

A NOTE ON APPEARANCE OF MEDIUM SIZED BLUEFIN IN THE CATCHES OF JAPANESE LONGLINE BOATS
OPERATED IN THE NORTHWEST ATLANTIC

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SUMMARY

From 1979 on, unusually large catches of medium-sized bluefin (about 150-200 cm in fork length), which had been captured only sporadically, have been observed by the Japanese longline boats from the northwest Atlantic. Implication of this phenomenon to stock structure and status of stock is briefly considered.

RESUME

A partir de 1979, des prises exceptionnelles de thon rouge de taille moyenne (environ 150-200 cm de longueur fourche), lesquels n'étaient capturés que de façon sporadique, ont été observées par les palangriers japonais dans l'Atlantique nord-ouest. Les implications de ce phénomène concernant la structure et l'état des stocks sont brièvement traitées.

RESUMEN

A partir de 1979 se vienen observando capturas muy importantes y poco frecuentes de atún rojo de talla media (alrededor de 150-200 cm longitud-horquilla) por parte de los palangreros japoneses en el Atlántico Noroeste. Se hace un breve estudio de las repercusiones de este fenómeno sobre la estructura y la condición del stock.

Introduction

One of unique characteristics found in the age and length composition of the bluefin catches in the Atlantic, especially those in the western Atlantic is poor catches of middle-aged-fish (hereinafter abbreviated as MAF), about 7-12 years old fish, relative to large and smaller fish. Suzuki and Hisada (1982) interpretes this phenomenon caused by low availability of the fish categorized in this group while Parrack (1982) regarded this as reflection of smaller stock size of the MAF. After about 1978, the MAF which usually represented very poorly in the catches of West Atlantic bluefin has become captured in a significant numbers by the Japanese longline boats operating offshore areas. This short note provides some information and description about distribution aspects of the MAF which will help clarify the dynamics of the population basing on the length measurement data by the Japanese longline boats. Basic data and data processings used in the present study are described by Suzuki (MS).

Results

1) Distribution of the MAF

Figure 1 shows distribution of average of sample lengths divided into three classes, less than 150 cm, from 150 to 199 cm and above 199 cm, by year and 5x5 squares for the years 1975-1980 during which period the biological measurements are satisfactory and the Japanese longline fishery established the present pattern of the operations. It is pointed out that the occurrences of the smaller fish tended to be restricted to the coastal areas west of 60°W those of the MAF to the east of 60°W and larger fish seldom caught in the north west areas. However, occurrences of the MAF spreaded over whole fishing grounds of the North-west Atlantic after 1978.

On the other hand, the distribution of the catches mostly made in the areas west of 60°W, whereas in 1979 and 1980 their importance seems to have increased in the areas east of 60°W. Therefore, it could be

inferred that the increase in the MAF in 1979 and 1980 was due to spread of occurrences of the MAF and the shift of the effort to the areas where the MAF usually is caught. However, it should be noted that the fishing effort did not shift proportionally to the catches (Fig. 2) during the period, i.e., large catches of the MAF are due to increase of cpue for them as described by Suzuki (MS).

2) Catches by ages by areas

As mentioned previously, the catches of the MAF by the Japanese long-liners from the west (Fig. 3; areas W1-W5) and East (Fig. 3; E1-E5) Atlantic have been small except for the period 1971-1973 and 1979-1981 (Fig. 4). The increase of the catches for this age category in the period of 1971-1973 is due to transitional phenomenon reflecting the shift of the target species from such as yellowfin and albacore to bigeye and bluefin tunas in the Japanese longline fishery, i.e., during the period in question, the Japanese longline boats temporarily covered the offshore area of W1 where the MAF usually caught.

