991), IOTP(1991) and FAO(1991), respectively.

Areas covered by IATTC, ICCAT, IOTC and Western and central Pacific in the table are for areas east of 150 ° W, entire Atlantic, FAO Fishing areas 51 and 57, FAO Fishing areas 61, 71 and 81, respectively.

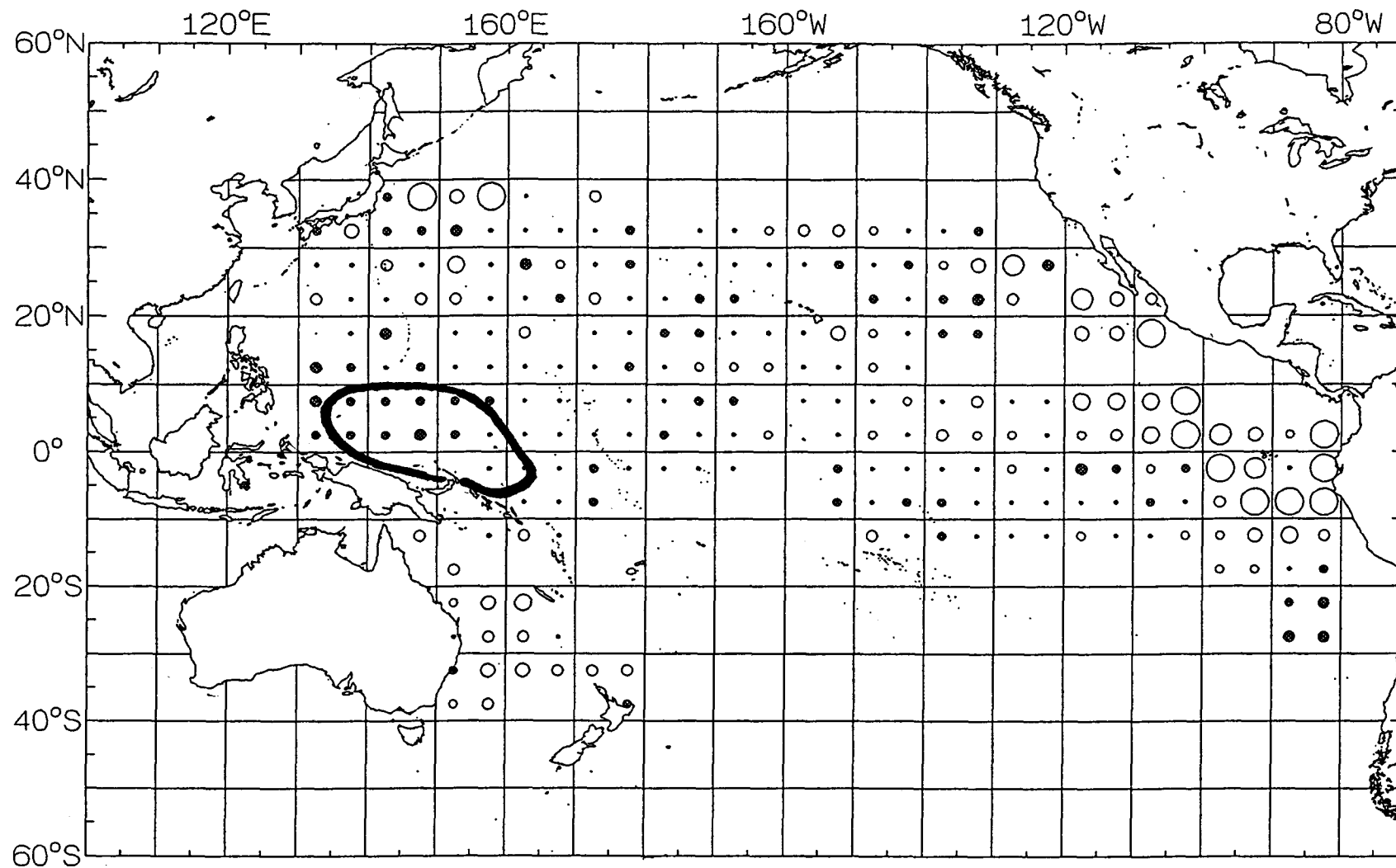


Figure 1. Relative change of average CPUE for the Japanese longline fishery before (1979-1981) and after (1987-1989) development of purse seine fishery in the western and Pacific.

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1974-76.

Modified from Suzuki (1991c).

Shaded and open circles indicate decrease and increase of CPUE after development of the purse seine fishery, respectively. Approximate area of purse seine fishing ground is shown in thick line.