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Commercial Redfish Fishery at West Greenland, Subarea 1, 1977-86

by

Klaus Lehmann

Grønlands Fiskeri-og Miljøundersøgelser  
Tagensvej 135, DK-2200, København N, Denmark

#### The Commercial Fishery

During the period 1978-84, redfish catches in Subarea 1 fluctuated without trend between about 6,000 t and 9,000 t. The high catches in 1977 of 30,900 t is thought to contain substantial amounts of other species. In 1985 and 1986, the catch was only 2,500 t and 3,200 t respectively (Table 1 and 2). This decrease is due to the decline in the cod fishery in these years since redfish catches at West Greenland are mainly a component of a mixed fishery or only by-catch in the cod fishery. Since 1984 a directed Japanese redfish fishery has taken place in a joint-venture arrangement with the Greenland Home Rule trawler company. Most of the catch has been taken in Div. 1D, 1E and 1F (see Schumacher, MS 1979, for biological reason for this).

There are 2 species in the area, i.e. Sebastes marinus and S. mentella, but S. mentella is found only in very small quantities in the samples from the catches in the southern divisions (less than 1% have been found in the samples from the Greenland trawlers). Therefore, this species is not considered in this paper. However, Div. 1A and 1B, the reported catch is S. mentella only, which occurs as by-catch in the shrimp fishery (Lehmann, MS 1987).

#### Fishing Effort

It is not possible to use any effort statistics from the last ten years, because the catch is taken in a mixed cod/redfish fishery in which the redfish component is mostly below 50%.

#### Mean Length and Weight of Age Groups in 1982, 1983, 1985, and 1986

Mean length and weight-at-age in the Greenland samples from SA 1 is given in Table 3 and age compositions in samples is shown in Table 4. All samples within the single years are pooled. The sum-of-product (SOP) test of these figures on numbers caught (Table 5) resulted in differences of less than 3% compared to the landed weight.

#### Age/Length Distribution

Inspections of the catch in numbers at age (Table 5) indicates a trend towards older age groups as years proceed.

Fishery Mortality

A catch curve over the years 1982, 1983, 1985 and 1986 was calculated for all year-classes available (Fig. 1). From age 16 onwards, fish were fully recruited. This section of the curve shows a steady almost linear decline and the slope of the regression indicates a total mortality of 0.59. Since natural mortality (M) for redfish is assumed to be 0.1, fishing mortality was determined as 0.49.

The S. marinus stock of the Irminger Sea (ICES Subareas V and XIV) is fully recruited at age 15 and a fishing mortality was estimated as 0.53 over the years 1977-85 (ICES, MS 1987).

References

- LEHMANN, K. MS 1987. Catches of redfish in shrimp research trawling in Div. 1A and 1B, 1976 to 1986. NAFO SCR Doc., No. 59, Serial No. N1348, 6 p.
- ICES. MS 1987. Report of the North-Western Working Group, Copenhagen, 3-11 September 1986. ICES C.M. Doc., No. Assess:2, 149 .
- SCHUMACHER, A. MS 1979. Assessment of the redfish (Sebastes marinus) stock at West Greenland (ICNAF Subarea 1). ICNAF Res. Doc., No. 69, Serial No. 5411, 15 p.

Table 1. Nominal catch (metric tons) by country of redfish at West Greenland, 1977-86. Figures for 1986 are preliminary.

Year	E/DEU	E/DNK	E/FRA-M	E/GBR	GRL	NOR	FRO	JPN	USSR	TOT
1977	29379				1098	44			390	30911
1978	7369		4		671	1	6			8077
1979	8592		1		251	3	33			8877
1980	6287				1220					7507
1981	5275		2		484					5761
1982	7729	11			288					8028
1983	6146			75	496					6714
1984	3971				1027			753		5751
1985	776				101			1651		2528
1986	521				658			2016		3195

Table 2. Nominal catches (metric tons) by division of redfish at West Greenland.