The increase of the catches for the recent three years are remarkable. In addition, this increase is not brought about by the shift of the effort pattern as stated already but due to increased catch rates. Although the MAF catches in 1981 have become smaller than those in 1979 and 1980 they are still higher relative to other years. There will be two possible reasons for the apparent decrease of the 1981 MAF catches. First, the operation of the Japanese longline boats and therefore the catches of the MAF for the fourth quarter of 1981 reduced significantly due to intensified ICCAT's new regulation measures taken for the West stock and rough weather in the fishing grounds in the fourth quarter. Secondly, the increased catches of the MAF observed in 1979-1980 (we can trace succession of their high catches back from 1976) might be caused by some unknown factors which apparently increased availability of the MAF other than their assumed large stock sizes. However, the age composition data for the whole West Atlantic catches of bluefin tuna except Japanese still seem to show the succession of the MAF catches (Fig. 5). Therefore, the possibility of the latter case would be low.

It is of interesting to compare the age composition of W1 and E3 from the viewpoint of the stock structures. When the fishing grounds of the Japanese longline fishery covered offshore areas and not differentiated their operational

pattern toward the coastal areas as in the present situation, i.e., in the years 1971 and 1972 the composition of the two areas are similar, indicating high intermingling each other but after 1972 in accordance of shift of fishing grounds to the coastal areas of the Atlantic, the two composition appear much different. However, the MAF is still caught both in the W1 and E3 areas.

References

Parrack, M.L. 1982. Atlantic bluefin tuna resource update, ICCAT CVSP 17, p.315-328.

Suzuki, Z. and K. Hisada 1982. A consideration assuming low availability of medium-sized fish to cohort analysis of the Atlantic bluefin tuna, ICCAT Record of the meeting on the West Atlantic bluefin management measures, p. 45-55.

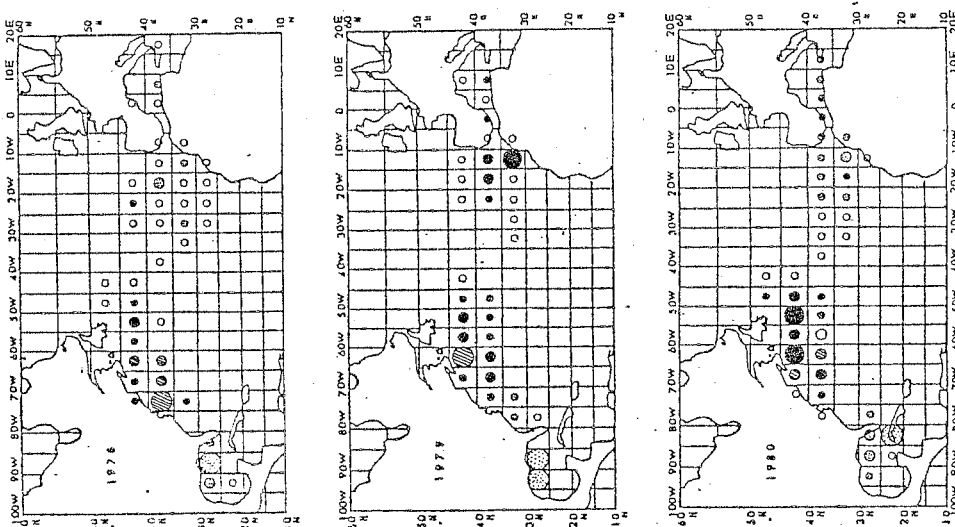


Fig. 1.

