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German Research Report for 2000

by

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Subarea 1

A. Status of the Fishery

In 2000, demersal fishing was conducted with low effort in Division 1D inside the Greenland EEZ from September until November. The fishery was directed towards Greenland halibut (*Reinhardtius hippoglossoides*). By end of the year, reported catches amounted to 444 tons of Greenland halibut. There was negligible by-catch of roundnose grenadiers, wolffish and skates reported (less than 1 ton). Table 1 lists a breakdown of the effort, catches, and non-standardised Greenland halibut CPUE by month. The trend is shown in Figure 1.

While the demersal fishery for Greenland halibut is a normal activity, the pelagic fishery for oceanic redfish (*Sebastes mentella*) occurred for the first time off West Greenland in 1999 and increased substantially in 2000 due to a change in distribution patterns of the stock in westerly direction as derived from an international hydro-acoustic survey conducted by Iceland, Russia and Germany. The German fisheries in Div. 1F as well as survey results are described in detail by (Rätz and Stransky, 2001). The fishery was conducted from August to October at depths above 500 m and targeted almost exclusively mature redfish with almost no discard and no by-catch of other species. A total catch of 4 475 tons was reported for 2000. Table 2 lists a breakdown of the effort, catches, and non-standardised oceanic redfish CPUE by month.

B. Special Studies

1. Environment

During the German groundfish survey off Greenland (15.09.-27.10.2000), fishery oceanographic measurements were performed at 72 fishing stations by means of CTD/Rosette. Additionally, temperature and salinity at stations of 4 NAFO standard oceanographic sections off West Greenland (Cape Desolation, Frederikshaab Bank, Fyllas Bank, Lille Hellefiske Bank) were measured in order to describe climatic trends. For the annual meeting of the NAFO Scientific Council a climatic review for the Greenland area was prepared which comprised information on air temperature anomalies, water mass properties and ice distribution (Stein, 2001). To continue the discussion in NAFO on the suitability of Environmental Indices, which may be used for the fishery assessment process, a paper is submitted (Borovkov and Stein, 2001). As part of the Russian/German project on „Assessment of Short-time Climatic Variations in the Labrador Sea“ a report is presented on the project meeting in Hamburg, Germany, 23-27 April 2001.

2. **Biological Studies**

Since 1982, annual groundfish surveys were conducted. During the fourth quarter, stratified random surveys covered shelf areas and the continental slope off West Greenland (Divisions 1B-1F) outside the 3-mile limit to the 400 m isobath. In October-November 2000, 73 valid hauls were carried out and the standard survey area was completely covered. The total survey catch amounted to 2389 kg. 34 437 specimens were classified to 49 taxonomic units. Based on this survey information, assessments of the stock status for demersal redfish (*Sebastes marinus, S. mentella*), American plaice (*Hippoglossoides platessoides*), Atlantic wolffish (*Anarhichas lupus*), and thorny skate (*Raja radiata*) are documented (Stranky, 2001 a and b). Two additional papers deal with redfish otolith analyses, which were conducted within the frame of an EU-project REDFISH with international cooperation (www.redfish.de). One paper reports on the age reading precision for golden redfish (*S. marinus*, Stransky et al., 2001) while the second one explores the applicability of otolith shapes for species/stock identification (Stransky, 2001 c).

For 1996-2000, estimates of catches, effort and catch rates for Greenland halibut and oceanic redfish by year and month are presented (Tab. 1 and 2). The trend of Greenland halibut CPUE is shown in Figure 1. The age disaggregated German catch of Greenland halibut is given in Table 3. The computations are based on 23 samples, 3 940 length measurements and 525 age determinations. Table 4 lists the size composition of the German catch of oceanic redfish. The computations are based on 16 samples and 9 336 measurements. The oceanic redfish size composition in the German catch is given in Table 4 and illustrated in Fig. 2. The mean fish size amounted to 35.3 cm.

Subareas 2 and 3

A. **Status of the Fishery**

In 1999, German fishing vessels did not fish in Sub-areas 2 and 3.

B. **Special Studies**

1. **Environment**

No research in relation to environment was carried out by Germany in NAFO Sub-areas 2 and 3.

2. **Biological studies**

No biological samplings or studies were performed by Germany in NAFO Sub-areas 2 and 3.

