

STUDY ON THE CATCH PROPORTION OF UNDERSIZED FISHES
CAUGHT BY KOREAN BAITBOATS FOR 1974-1977

by

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SUMMARY

Catch proportion of undersized yellowfin and bigeye tuna caught by Korean baitboats for 1974-1977 was studied, analyzing the catch composition by fish size category.

The catch percentages of undersized yellowfin were 31.3% in 1974 and 1975, 24.9% in 1976, and 1.5% in 1977 (5 months). The percentage of bigeye was highest in 1975 (66.6%), but reduced to 32.2% in 1976 and 17.4% in 1977 (5 months) respectively. Compared with the above data of yellowfin and the SCRS report of ICCAT (1976), the former is much lower than the latter.

RESUME

Le présent document fait état d'une étude du pourcentage d'albacore et de thon obèse sous-taille dans les prises des canneurs coréens en 1974-1977, en analysant la composition de la prise par catégorie de taille du poisson. Le pourcentage d'albacore sous-taille a été de 31,3% en 1974 et 1975, de 24,9% en 1976 et de 1,5% en 1977 (5 mois). Pour le thon obèse, ce pourcentage s'est situé à son niveau le plus élevé en 1975 (66,6%), mais a ensuite baissé à 32,2% en 1976 et 17,4% en 1977 (5 mois). Les données sur l'albacore indiquées ci-dessus sont bien inférieures à celles qui figurent dans le rapport SCRS 1976 de l'ICCAT.

RESUMEN

Se estudia la proporción de rabil y patudo pequeño en las capturas de los barcos de cebo coreanos en el periodo 1974-77, analizando la composición de dichas capturas por categoría de tallas.

Los porcentajes de rabil pequeño en la captura fueron: 31,3% en 1974 y 1975, 24,9% en 1976 y 1,5% en 1977 (5 meses). El porcentaje de patudo fue más alto en 1975 (66,6%), disminuyendo hasta el 32,2% en 1976 y 17,4% en 1977 (5 meses). Las cifras arriba mencionados sobre el rabil son muy inferiores a las que aparecen en el Informe SCRS de 1976.

INTRODUCTION

In 1972, The International Commission for the Conservation of Atlantic Tunas (ICCAT) adopted a size regulation for yellowfin tuna of 3.2 Kg with a 15% tolerance for incidental catches of undersized fish.

This regulation was based on evidence that long-term yield would be increased if the capture of small yellowfin tuna (less than 3.2 Kg) was avoided. However, according to the report of the Standing Committee on Research and Statistics, the catch of undersized yellowfin is still high in surface fisheries, especially at Tema base, where the baitboat fleet caught a higher proportion of undersized fish than other fishery.

The catch percentage of undersized yellowfin in Ghana, Japan and Korea (combined) was about 80.7% in 1974, 85% in 1975, 90% in 1976 (6 Months). The Fourth Regular Meeting of the Council of ICCAT (1976) stressed that the catch of small fish should be reduced for the future yield and assigned that the proportion of undersized yellowfin, including the bigeye tuna, be studied. These are some of the results that have been examined in the catch proportion of undersized yellowfin and bigeye tuna caught by Korean baitboat for the period 1974 to July 1977.

DATA AND PROCEDURES

Total catch of yellowfin and bigeye for 1973-1976 was obtained from monthly report of statistical bulletin (Office of Fisheries, Korea) and preliminary catch data for 5 months of 1977 was obtained from Korean fishing companies based in Tema, since the buyer (Star-Kist) has bought the catches of baitboat by fish size categories such as GG, R1, R2 and R3 for economic purpose, annual landing data by fish size categories of yellowfin and bigeye was easily obtained from Korean fishing companies in Seoul, Korea. The data, then, was calculated to the catch proportion of each category (Table 2). The weighing ranges of each category are 13.6 Kg over in GG, 13.6-4.6 Kg in R1, 4.6-1.8 Kg in R2 and 1.8-1.4 Kg in R3 respectively. Therefore, R3 fish size and some of R2 fish size are suspected to be undersized fish.

In order to calculate the proportion of undersized fish in R2 category, fish measurement was carried out for two weeks at Tema base during 1977. The results are shown in Table 3 and Figure 1. The weight of fish in sample was determined by converting the length to weight with

$$W = 0.0000218 Lf^{2.97} \dots \dots \dots \text{Yellowfin}$$

$$W = 0.0000125 Lf^{3.12} \dots \dots \dots \text{Bigeye}$$

where W = weight in Kg., and Lf = fork length in Cm. (Lenarz, 1974).

According to the results of calculation, the fish weighing less than 3.2Kg correspond with 55 Cm (Yellowfin) and 54 Cm (bigeye).

Accordingly, the amount of undersized fish in R2 category are 22% (Yellowfin) and 16% (bigeye). The total percentage of undersized yellowfin is R3 + 22% of R2 and that of bigeye is R3 + 16% of R2. As the R2 size length composition data of yellowfin and bigeye for 1974-1976 was limited, the above data was employed in those years.

CONCLUSION

As a result of this study, the annual catch proportion of undersized fishes caught by Korean baitboat is summarized in Table 4.