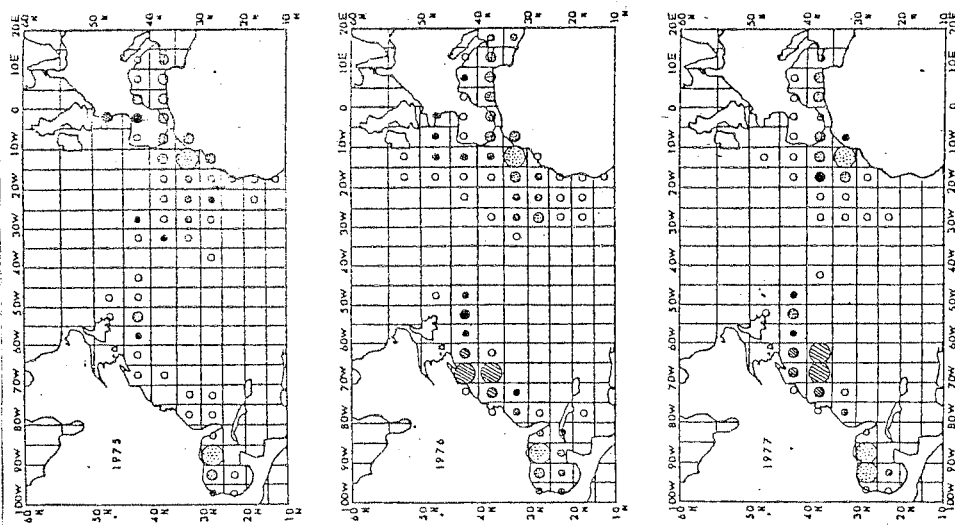


Fig. 1.

Schematic representation of catches and average lengths of bluefin by the Japanese longline fishery, 1975-1980.

Sizes of circles denote magnitude of the bluefin in number; large (3001 and more), medium (501-3000) and small amount (500 and less). Kinds of length classes denote large (200 cm and larger; stippled), medium (150-199 cm; solid) and small fish (149 and smaller; dashed). Blank circles denote only catches are available.

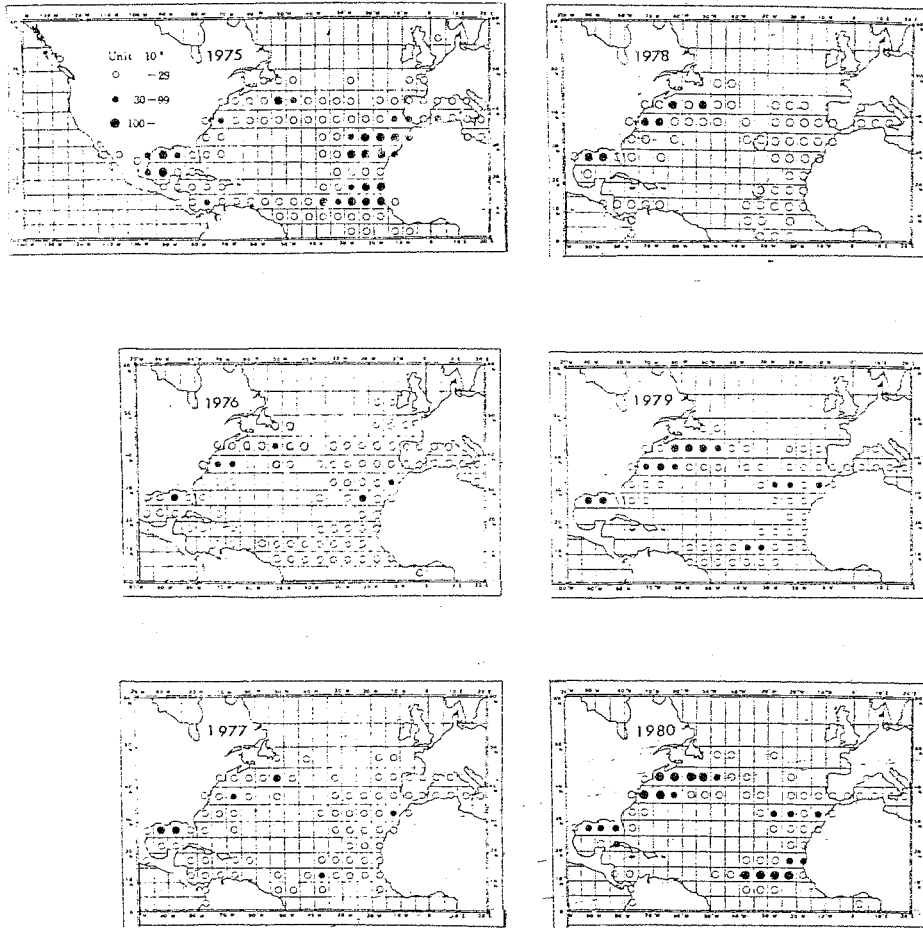


Fig. 2. Distribution of nominal hooks casted by Japanese longline fleet from 1975-1980.

