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Historical Data Summary for the Flemish Cap Project (Division 3M)

by

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A result of the January 1980 meeting of the ad hoc Working Group on the Flemish Cap Project (NAFO SCS Doc. 80/VI/9) was an agreement to compile a list of research data collected by participating countries in the Flemish Cap Project. The list was to include all data collected, whether published or not, in an attempt to consolidate the data base of oceanographic, plankton, larval and adult fish information for the Flemish Cap region. This was considered to be an important and necessary step in clarifying sampling strategies and to aid in development of a well-coordinated sampling scheme.

The data listed below includes tables summarizing all groundfish surveys made on Flemish Cap by Canada and the U.S.S.R. for cod and redfish (Tables 1-8). The surveys dated from 1949 (Investigator II) and include a large number of variables measured and the number of samples for each. For the years 1949-50 (Canada) and 1956-60 (U.S.S.R.) all redfish data were grouped together (Tables 2 and 8). Beginning in 1956 (Canada) and 1961 (U.S.S.R.) data for the different species was listed separately. Also listed is U.S.S.R. data collected for American plaice, roundnose and roughhead grenadier, Greenland halibut and wolffish.

Plankton and oceanographic data collected by the Northwest Atlantic Fisheries Center, Canada and the Bedford Institute of

Oceanography are listed in Tables 9 and 10, respectively. Plankton data collected by the Polish vessel R.V. Wieczno are listed in Table 11. A summary of U.S.S.R. plankton data collected on Flemish Cap is listed in Table 12.

Oceanographic data historically collected by Canada and the U.S.S.R. for the Flemish Cap region, and not listed here, are being archived by MEDS and are available from that organization (eg. MEDS Data Record Series No. 1, 1980, J. Gagnon).

Table 1. List of biological material on cod collected by the PINRO research vessels in 1956-1979.

Year	Date	Vessel (cruise)	Length	Matu- rity	Stomach content	Age	Weight of liver	Round weight	Weight of stomach	Weight of food bolus	Detailed analysis of food bolus	Bio- metric analysis of muscles	Morpho- metric analysis	Tagging
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1956	September	236(4)	987	690	690	30I	I00	30I						
1956	August - September	242(2)	3590	483	483	200	I00	200						
1958	March-May	98(I)	5339	I245	I245	595	200	595						
1958	September	94(2)	376											
1958	December	98(3)	2565	I00	I00									
1959	March	99(I)	445	23I	23I									
1959	May	99(2)	3I9	I9I	I9I									
1959	July	97(I4)	536	II9	II9									
1959	July-Septem- ber	96(2)	I833	450	450	300	I00	300						
1960	January	98(3)	540	I06	I06									
1960	March - April	97(I6)	I82I	644	644	400	I00	400						
1960	July	97(I7)	I675	70I	423	70I	200	70I						
1960	December	99(3)	526											

Table 1. Continued

Year	Date	Vessel (cruise)	Length	Maturity	Stomach content	Age	Weight of liver	Round weight	Weight of stomach	Weight of food bolus	Detailed analysis of food bolus	Bio- chemi- cal analysis of muscles	Morpho- metric analy- sis	Tagging
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1961	March	99(I)	5447	760	760	635	200	635						39
1961	June	98(2)	165	88	88									
1961	October	96(2)	617	125	325	300	100	300						221
1961	December	94(3)	33	25	25	-	-	-						
1962	March	95(I)	1531	426	384	426	200	426						
1962	March	721(I)	937	576	576	397	100	397						
1962	June	94(2)	97											
1962	August	207(4)	842	160	160									
1962	September	95(3)	293	95	95									
1962	December	94(3)	1706	300	265	300	100	300						
1963	January	95(4)	1000	775	132	775	200	775					80	
1963	March	210(I)	4074	638	638	550	200	550						
1964	August	97(21)	187	100	100									
1964	February	95(I)	6658	1680	780	879	300	879						
1964	February - March	210(I)	2494	847	300	547	200	547						247
1964	September	210(3)	184	87	87									
1964	November - December	97(22)	1221	456	456	321	100	321						
1965	February	97(22)	2784	464	264	300	100	300						
1965	February - March	95(I)	8273	650	650	300	100	300						560
1965	August	207(I)	1375	50	50									
1965	September, December	207(2)	447	25	25									
1965	October	97(23)	5985	582	582	300	100	300						
1966	February	97(24)	318	144	144	54	54	54			38			
1966	December	94(2)	5315	726	726	354	100	354						448
1967	January	94(2)	1127	350	350									
1967	March- April	97(26)	1376	628	628	258	100	258						
1967	December	417(4)	7326	1375	674	300	100	300						
1968	January - February	205(I)	9379	1825	900									
1968	March - April	100(I)	8816	2350	1750	600	200	600						138
1968	April	96(10)	233	230	230									
1968	June	205(2)	990	275	275									
1969	March	100(I)	4555	330	330									
1969	April	96(11)	2191	1136	680	456	200	456					90	
1969	September	96(12)	506	137	137									
1970	July	8-206(2)	100	100	100	100	100	100						
1970	August	96(13)	2006	888	736	718	200	718					100	
1971	February - March	2645(I)	1822	1050	1000	600	200	600						

Table 1. Continued

[illegible]

Table 2. List of biological material on redfish collected by the PINRO research vessels in 1956-1960.

