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An Update on the Status of Roundnose Grenadier in Subareas 0+1 and 2+3

by

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INTRODUCTION

In recent years the grenadier fishery in SA 0+1 has been only a by-catch fishery and no assessments have been possible. This was again the case in 1983 and nothing further can be said regarding this stock.

The catch rate series for grenadier in SA 2+3 has shown a steady decline in recent years. Although insufficient data have been available for any analytical assessments, this decline in CPUE prompted STACFIS, in 1982, to recommend a precautionary TAC of 11,000 MT for 1983 and this has been continued through 1984. Compounding the problem in assessing this stock is the 10% by-catch limitation on Greenland halibut and the reported problems of the USSR fishing fleet in maintaining this level in light of the increased abundance of Greenland halibut.

METHODS AND RESULTS

Until 1977, the USSR took the bulk of the catches in SA 0+1 then the Federal Republic of Germany replaced them as the major fleet (Table 1). A difference in the period of fishing accompanied the shift in fleets (Table 2). The USSR fished in the second half of the year while FRG tended to fish more during the first half. This is reflective of the shift in landings from SA 0 to SA 1 (Table 3) where ice is not a problem. Catches have declined since 1979.

In Subareas 2+3, the largest catches have consistently been taken in Div. 3K (except 1971) (Table 3) and the USSR has routinely been the main participant (Table 4) fishing primarily in the latter half of the year (Table 5). An overall decline in catches since 1978 is quite evident (Fig. 1) and this is related to a decline in standardized effort (Fig. 2).

As in previous assessments, the multiplicative model (Gavaris 1980) was used to standardize the catch rate data. The regression results (Table 6) indicate significance and that the model's assumptions have been met. The catch rates (relative to 1967) (Table 7 and Fig. 3) show a saw-toothed but continual downward trend since about 1973.

Regression of CPUE on effort with and without 1971 (Fig. 4 and 5) indicate the futility of attempting a general production model. It is interesting to note that the years from 1979 on are all associated with low catch rates and low effort. This period coincides with the upsurge in the Greenland halibut stock and may reflect active avoidance of this species due to by-catch limitations.

The above data do not provide sufficient information to suggest a change in advice from that given in 1983.

REFERENCE

Gavaris, S. 1980. Use of a multiplicative model to estimate catch rate and effort from commercial data. *Can. J. Fish. Aquat. Sci.* 37: 2272-2275.

Table 1. Roundnose grenadier catches by country and year in Subareas 0+1.

Country	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Den(G)	-	11	5	6	1	10	32	21	-	39	37
GDR	-	1,835	2,804	186	181	61	-	-	-	-	-
FRG	-	-	-	33	147	519	5,807	6,794	1,721	353	11
Poland	147	-	-	-	-	-	-	-	-	-	-
USSR	2,164	3,038	9,509	4,728	8,174	2,345	-	106	32	-	43
Total	2,311	4,884	12,318	4,953	8,503	2,935	5,839	6,921	1,753	392	91

Table 2. Roundnose grenadier catches by month and year in Subareas 0+1.

Year	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	NK	Total
1972	8	-	-	-	-	12	1,789	353	138	3	8	-	-	2,311
1973	-	-	-	-	4	-	47	494	528	1,098	289	2,424	-	4,884
1974	85	-	-	1	-	1	390	1,306	182	528	2,289	7,527	-	12,318
1975	46	158	35	43	-	111	307	672	439	109	1,171	1,862	-	4,953
1976	475	7	1	197	-	-	-	206	631	1,793	3,276	1,917	-	8,503
1977	464	94	20	14	2	5	58	1,094	1,089	38	18	39	-	2,935
1978	139	130	723	2,554	1,942	343	4	2	1	-	-	-	-	5,839
1979	605	759	348	626	1,658	1,122	123	118	1	185	545	831	-	6,921
1980	686	385	-	-	-	-	-	418	117	118	23	6	-	1,753
1981	1	4	13	12	1	2	-	-	170	183	-	-	-	392
1982	1	3	9	6	4	11	1	3	1	14	25	14	-	91
1983	Not available by month													

Table 3. Roundnose grenadier catches by subarea and division from SA 0+1 and SA 2+3.