References:

Borovkov, V.A. and M. Stein 2001. Recruitment of West Greenland Cod – Modelling Different Cause-Effect Regimes. Announced for NAFO Scientific Council Meeting June 2001.

Rätz, H.-J. and C. Stransky 2001. Distribution patterns and selected stock parameters of pelagic redfish "oceanic *Sebastes mentella*" in the NAFO and NEAFC Convention Areas. NAFO SCR Doc. 01/1, Ser. No. N 4353, 14 pp.

Stein, M. 2001. Climatic Conditions Around Greenland – 2000. NAFO SCR Doc. 01/3, 21p.

Stein, M. and V.A. Borovkov 2001. Sixth Report of Joint Russian/German Project „Assessment of Short-time Climatic Variations in the Labrador Sea". Announced for NAFO Scientific Council Meeting June 2001.

Stransky, C. 2001 a. Assessment of Redfish in NAFO Sub-area 1. Announced for NAFO Scientific Council Meeting June 2001.

Stransky, C. 2001 b. Assessment of Other Finfish in NAFO Sub-area 1. Announced for NAFO Scientific Council Meeting June 2001.

Stransky, C. 2001 c. Preliminary results of a shape analysis of redfish otoliths:comparison of areas and species. Announced for NAFO Scientific Council Meeting June 2001.

Stransky, C., S. Guðmundsdóttir, Þ. Sigurðsson, S. Lemvig and Kjell Nedreaas 2001 . Age readings of *Sebastes marinus* otoliths: bias and precision between readers and otolith preparation methods Announced for NAFO Scientific Council Meeting June 2001.

Table 1. German effort (hours fished), catches (tons), unstandardized CPUE (kg/h) and accompanied standard deviations for Greenland halibut by division and month, 1996-2000.

Year	Month	Effort 1D	Catch 1D	CPUE 1D	St.Dev.
1996	September	74	19	265	97
1996	October	490	136	270	104
1996	November	562	259	457	147
1996	December	90	37	415	150
1996	∑	1217	452	365	158
1997	November	758	334	456	262
1997	December	262	112	423	138
1997	∑	1020	446	448	237
1998	October	34	16	482	225
1998	November	506	205	430	191
1998	December	267	129	494	154
1998	∑	806	350	446	186
1999	September	208	89	428	80
1999	October	439	163	371	71
1999	November	462	187	400	83
1999	∑	1108	439	393	80
2000	September	318	161	504	119
2000	October	471	194	426	120
2000	November	209	89	426	62
2000	∑	998	444	447	118

Table 2. German effort (hours fished), pelagic catches (tons), unstandardized CPUE (kg/h) and accompanied standard deviations for oceanic redfish (*Sebastes mentella*) by division (inside Greenland EEZ only) and month, 1999-2000.

Year	Month	Effort 1F	Catch 1F	CPUE 1F	St.Dev.
1999	September	231	154	663	226
1999	∑	231	154	663	226
2000	August	1859	2107	1180	480
2000	September	1685	1885	1376	1092
2000	October	574	483	878	358
2000	∑	4118	4475	1231	831

Table 3. Age composition of the German catch of Greenland halibut in Div. 1D.

Age	N	length (cm)	weight (kg)	SOP (kg)
0	0			0
1	0			0
2	0			0
3	0			0
4	0			0
5	1073	42,7	0,589	632
6	3138	45,3	0,726	2278
7	3095	45	0,709	2194
8	10227	49,6	1,002	10247
9	8176	52,7	1,243	10163
10	5741	56,1	1,553	8916
11	4962	59,3	1,891	9383
12	3171	63	2,345	7436
13	2748	64,3	2,521	6928
14	726	74,6	4,274	3103
15	1376	77,5	4,894	6734
16	0			0
Sum	44433			68014
Sample weight				70700
Per cent				1,04

Table 4. Size composition of the German catch of oceanic redfish in Div. 1 F, above 500 m.

