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An Estimate of Total Allowable Catch of Red Hake on Georges Bank  
(Subdivision 5Ze) for 1980

by

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According to the preliminary data submitted to the ICNAF Secretariat on a month basis, the USSR red hake catch in 1978 totalled about 0.8 thous. tons or 3.143 mill. specimens. The latter figure was used for allocation of the catches by age group, since according to the above data the Georges Bank red hake was not fished by other countries in 1978.

The recruitment was estimated from the abundance of 2-year olds calculated by means of virtual population analysis (Schumacher, 1970) and from abundance indices of the young-of-the-year, 1978 inclusive (table 1). The initial values for the 1972, 1973, 1974 and 1975 year classes were calculated by the iteration method from the data on abundance of age groups at the beginning of 1979 (Rikhter, Pankratov, 1978). The estimated 1976, 1977 and 1978 year class abundance was approximately at the same level and was taken as the arithmetical means of the 1963-1975 year class abundance (212 mill. specimens) which agrees with the young-of-the-year abundance indices on the whole.

In the calculations based on the virtual population analysis it was admitted that the fishing mortality in 1979 would approach the optimum level (Rikhter, 1970), in which case the total allowable catch for 1980 would be 21 thous. tons (table 2).

The forecast of the possible 1980 catch calculated by other method (Rikhter, 1974) was also based on the above estimates of the 1974-1978 year class abundance. The calculation results are given in table 3. As is evident from the table, there is no considerable difference between the two estimates.

The TAC of 20 thous. tons recommended for 1980 may prove to be a result of a conservative approach since the 1979 fishing mortality is likely to be much lower than the optimum level with acting limitations.

#### References

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Table 1. Data used for estimating the Georges Bank (5Ze) red hake abundance.

Year class	2-year olds abundance ( $10^6$ )	Abundance indices* for the young-of-the-year
1963	321	-
1964	188	-
1965	110	-
1966	214	-
1967	222	-
1968	266	0.02
1969	250	6.2
1970	241	1.8
1971	233	5.4
1972	149	1.9
1973	112	8.5
1974	270	20.6
1975	182	3.0
1976	-	4.3
1977	-	3.2
1978	-	4.5

\* Young-of-the-year abundance indices are calculated from the trawling survey data obtained by research vessels "Albatross IV" and "Delaware" of the United States Northeast Fisheries Center.

Table 2. Estimating the Georges Bank red hake stock and TAC for 1980 by actual population method.

Indices	Age					Total	
	2	3	4	5	6	Abundance mill.sp.	Weight thous.t
N 1978	212.0	99.5	88.2	2.9	1.8	404.4	69.2
C 1978	0.08	0.41	1.44	1.04	0.17	3.14	0.8
F 1978	0.0005	0.005	0.02	0.55	0.12		
N 1979	212.0	116.3	66.7	59.1	1.1	455.2	85.0
F 1979*	0.13	0.7	0.7	0.7	0.7		
N 1980	212.0	102.2	38.7	22.2	19.7	394.8	70.2
F 1980	0.13	0.7	0.7	0.7	0.7		
C 1980	19.56	43.38	16.43	9.42	8.36	97.15	21.3

\* The catch at given fishing intensity totals 27.5 thous.tons.

Table 3. An approximate estimate of the Georges Bank red hake TAC for 1980 (2nd method).

Age year class	Age group ratio in catches(%)	Catch for exploitat- ion period		Catch by age group for 1980	
		Weight :thous.t	Numbers : (10 <sup>6</sup> )	Weight :thous. t	Numbers : (10 <sup>6</sup> )
2/1978	24.3	23.2	107.2	3.2	26.0
3/1977	34.7	23.2	107.2	6.9	37.2
4/1976	26.2	23.2	107.2	7.5	28.1
5/1975	9.9	19.9	92.0	3.0	9.1
6/1974	4.9	29.5	136.5	2.7	6.7
Total:	100.0			23.3	107.1