Year	0	1	Total 0+1	Subarea/Division					Total 2+3
				2G	2H	2J	3K	Other	
1967	1,129	6	1,135	-	868	217	16,009	210	17,304
1968	5,996	284	6,280	2,536	4,089	479	23,553	606	31,263
1969	2,642	68	2,710	387	-	264	11,682	-	12,333
1970	545	5,980	6,525	-	-	468	22,267	129	22,864
1971	4,172	4,132	8,304	54,179	2,738	81	18,392	55	75,445
1972	5,783	2,311	8,094	2,161	655	293	21,122	155	24,386
1973	1,054	3,830	4,884	5,880	232	632	10,655	165	17,564
1974	2,661	9,657	12,318	3,220	2,007	333	22,816	40	28,416
1975	204	4,749	4,953	6,489	3,536	1,754	15,388	258	27,425
1976	2,610	5,893	8,503	3,841	1,460	1,381	13,636	275	20,953
1977	721	2,214	2,935	2,597	525	206	11,935	123	15,387
1978	-	5,839	5,839	3,112	1,412	913	15,250	12	20,699
1979	106	6,815	6,921	1,035	3,090	438	3,200	19	7,782
1980	32	1,721	1,753	279	493	726	451	104	2,053
1981	-	392	392	967	1,693	463	3,920	42	7,085
1982	43	50	93	719	734	182	2,709	-	4,344
1983 <sup>a</sup>									3,364

<sup>a</sup> Provisional

Table 4. Roundnose grenadier catches by country and year in Subareas 2+3.

Country	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983 <sup>a</sup>
Can(N)	-	-	-	-	16	15	7	4	-	-	-	-
Can(MQ)	-	-	-	-	-	-	2	-	-	-	-	-
FRG	-	-	199	-	1	174	973	-	32	-	-	-
GDR	239	684	1,766	2,705	497	613	1,801	480	898	1,407	1,640	2,534
Poland	123	294	181	1,499	101	-	51	96	36	18	15	53
Romania	-	-	-	-	-	7	108	-	-	-	-	-
USSR	24,024	16,586	26,270	23,221	19,978	14,577	17,760	7,201	1,087	5,660	2,689	772
Faroese	-	-	-	-	-	-	-	-	-	-	-	5
Portugal	-	-	-	-	-	-	-	-	-	-	-	3
Total	24,386	17,564	28,416	27,425	20,593	15,386	20,702	7,781	2,053	7,085	4,344	3,367

<sup>a</sup> Provisional

Table 5. Roundnose grenadier catches by month and year in Subareas 2+3.

Year	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	NK	Total
1972	173	-	2	15	2,748	8,125	5,762	3,481	465	2,643	921	51	-	24,386
1973	466	60	37	123	51	277	5,202	3,663	3,514	1,785	1,453	933	-	17,564
1974	205	22	187	5	2	520	2,479	1,459	2,214	4,976	9,050	7,297	-	28,416
1975	784	1,388	400	807	47	1,596	812	6,516	7,498	3,301	2,332	1,944	-	27,425
1976	843	1,225	1	605	290	106	257	1,856	1,170	3,961	4,530	5,749	-	20,593
1977	44	8	12	45	13	6	1,776	5,698	3,411	1,973	1,681	719	-	15,387
1978	264	467	13	45	7	405	6,416	3,963	1,814	3,964	1,487	1,866	-	20,699
1979	103	32	44	6	136	683	1,169	1,612	1,691	611	745	949	-	7,782
1980	3	4	48	13	2	-	-	130	376	794	577	106	-	2,053
1981	40	14	1	2	4	1	168	1,636	1,391	759	1,751	1,318	-	7,085
1982	4	-	3	5	3	4	559	563	410	698	1,465	630	-	4,344

Table 6. Regression of Multiplicative Model

MULTIPLE R.....0.674  
 MULTIPLE R SQUARED.....0.455

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DF	SUMS OF SQUARES	MEAN SQUARES	F-VALUE
INTERCEPT	1	1.120E1	1.120E1	
REGRESSION	25	2.827E1	1.131E0	6.375
TYPE 1	4	3.005E0	7.512E-1	4.235
TYPE 2	5	3.683E0	7.365E-1	4.153
TYPE 3	16	1.471E1	9.192E-1	5.182
RESIDUALS	191	3.388E1	1.774E-1	
TOTAL	217	7.334E1		

Table 7. Predicted Relative Power.