Year	Date	Vessel: (cruise)	Length	Maturity	Stomach content	Sex	Age	Round weight
I956	September - October	236(4)	I255I	I536	I536	I255I	800	800
I956		242(2)	700	I92	I92	700		
I957	June	98(2)	493	200	I00	493	200	200
I958	March, May	98(I)	27997	I603	I603	27997	600	600
I958	August	98(2)	780	225	225	780	200	200
I958	September	94(2)	6I08	472	472	6I08	247	247
I958	October- November	255(5)	32059	I250	I250	32059	600	600
I958	December	98(3)	2565	I00	I00	2565		
I959	March	99(I)	3282	20I	20I	3282		
I959	March - April	255(2)	I53I8	400	I50	I53I8	400	400
I959	May - June	99(2)	6540	200	200	6540	200	200
I959	July - August	97(I4)	I6662	I48I	I48I	I6662	I000	I000
I959	August, September	96(2)	2502I	2298	2298	2502I	I248	I248
I960	February- March	I00(I)	2436	335	335	2436	300	300
I960	March - April	97(I6)	7650	99I	99I	7650	800	800
I960	May	96(3)	2487	250	I50	2487	250	250
I960	June - July	99(2)	9I70			9I70		
I960	July	97(I7)	I5I08	I670	I670	I5I08	809	809
I960	July	I00(2)	I776			I776		
I960	December	98(3)	8968	463	463	8968		
I960	November	99(3)	I886	25	25	I886		

* Investigations had been performed without dividing into species till 1960.

Table 3. List of biological material on redfish Sebastes marinus collected by the PINRO research vessels in 1961-1979.

Year	Date	Vessel: (cruise)	Length	Matu- rity	Stomach content	Sex	Age	Round weight
1961	March	99(I)	421	300	100	421	300	300
1961	April	98(2)	35			35		
1961	October	96(2)	605	65	65	605		
1962	March	95(I)	2200	640	327	2200	640	640
1963	January	95(4)	2053	463	463	2053	388	388
1964	February	95(I)	542	300	100	542	300	300
1964	August	97(21)	448	100	100	448		
1964	September	210(3)	766	225	125	766	100	100
1964	November- December	97(22)	713	98	98	713	73	73
1965	January- February	97(22)	106			106		
1965	September- December	207(2)	714	80	50	714	50	50
1966	February	97(24)	193			193		
1966	December	94(2)	2150	338	338	2150	300	300
1967	April	97(26)	1113	201	172	1113		
1968	January, March	205(I)	500	500	75	500		
1968	April	96(10)	482	74	74	482		
1968	June	205(2)	250	100	100	250		
1969	April	96(11)	549	50	50	549		
1969	September	96(12)	33	33	33	33		
1970	August	96(13)	230	230	180	230		
1971	May	1202(6)	841	391	391	841	202	202
1972	February	323(I)	414	50	50	414		
1972	April	1202(8)	1946	275	175	1946		
1973	July	1202(11)	3175	604	316	3175	300	300
1973	August	2645(7)	330	25	25	330		
1974	November	1202(12)	3990	772	314	3990	300	300
1975	June	1202(14)	2798	600	220	2798	300	300
1976	March	1202(15)	2013	702	251	2013	300	300
1976	December	2645(14)	613	60	60	613		
1977	April	1202(18)	1589	616	225	1589	235	235
1978	January	1202(19)	4568	1004	819	4568	300	300
1978	July- August	1202(20)	1924	352	212	1924		
1979	January	120(1/16)	351	50	50			
1979	March, April, June	2645(2)	1384	152	125			
1979	September	2645(3/20)	310	35	35			

Table 4. List of biological material collected by the PINRO research vessels.