Year	Div. 1A	Div. 1B	Div. 1C	Div. 1D	Div. 1E	Div. 1F	NK	TOT
1977	3	1	1839	10925	4082	14061		30911
1978	-	5	417	1143	3313	3175		8053
1979	-	2	1357	3221	2172	2115		8877
1980	2	12	1995	776	1617	3205		7507
1981	9	12	462	205	1672	3401		5761
1982	1	24	734	2236	2708	2325		8028
1983	1	14	56	292	3912	2535	7	6717
1984	-	-	1	416	2303	2116	915	5751
* 1985	-	-	-	10	43	9	39	101

\*Greenlandic catch only.

Table 3. Mean length (total, cm below) and mean weight (kg. round fresh) by age groups of Sebastes marinus in samples from offshore landings from Greenland trawlers in Subarea 1 during 1982, 1983, 1985, and 1986.

Age Group	1982		1983		1984		1985	
	$\bar{l}$	$\bar{w}$	$\bar{l}$	$\bar{w}$	$\bar{l}$	$\bar{w}$	$\bar{l}$	$\bar{w}$
9	27.9	0.30	26.5	0.25	-	-	25.8	0.25
10	29.7	0.36	27.6	0.29	27.0	0.25	25.2	0.24
11	30.5	0.39	29.8	0.36	27.5	0.27	28.7	0.35
12	32.6	0.48	30.1	0.38	30.2	0.38	30.0	0.40
13	34.6	0.58	32.0	0.46	32.3	0.47	32.0	0.49
14	36.0	0.65	33.7	0.54	33.8	0.53	33.6	0.56
15	37.4	0.73	34.8	0.60	35.2	0.61	35.5	0.66
16	40.1	0.86	36.2	0.67	37.0	0.71	37.5	0.78
17	42.1	0.95	37.9	0.76	38.9	0.83	39.2	0.90
18	47.5	1.16	39.9	0.89	40.7	0.93	41.0	1.06
19	45.8	1.50	41.4	1.00	42.4	1.06	43.2	1.24
20	-	-	45.9	1.52	45.3	1.33	44.7	1.37
21	-	-	43.3	1.05	47.4	1.50	46.6	1.53
22	-	-	48.6	1.84	49.0	1.67	48.7	1.69
23	-	-	54.0	2.30	48.7	1.72	47.8	1.65
24	-	-	-	-	52.0	20.7	52.4	2.11
25	-	-	-	-	54.0	2.30	55.3	2.53
26	-	-	-	-	61.5	4.08	56.0	2.63
Overall	36.3	0.66	34.7	0.60	37.3	0.76	38.8	0.91

Table 4. Age compositions of Sebastes marinus from samples of offshore landings from Greenland trawlers in Subarea 1 during 1982, 1983, 1985 and 1986.

Age Group	1982	1983	1985	1986
9	8	44	-	5
10	23	57	1	9
11	27	79	4	47
12	109	231	21	147
13	158	410	35	432
14	117	564	58	609
15	143	979	84	949
16	114	861	86	987
17	36	429	50	1121
18	13	96	39	1099
19	14	56	20	671
20	-	12	12	524
21	-	6	9	211
22	-	15	2	101
23	-	2	3	54
24	-	-	3	14
25	-	2	1	13
26	-	4	6	10
TOT	762	3845	434	6987

Table 5. Catch in number-at-age of redfish (Sebastes marinus) from Greenland trawler landings during 1982, 1983, 1985 and 1986.

Age Group	1982	1983	1985	1986
9	4581	9460	-	517
10	13171	12255	306	931
11	15462	16985	1225	4864
12	62419	49664	6430	15213
13	90480	88149	10717	44707
14	67001	121259	17760	63025
15	81890	210483	25722	98211
16	65283	185113	26334	102144
17	20616	92234	15310	116011
18	7445	20640	11942	113734
19	8017	12040	6124	69441
20	-	2580	3675	54228
21	-	1290	2756	21836
22	-	3225	612	10452
23	-	430	919	5588
24	-	0	919	1449
25	-	430	306	310
26+	-	860	1837	1035
<b>TOTAL</b>	<b>436365</b>	<b>827097</b>	<b>132894</b>	<b>723696</b>
<b>TONS</b>	<b>288</b>	<b>496</b>	<b>101</b>	<b>658</b>
<b>Mean weight of fish</b>	<b>0.66</b>	<b>0.60</b>	<b>0.76</b>	<b>0.91</b>

