STATE OF THE BIGEYE TUNA STOCK IN THE EASTERN PART OF THE PREEQUATORIAL ATLANTIC

by

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SUMMARY

This paper, based on field studies, deals with some features of the commercially important concentrations of bigeye tuna. A complex approach to the changes in the relative abundance index and in some biological features of bigeye tuna permitted the authors to suppose the existence of a favorable state of the stock, enabling the further expansion of fisheries of this species.

ETAT DU STOCK DE THON OBESE DANS LA PARTIE ORIENTALE DE L'ATLANTIQUE PRE-EQUATORIAL

par

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RESUME

Le présent document, qui s'appuie sur des études effectuées sur le terrain, traite de certains aspects des concentrations d'importance commerciale de thon obèse. Une étude complexe des variations de l'indice d'abondance relative et de certains aspects biologiques du thon obèse a permis aux auteurs d'émettre l'hypothèse d'un état favorable du stock permettant une expansion ultérieure de la pêche de cette espèce.

SITUACION DEL STOCK DE PATUDO EN LA ZONA ORIENTAL DEL ATLANTICO PRE-ECUATORIAL

por

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RESUMEN

Este documento, basado en estudios hechos sobre el terreno, trata de algunas características de las concentraciones a nivel comercial de patudo. Un análisis complejo de los cambios en el índice de abundancia relativa y en algunos rasgos biológicos del patudo permite a los autores suponer la existencia de una condición favorable del stock que puede permitir una futura expansión de la pesquería hacia esta especie.

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ON THE STATE OF THE BIG-EYED TUNA STOCK IN THE EASTERN PART OF THE PREEQUATORIAL ATLANTIC.

Since 1968, the bulk of the catches by the Soviet tuna fishing vessels in the eastern part of the preequatorial Atlantic is made by big-eyed tuna. Its mean proportion in the catches is 92%. During 1968-1971, commercial and biological data have been collected. Now, they permit us to characterize the commercial stock and determine the trends in the stock fluctuations. For this purpose we selected comparable data on catches, efforts and size composition of the tuna population south of the Equator up to 10°S and from 8° to 10°W, except for the 1968 data, which partially refer to the area north of the Equator as well.

As shown in Table I, tuna of ~~the~~ 70 to 200 cm are fished, the bulk of the catches consisting of the 125-155 cm size groups. According to the biological analysis, the tuna concentrations are the spawning ones. A comparable analysis of the size frequencies and of the mean size indicates a significant variation of these indices.

In 1968, tuna of 70-165 cm in size were fished, a significant proportion of the catch consisting of the small individuals of 70-90 cm. The mean size was 120.7 cm.

In 1969-1970, an absolute absence of tuna below 90 cm was observed, the mean size being increased to 138.6 cm in 1970. To our opinion, the absence of small tuna is indicative of a weak recruitment to the commercial stock during this season, although, on the other hand, their absence in the catches might be associated with the characteristic features in their distribution. We are inclined to accept the former explanation.

In 1971, a further increase in the mean size (145.5 cm) is observed; at the same time there appears an insignificant portion of the younger age group.

On the base of the commercial fishery statistics the indices of the relative abundance were determined in number of individuals caught per 100 hooks (Table 2). Their variation from year to year are considered to be quantitative characteristics of the change in the stock size. The increase of this index from 1968 to 1969, to our opinion, is likely to be explained by the improvement of the vessels orientation in the area, while its increase in 1969-71 seem to be caused by the natural fluctuations in the stock. The indices show a slight decrease in the abundance of big-eyed tuna stock during last year, but in general they remain to be sufficiently high.

A combined analysis of the size composition of the catches and of the relative abundance indices allows to draw the following tentative conclusions:

1. The commercial concentrations of big-eyed tuna in the preequatorial Atlantic have a relatively high density.

2. The observed increase in the mean size of tuna and a low percentage of the individuals entering the fisheries indicate a weak recruitment to the stock.

3. The indices of the relative abundance show a sufficiently high level of the stock size.

4. It can be supposed that some natural fluctuations in the production of big-eyed tuna occur; it is that factor, not the fisheries press, determines at the present time the total abundance of the species.

5. A cautious increase in the fisheries effort without any damage to the stock is permissible.

The present tentative conclusions conform in general to the published data, in particular to the FAO estimates of state of the big-eyed tuna stock (1,2,3).

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Table 1.

SIZE STRUCTURE OF THE BIG-EYED STOCK

Size-group cm	75	85	95	105	115	125	135	145	155	165	175	185	195	%	L mean cm	N
Year																
1968	13.9	1.9	10.1	4.9	5.2	22.0	18.6	10.8	9.8	2.8	-	-	-	100	120.7	633
1969	-	-	3.9	8.9	12.7	17.4	16.6	15.8	9.3	10.8	3.1	1.5	-	100	135.2	252
1970	-	-	0.4	4.0	11.6	18.0	20.0	17.4	15.7	10.2	1.3	1.4	-	100	138.6	1054
1971	0.1	0.4	1.4	1.2	1.1	10.8	24.2	22.4	18.0	11.8	6.9	1.5	0.2	100	145.5	2360

Table 2

RELATIVE ABUNDANCE INDICES (number of fish per 100 hooks)

Year	1968	1969	1970	1971
Index No./100 hooks	0.69	2.42	2.75	2.23