	3rd Quarter	4th Quarter	
Length (cm)	NAFO 3rd Q <500 m	NAFO 4th Q <500 m	Total
20,5	0	0	0
21,5	3464	419	3883
22,5	6928	838	7766
23,5	28576	3457	32033
24,5	39833	4820	44653
25,5	44163	5343	49506
26,5	48493	5867	54360
27,5	69275	8382	77657
28,5	105645	12782	118427
29,5	182714	22107	204821
30,5	211290	25564	236854
31,5	282298	34156	316454
32,5	443363	53643	497006
33,5	693621	83923	777544
34,5	1089357	131803	1221160
35,5	1214919	146995	1361914
36,5	1205393	145843	1351236
37,5	1088491	131699	1220190
38,5	685827	82980	768807
39,5	419117	50710	469827
40,5	142015	17183	159198
41,5	55420	6705	62125
42,5	19917	2410	22327
43,5	4330	524	4854
44,5	0	0	0
45,5	866	105	971
46,5	866	105	971
47,5	0	0	0
48,5	0	0	0
49,5	0	0	0
50,5	0	0	0
Summe	8086181	978363	9064544
Kg	3992000	483000	4475000
Mean	35,3	35,3	35,3

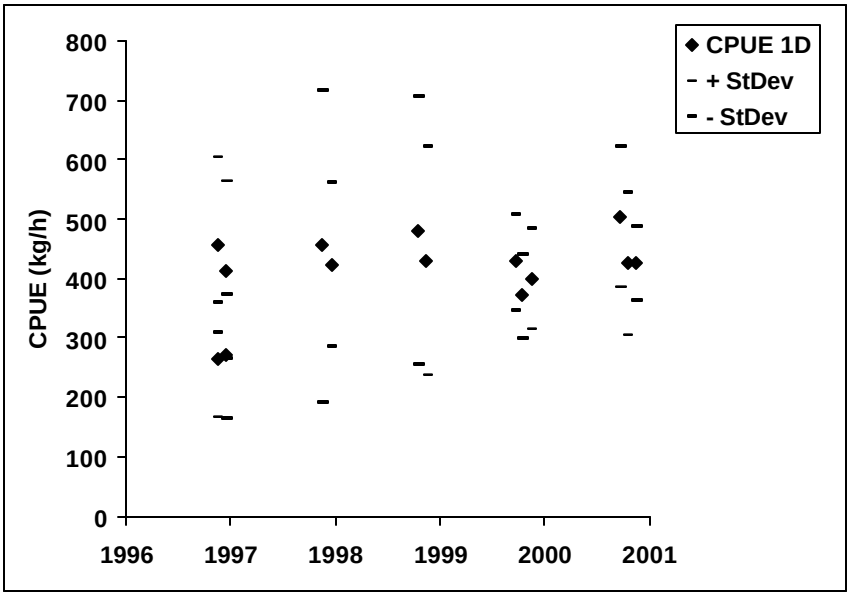

Fig. 1. Greenland halibut in NAFO Div. 1D. CPUE and accompanied standard deviation by year and month as derived from German commercial catches, 1996-2000. Respective values are listed in Table 1.

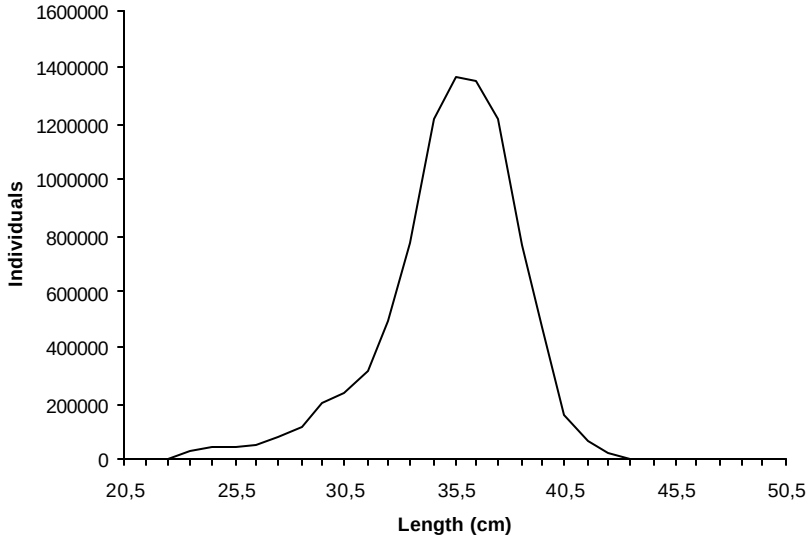

Fig. 2. Size composition of German catches of oceanic redfish in Div. 1 F, 2000. Respective values are listed in Table 4.