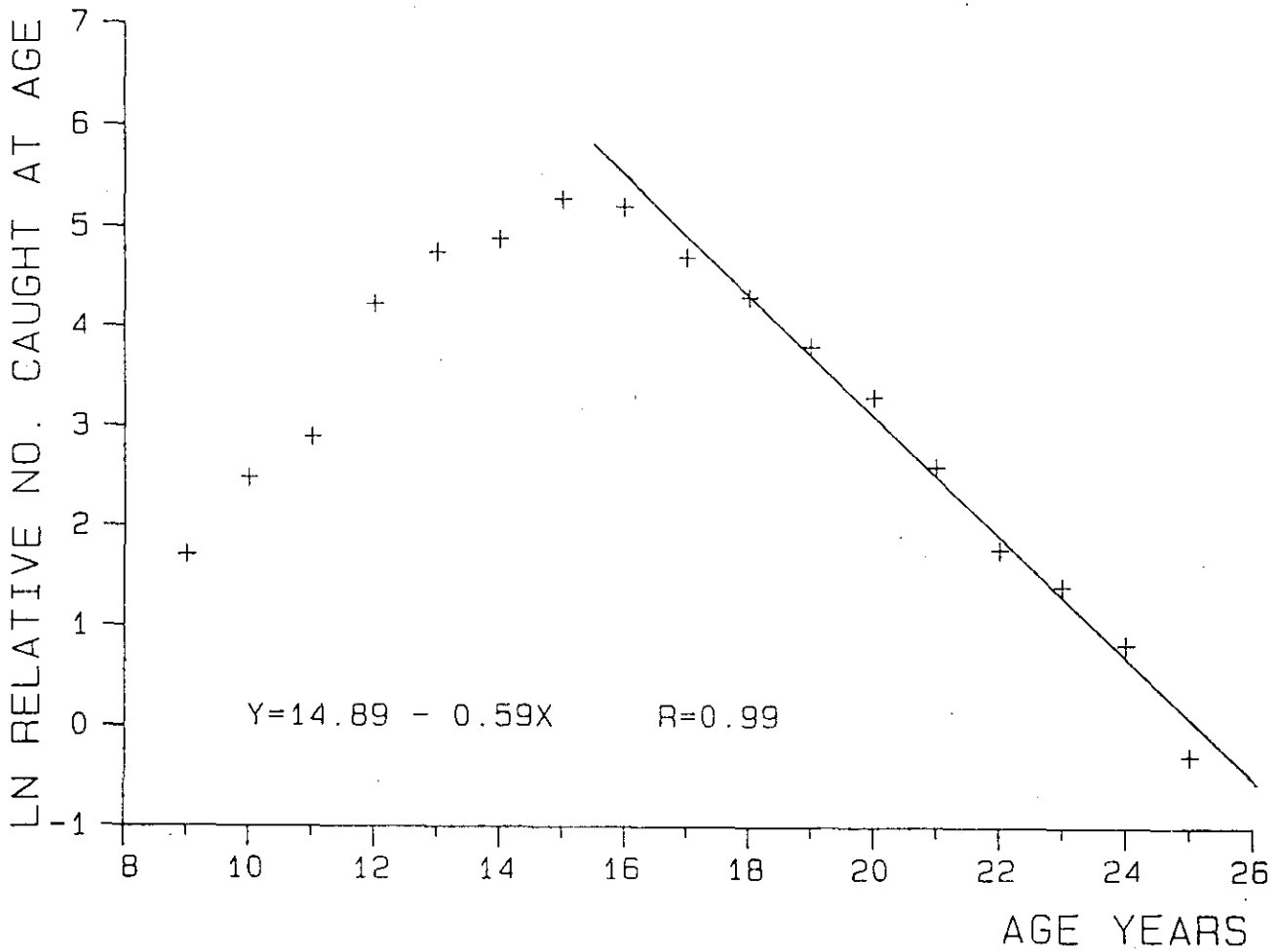


FIG. 1. Catch curve of S. marinus NAFO SA 1.  
Commercial catches Greenland trawlers. Mean of relative  
catch number by age groups of 1982, 1983, 1985 and 1986.