Year	Date	Vessel (cruise)	Length	Maturity	Stomach content	Sex	Age	Round weight	Weight of stomach	Weight of food bolus	Detailed analysis of food bolus	Morpho- metric analysis
I	2	3	4	5	6	7	8	9	10	11	12	13
Roundnose grenadier												
1979	Sep	2645(3/20)	I465	575	500	I465	500	500	30	30	30	I00
Roughhead grenadier												
1978	February- March	I05(I5)	690	I82	I82	690	I82	I82	-	-	-	-
1979	September	2645(3/20)	I44	75	75	I44	-	-	-	-	-	-
Greenland halibut												
1978	February - March	I05(I5)	505	430	430	505	67	67	-	-	-	-
1978	July- August	I202(20)	62	42	42	62	-	-	-	-	-	-
1979	September	2645(3/20)	307	75	75	307	-	-	-	-	-	-
Wolffish												
1971	May	I202(6)	2II	-	-	-	-	-	-	-	-	-
1972	April	I202(8)	I68	38	38	38	-	-	-	-	-	-
1973	July	I202(II)	48I	-	-	-	-	-	-	-	-	-
1974	August	I202(I2)	520	25	25	25	-	-	-	-	-	-
1975	June	I202(I4)	860	-	-	-	-	-	-	-	-	-
1976	March	I202(I5)	454	-	-	-	-	-	-	-	-	-
1977	April	I202(I8)	638	452	452	452	I94	I94	-	-	-	-
1978	January	I202(I9)	283	I2I	I2I	I2I	-	-	-	-	-	-
1978	May	I05(I5)	I22	4I	4I	I2I	-	-	-	-	-	-
1978	July- August	I202(20)	20I	20I	20I	20I	20I	20I	-	-	-	-
1979	April, June	2645(2)	6I9	2I3	2I3	2I3	-	-	-	-	-	-

Table 5. List of biological material on beaked redfish collected by the PINRO research vessels in 1961-1979.

Year	Date	Vessel (cruise)	Length	Maturity	Stomach content	Sex	Age	Round weight
I	2	3	4	5	6	7	8	9
196I	March	99(I)	535	300	I59	535	300	300
196I	June	98(I)	456I	900	700	456I	700	700
196I	October	96 (2)	250	250	I00	250	250	250
196I	December	94(3)	646	326	326	646	300	300
1962	March	95(I)	4835	I200	I200	4835	II00	II00

Table 5. Continued

Year	Date	Vessel (cruise)	Length	Maturity	Stomach content	Sex	Age	Round weight
1	2	3	4	5	6	7	8	9
I962	March	72I(1)	3095	378	378	3095	378	378
I962	June	24(2)	3427	300	300	3427	300	300
I962	August	207(4)	766I	I032	75I	766I	I032	I032
I962	August	72I(3)	65I	302	302	65I	302	302
I962	September	95(3)	649	70	70	649		
I962	October	207(5)	900	900	300	900	900	900
I962	December	94(3)	I583	I25	I25	I583		
I963	January	95(4)	4235	I244	I244	4235	II06	II06
I963	March	2I0(I)	5449	I050	748	5449	I050	I050
I964	February	95(I)	8336	I765	I765	8336	663	663
I964	May - June	2I0(2)	I34I	700	I89	I34I	700	700
I964	August	97(2I)	3554	772	772	3554	600	600
I964	August- September	2I0(3)	3247	497	200	3247	200	200
I964	November- December	97(22)	503I	929	729	503I	729	729
I965	January- February	97(22)	I887	25	25	I887		
I965	February	392(I)	250	250	I00	250	250	250
I965	March	95(I)	5975	775	775	5975	600	600
I965	August	94(I)	5585	470	470	5585	300	300
I965	August	392(3)	462	250	I00	462	250	250
I965	September	207(2)	465	50	50	465		
I965	Sept- Oct	97(23)	76I4	465	465	76I4		
I966	February	97(24)	50I	25	25	50I		
I966	December	94(2)	7082	600	575	7082	600	600
I967	January	94(2)	I6670	I200	I200	I6670	600	600
I967	April	97(26)	I072	300	25I	I072	300	300
I967	December	4I7(4)	2096	7II	I67	2096	7II	7II
I968	January	205(I)	I700	I700	350	I700	I700	I700
I968	April	96(I0)	II75	600	200	II75	600	600
I968	June	205(2)	I000	50I	50I	I000	-	

