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Div. 4VW haddock - Canadian research
vessel survey results

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Canada has conducted stratified-random groundfish surveys in Div. 4W since 1969. Estimates of biomass and population numbers of haddock in this Division declined from 1969 to 1972, subsequently increasing to about the 1969 level by 1975 (Table 1). Estimates of population numbers at age suggest that these apparent trends may, in fact, be due to reduced availability of haddock to the surveys in 1972 and 1973.

Mortality estimates averaged for the seven year period give a total mortality on age groups fully recruited to the commercial fishery (age 4+) of $Z = 0.65$. There are indications that mortality was lower in the later years of the data series.

The 1974 year class predominated in the 1975 survey and at present appears to be the strongest year class to enter the population since initiation of the surveys. In comparison to similar survey estimates made in the 1950's, the 1974 year class is comparable to those of 1954, 1958, and 1959 which subsequently showed up in the fishery as average year classes (Halliday, MS 1970, Halliday, 1971).

Commercial catches in 1974 were 2,326 mt, and preliminary catches reported for 1975 are about 1,800 mt. There are no indications from the commercial fishery of increased stock abundance. Grosslein and Halliday (MS 1972) observed an approximate 1:1 relationship between haddock stock biomass/ calculated from fishery statistics and estimated from survey cruises. If this relationship continues to hold, stock biomass is presently in the order of 15,000-20,000 mt for a stock which, in the 1950's and early 1960's, was capable of sustaining annual catches of about 28,000 mt. Thus the population remains at an extremely low level. Should the 1974 year class prove to be as large as an average year class was in the 1950's, the opportunity should be taken to rebuild the stock towards the level prevailing in the 1950's. No change in the present restrictive management regime can be recommended.

References

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- Halliday, R. G. MS 1970. 4T-V-W haddock: recruitment and stock abundance in 1970-72.
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Table 1 . Div. 4W haddock - estimates of numbers at age ($\times 10^{-3}$) and biomass (mt), and Z on fully recruited age groups, from Canadian research vessel surveys.

Age	1969	1970	1971	1972	1973	1974	1975 [✓]
0	-	-	-	123	-	-	192
1	2,330	6,151	3,689	2,626	1,432	653	11,866
2	4,529	1,779	8,936	491	3,008	5,513	1,338
3	7,465	3,656	2,858	1,313	788	7,344	4,923
4	6,638	2,973	3,888	865	1,104	1,234	4,416
5	3,332	1,108	1,491	988	543	1,372	1,096
6	3,366	959	796	414	920	702	1,940
7	1,336	901	360	237	167	501	522
8	216	354	599	125	83	139	226
9	427	125	30	102	81	118	117
10+	-	86	-	49	-	141	146
NK	-	-	-	-	-	594	-
Totals	29,640	18,094	22,647	7,333	8,126	18,311	26,784
Biomass	18,160	18,160	15,460	7,140	8,700	15,580	21,140
$Z_{4+}/5+$	1.47	0.69	1.32	0.44	-0.21	0.17	
$Z_{5+}/6+$	1.27	0.69	1.26	0.43	-0.20	0.19	
			$\bar{Z}_{4+}/5+$ (1969-75) = 0.65				
			$\bar{Z}_{5+}/6+$ (1969-75) = 0.61				

[✓] Strata 53-66 inclusive. Previous years exclude strata 53, 59-61, 65. In 1975, these strata contained an estimated 2.8×10^6 haddock, mainly 1-3 years old.