YEAR	TOTAL CATCH	PROP.	RELATIVE POWER MEAN	S.E.	EFFORT
1967	17304	0.890	1.000	0.000	17304
1968	31263	0.070	0.585	0.198	53485
1969	12333	0.551	0.776	0.283	15890
1970	22864	0.953	1.439	0.470	15885
1971	75445	0.924	1.218	0.387	61920
1972	24386	0.752	0.940	0.313	25956
1973	17564	0.489	1.335	0.453	13155
1974	28416	0.418	0.817	0.267	34770
1975	27425	0.311	1.005	0.327	27288
1976	20593	0.456	0.855	0.281	24089
1977	15387	0.812	0.731	0.234	21057
1978	20699	0.733	0.854	0.271	24251
1979	7782	0.773	0.609	0.194	12771
1980	2053	0.842	0.638	0.217	3219
1981	7085	0.718	0.551	0.178	12864
1982	4344	0.436	0.660	0.225	6583
1983	3364	0.562	0.468	0.177	7184

AVERAGE C.V. FOR THE MEAN:0.314

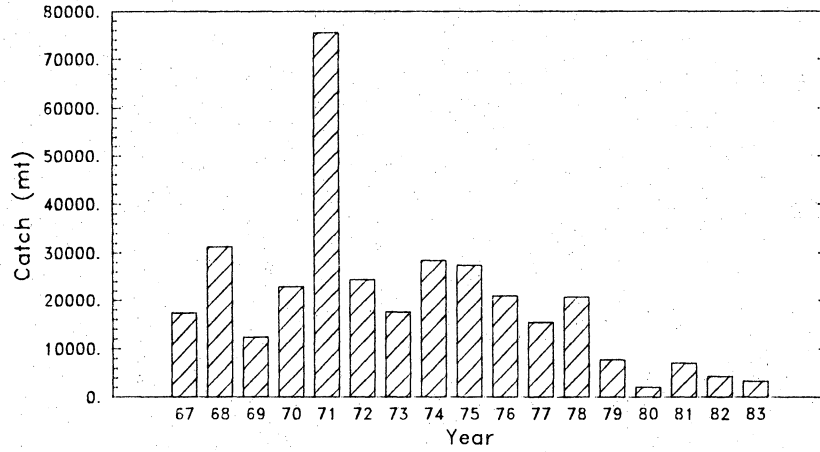


Fig.1: Nominal catches of grenadier in Subareas 2+3, 1967-1983. (1983 Provisional)

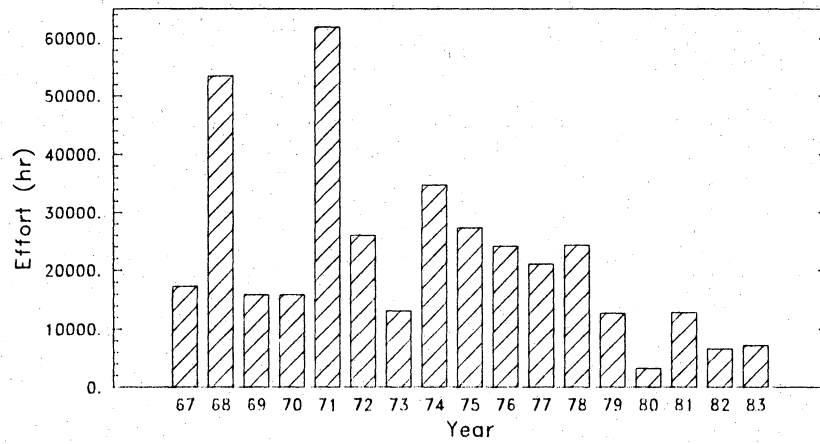


Fig.2: Standardized directed effort for grenadier, 2+3K, 1967-1983. (1983 Provisional)

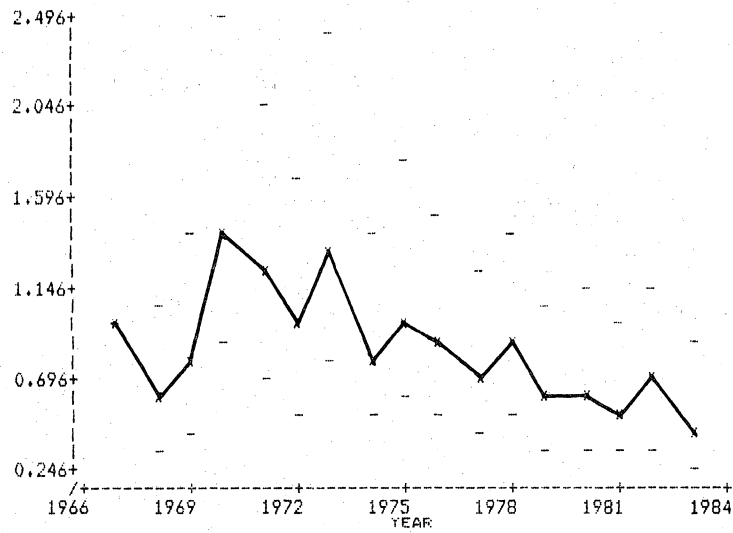


Fig.3. Standardized catch rates (relative to 1967) for grenadier in Subareas 2+3K.