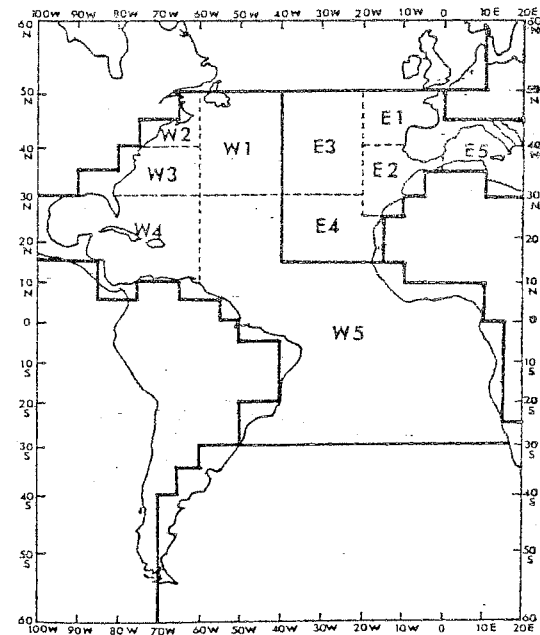


Fig. 3. Areal divisions of the West (W1-W5) and East (E1-E5) stocks.

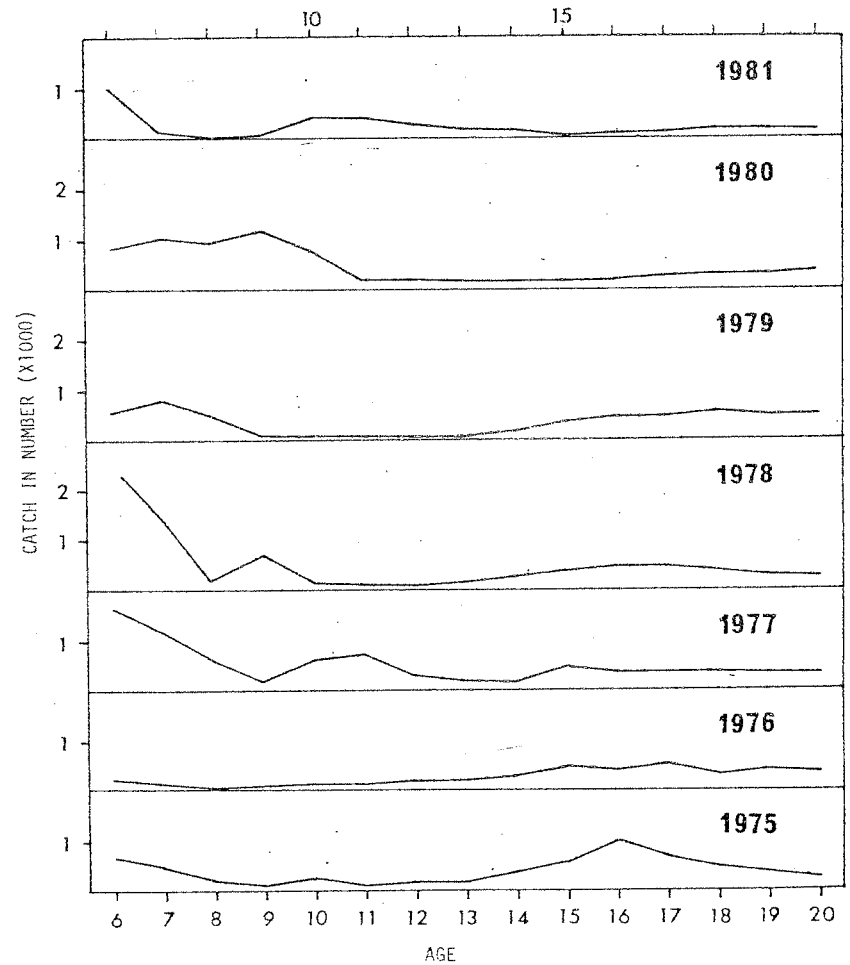
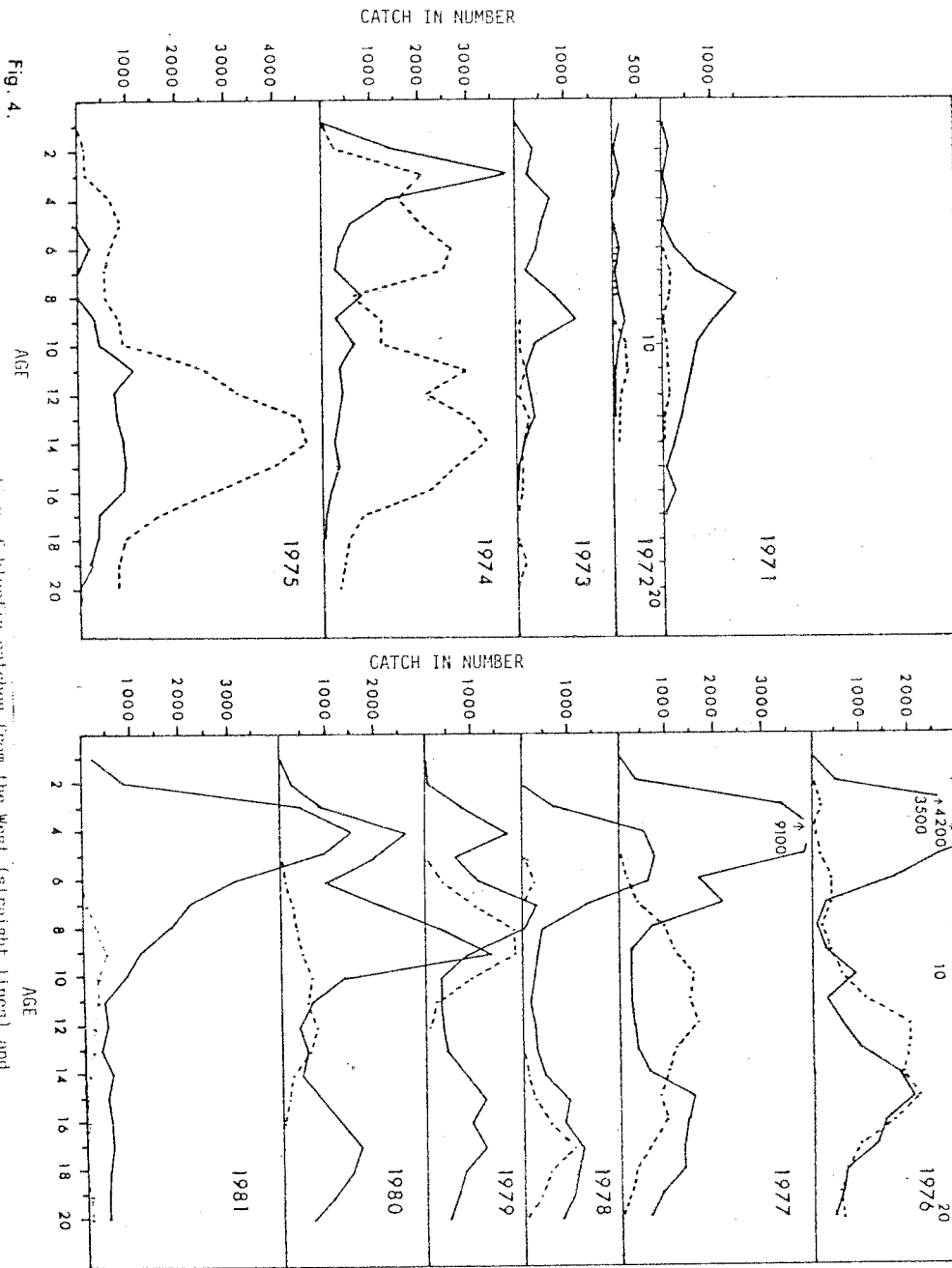


