

AGE COMPOSITION OF THE BIGEYE TUNA CAUGHT BY ATLANTIC LONGLINE FISHERY, 1976

by

S. Kume

SUMMARY

This report estimates the age composition of the Atlantic bigeye tuna caught by the longline fleets by ICCAT bigeye sampling area in 1976, based on the size data obtained by the Japanese and Brazilian longline fishery. To make up for the missing strata, several ways of substitution were made in time and space. Three sets of age data were estimated: whole Atlantic, North, and South Atlantic. This report is also to update the age composition, 1965-75 in SCRS/77/83, in which the details of the principal technique was explained.

RESUME

Le présent rapport contient des estimations de la structure démographique des captures palangrières de thon obèse atlantique, estimations basées sur les données de taille fournies par les pêcheries japonaise et brésilienne à la palangre, par zone ICCAT en 1976. On a procédé à plusieurs sortes de substitutions spatio-temporelles pour remplacer les données manquantes. Trois structures d'âge ont été estimées: Atlantique entier, nord et sud. Ce rapport constitue également une mise à jour de la structure démographique; la période 1965-75 est fournie dans le document SCRS/77/83, lequel donne un exposé détaillé de la technique utilisée.

RESUMEN

Este informe presenta una estimación de la estructura demográfica del patudo capturado en el Atlántico por las flotas palangreras, por zona ICCAT de muestreo para patudo en 1976, basada en datos de talla de las pesquerías de palangre brasileña y japonesa. Con el fin de suplir los estratos que faltaban se siguieron varios métodos de sustitución en tiempo y espacio. Se estimaron tres conjuntos de datos: conjunto del Atlántico, Norte y Sur del Atlántico. Asimismo se actualiza la estructura demográfica presentada en el documento SCRS/77/83-1965-75, que detalla la técnica principal empleada.

1. Catch statistics in number by area

First, catch in number by quarter and ICCAT area and by country was compiled and estimated using Task II statistics when it is available.

- i) Japan, Taiwan and Cuba.....Task II statistics of these countries are compiled in terms of number of fish, so that only simple summation of catch by ICCAT area (Fig. 1) was adequate.
- ii) Korea and Brazil (Panama included).....Task II of these countries are expressed by catch in weight. By utilizing the size composition available, the mean weight was calculated by the area and then weight statistics were converted into catch in number. Panamanian data were included in Korean data and Brazilian data were assigned to Area 8.
- iii) Argentine and Venezuela.....These two countries do not have Task II statistics. Assigned for ICCAT areas were Argentine to Area 8 and Venezuela to Area 4.

2. Size composition

As basic data to estimate overall size composition, adopted are Japanese and Brazilian length frequencies data of 1976, which were already published in the series of the ICCAT Data Records. In Table 1, indicated are sample sizes in number of length measurements by quarter and ICCAT area and how the substitution was made.

- i) Japanese size data.....for Taiwanese, Cuba, Area 1-7 of Korean (with Panama) and Venezuela data.
- ii) Brazilian data.....for Argentine and Area 8 of Korean data, in the latter of which the catch was made in rather northern part of Area 8, so the Brazilian size data were applied.

3. Age composition

The quarterly catch by the Areas already prepared in section 1 were proportionated to the age data which were converted from the size data using age-length key by the growth equation of Yukinawa and Yabuta (1963) that is well comparable to the equation estimated by Champgnat and Pianet (1974). The resultant overall age data are tabulated in Table 2 for whole Atlantic and north and south Atlantic separately.

References

- Champagnat, C. and R. Pianet 1974: Growth of bigeye (*Thunnus obesus*) in the regions of Dakar and Point-Noire. ICCAT Col. Vol. Sci. Papers, Vol. II, 141-144.
- Kume, S. 1978: Age composition of the Atlantic bigeye tuna, 1965-75. (SCRS/77/83). ICCAT Col. Vol. Sci. Papers, Vol. VII(1), 107-109.
- Yukinawa, M. and Y. Yabuta 1963: Age and growth of bigeye tuna, *Parathunnus mebachi*, (KISHINOUE). Rept. Nankai Reg. Fish, Res. Lab., (19), 103-118.

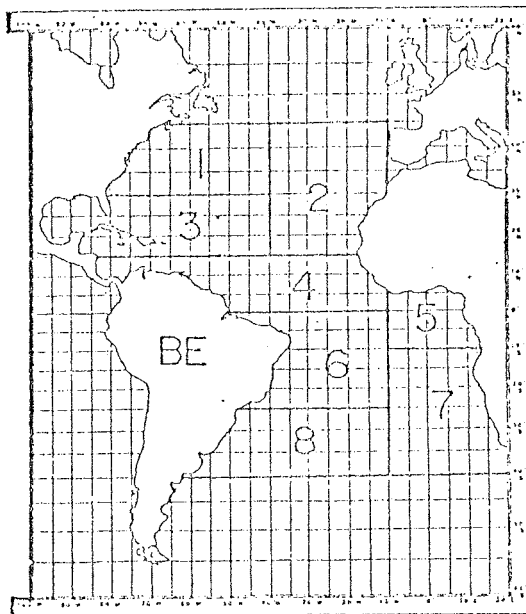


Fig. 1. ICCAT statistical area for bigeye tuna in the Atlantic.

Table 2. Age composition of Atlantic bigeye tuna caught by the longline fishery by area, in 1976.

Age	ICCAT AREA								Sub.T.	Grand T.
	NORTH				SOUTH					
	1	2	3	4	5	6	7	8		
1	733	518	9	205	63	714	1,114	1,712	3,603	5,068
2	11,594	8,129	131	3,602	4,740	2,464	8,929	7,837	23,970	47,426
3	38,938	18,698	505	14,651	8,376	10,158	12,404	15,382	46,320	119,112
4	22,951	20,852	3,379	34,188	12,272	11,229	16,873	8,335	48,709	130,079
5	4,597	11,670	1,337	24,545	9,462	9,729	13,261	10,012	42,464	84,613
6	950	6,917	85	15,149	1,930	6,909	9,662	4,862	23,363	46,464
7	246	2,466	18	6,175	233	2,928	2,839	2,183	8,183	17,088
8	92	983	-	1,770	54	607	879	507	2,047	4,892
9	9	267	-	229	-	36	313	126	475	980
10+	22	76	-	398	-	-	82	-	82	578
Total	80,132	70,576	5,464	100,912	37,130	44,774	66,356	50,956	199,216	456,300

Table 1. Number of Atlantic bigeye tuna measured by quarter and ICCAT sampling area for Japanese and Brazilian data, and substitution for missing strata, in 1976.

Area	Quarter-of-the-year			
	I	II	III	IV
1	4,185	1,477	1,160	6,857
2	13,666	670	A.C.*	1,840
3	613	238	14	1-Q**
4	666	186	268	A.C.
5	A.C.	A.C.	99	308
6	A.C.	A.C.	A.C.	A.C.
7	209	A.C.	A.C.	648
8***	124	1,036	766	32
Total	19,463	3,607	2,307	9,685

* Average age composition of 1965-1975.
 ** First quarter of the same year.
 *** Brazilian data for Argentine, Korean and Panamanian catch. For Taiwanese catch Japanese average age composition was used.