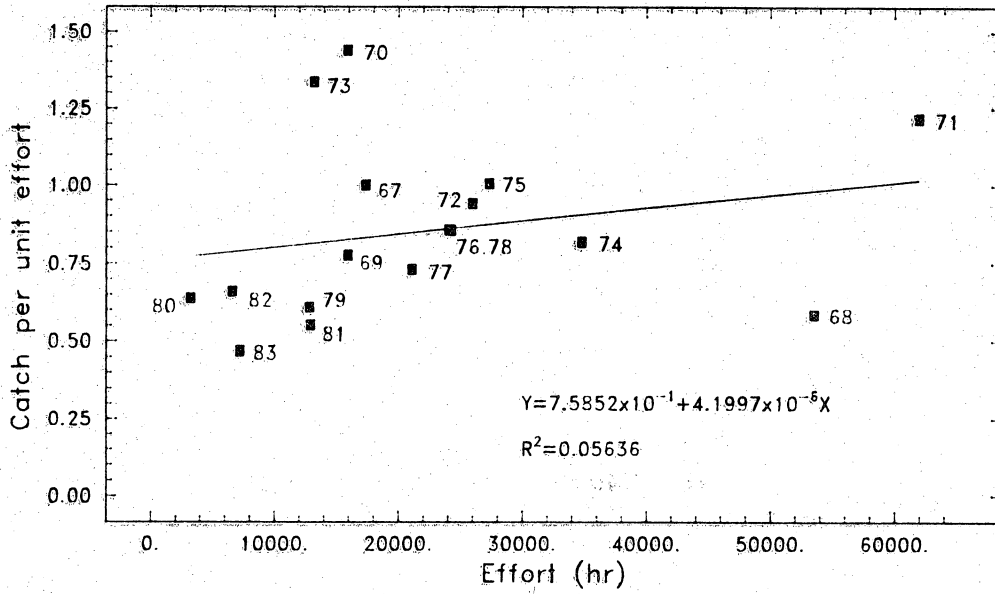


Fig.4: Regression of C.P.U.E. on effort including 1971.

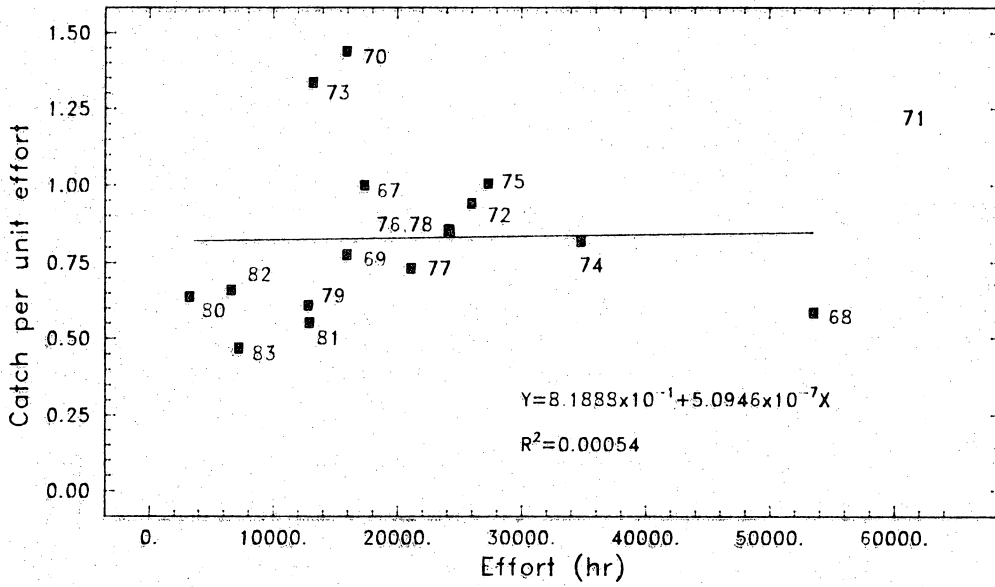


Fig.5: Regression of C.P.U.E. on effort excluding 1971.