Fig. 5. Age composition of bluefin catches from the West Atlantic except for Japanese longline catches (data from Parrack 1982 and Kume (personal comm.) for 1981 data).

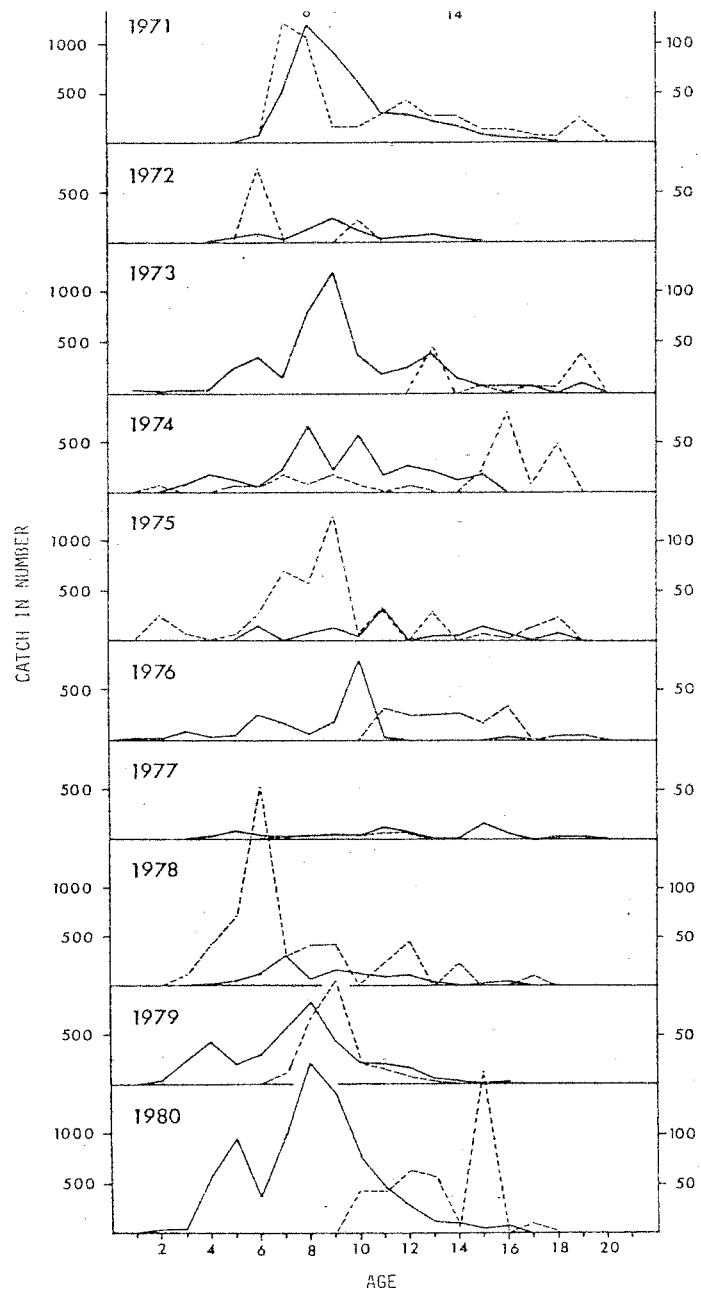


Fig. 6. Age composition of bluefin catches by the Japanese longline boats from areas W1 (straight lines) and E3 (dotted lines). Note the scales in the left hand for the W1 and right hand side for the E3.