The catch percentages of undersized yellowfin were 31.3% in 1974 and 1975, 24.9% in 1976 and 1.5% in 1977 (5 months). The percentage of bigeye was highest in 1975 (66.6%), but reduced to 32.2% in 1976 and 17.4% in 1977 respectively. Compared with the above data of yellowfin and SCRS report of ICCAT (1976), the former is much lower than the latter. It is very difficult to sample each fish from a large amount of fish in order to understand the length composition of the catch. Accurate random sampling could improve the accuracy of the data. Otherwise, it leads to big errors. It would be a good idea to measure the length of whole catches by using fish size categories in Tema base. In relation to the size regulation of ICCAT, there were some problems of misidentification of small yellowfin and bigeye. But in consequence of field survey at Tema at this time, most of the expert fishermen could easily identify them. Under the circumstance, fishermen won't catch the undersized fishes because buyer refuses to purchase such fishes. Therefore, I would like to recommend that we could abide by the ICCAT size regulation on the condition that the buyer does not purchase the undersized fishes.

Table 1. Annual catches of Korean baitboat in Atlantic Ocean

Species	Unit : M/T				
	1973	1974	1975	1976	1977 (5months)
Yellowfin	900	2,169	1,259	365	206
Bigeye	-	-	1,750	810	78
Skipjack	92	2,123	4,469	1,948	946
Others	-	120	175	216	?
Total	1,822	4,412	7,659	3,339	?

Table 2. Catch proportion of yellowfin and bigeye by fish size categories
1) in Percent

Year	Yellowfin					Bigeye				
	GG	R1	R2	R3	total undersize	GG	R1	R2	R3	total undersize
1974	0.9	36.4	40.2	22.5	31.3	-	-	-	-	-
1975	2.0	14.6	66.8	16.6	31.3	0.1	3.1	36.0	60.8	66.6
1976	2.5	28.1	57.0	12.4	24.9	0.7	11.2	66.5	21.6	32.2
1977	20.9	72.2	6.9	-	1.5	6.4	9.7	79.2	4.7	17.4

2) in Weight (M/T)

Year	Yellowfin					Bigeye				
	GG	R1	R2	R3	Total	GG	R1	R2	R3	Total
1974	19.5	789.5	871.9	488.0	2,169	-	-	-	-	-
1975	25.2	183.8	841.0	209.0	1,259	1.6	54.3	630.0	1,064.0	1,750
1976	9.1	102.6	208.1	45.3	365	5.7	90.7	538.6	175.0	810
1977	43.1	148.7	14.2	-	206	5.0	7.6	61.8	3.6	78

Table 3. Length frequency distribution of yellowfin and bigeye tuna in R2 fish size category.

Length(Cm)	Yellowfin		Bigeye	
	No.	%	No.	%
52	-	-	6	2
53	12	4	18	6
54	18	6	24	8
55	36	12	30	10
56	48	16	34	11
57	42	14	62	21
58	48	16	36	12
59	42	14	36	12
60	30	10	24	8
61	18	6	12	4
62	6	2	12	4
63	-	-	6	2
No. of samples		3	3	
No. of fish measured		300	300	
Total catch		23.3 M/T	22.5 M/T	

Table 4. Development in catch proportion of undersized Yellowfin and bigeye tuna caught by Korean baitboat

Species	Unit : percentage			
	1974	1975	1976	1977
Yellowfin	31.3 (67)	31.3 (84)	24.9 (90)*	1.5
Bigeye	-	66.6	32.2	17.4

() : ICCAT (1976) data
* 6month estimate,
Ghana Japan and Korea Combined

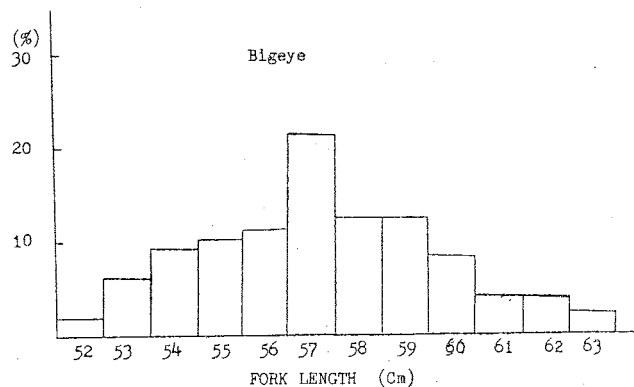
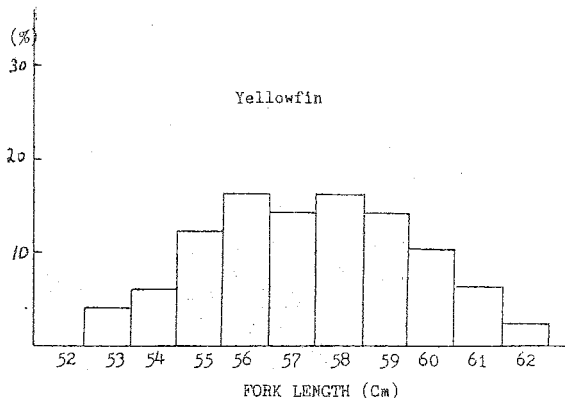


Fig. 1. Length composition of yellowfin and bigeye tuna in R2 fish size category.