Table 5. Continued

Year	Date	Vessel (cruise)	Length	Maturity	Stomach content	Sex	Age	Round weight
1	2	3	4	5	6	7	8	9
1969	April	96(II)	665	250	150	665	200	200
1969	September	96(I2)	322I	450	450	322I	200	200
1970	June	8 206	100	100	100	100	100	100
1970	August	96(I3)	200	200	200	200		
1971	February	2045(I)	2420	1000	1000	2420	100	100
1971	May	I202(6)	868	I24	I24	868		
1971	June	392(I)	3043	300	300	3043		
1972	January	42I(8)	1100	600	400	1100		
1972	February	323(I)	769	75	75	769		
1972	March	436(I)	1022	100	100	1022		
1972	April	I202(8)	1098	544	I71	1098	200	200
1972	June	436(2)	4737	875	875	4737	300	300
1972	July	420(I)	2770	I75	I75	2770		
1972	November	422(I)	200	100	100	200		
1973	January	2645(5)	220	50	50	220		
1973	February	42I(I)	I218	250	250	I218		
1973	February-March	392(I)	7412	900	750	7412	250	250
1973	February - March	420(2)	8993	900	900	8993	300	300
1973	July	I202(II)	3474	550	229	3474	300	300
1973	November	2645(7)	2653	425	425	2653	250	250
1974	February	I2I(5)	I250	200	200	I250		
1974	February - April	420(3)	I3688	I275	I275	I3688		
1974	August	I202(I2)	4116	800	225	4116	300	300
1974	November	I206(3)	1158	400	400	1158	300	300
1974	December	423(6)	4538	745	745	4538	200	200
1975	June	I202(I4)	3724	874	275	3724	300	300
1976	March	I202(I5)	2815	864	286	2815	300	300
1976	March - April	42I(6)	6053	1130	580		200	200
1976	December	2645(I4)	511	200	200	511	200	200

Table 5. Continued

Year	Date	Vessel (cruise)	Length	Maturity	Stomach content	Sex	Age	Round weight
1	2	3	4	5	6	7	8	9
1977	January - February	425(3)	5503	1100	900	5503	300	300
1977	February	I202(I7)	768	325	I25	768	300	300
1977	March - April	42I(8)	5688	800	500	5688	300	300
1977	April	I202(I8)	4207	I33I	466	4207	797	797
1977	October	367(8)	808	I00	I00	808		
1978	January	I202(I9)	425I	676	476	425I	300	300
1978	January	2645(I6)	364	55	55	364		
1978	February- March	I05(I5)	I8I9I	I739	I499	I8I9I	290	290
1978	July- August	I202(20)	I20I0	I5I6	74I	I20I0	300	300
1979	January	I20(I)	2579	I50	I50	2579		
1979	February	0I40(I3)	638	300	I00	638	300	300
1979	Mar, Apr, Jun	2645(2)	20I06	2905	I247	I8472	I332	I332
1979	September	2645(3/20)	9893	II06	556	9893	300	300
1979	October	I05(I7)	I228	300	I00	I228	300	300

Table 6. List of biological material on American plaice collected by the PINRO research vessels in 1970-1979.

Year	Date	Vessel (cruise)	Length	Matu- rity	Sto- mach con- tent	Sex	Age	Round Weight	Morpho- metric ana- lysis	Tag- ging
1970	June	96(I3)	100	100	100	100	100	100	-	-
1971	May	I202(6)	560	25	25	560	-	-	-	-
1972	April	I202(8)	958	454	290	958	-	-	-	-
1973	July	I202(II)	962	304	229	-	-	-	-	-
1974	August	I202(I2)	I680	II45	4I3	I680	300	300		
1975	June	I202(I4)	I844	I086	367	I844				
1976	March	I202(I5)	I60I	708	200	I60I	300	300		
1977	April	I202(I8)	II85	625	346	II85	207	207	I00	
1978	January	I202(I9)	633	480	I25	633				
1978	March	I05(I5)	I274	355	I70	I274	285	285		
1978	July- August	I202(20)	2302	I507	8I4	I857	349	349	-	445
1979	March, April	2645(2)	I487	883	473	I487				
1979	September	2645(3/20)	478	I25	I25	478				

Table 7. Groundfish Survey Observations. List of data collected by NAFC, Canada on Flemish Cap Cod. 1949-1979.

Year	Date	Ship/Trip	Sample Type	Length	Sex	Mat.	Round Wt.	Gut & Gonad	Vertebrae	Otolith Wt.	Ages	Stomach Observations	Girth
1949*	Aug.	INV II #6	LR	214	214	214	214	214	214	-	214		
1950	July	INV II #8	LR	243	243	132	120	120	243	243	243		
1951	Aug.	INV II #10	SR	120	120	120	-	-	120	120	120		
1956	July	INV II #5	-		No samples								
1958	June	INV II #4	-		No samples								
1958	Nov.	ATC #1	SR	72	72	72	-	-	-	-	72	1	
1961	Mar.	ATC #36	SR	522	522	522	-	-	522	-	522	vol. 1-119	420
1961	Mar.	ATC #36	SC	45	45	45	1	1	45	-	45	vol. 23	23
1961	Mar.	ATC #36	LC	29	29	29	29	29	tag-no count		29		
1962	May-June	INV II #1	-		No samples				29				
1964	Apr.	ATC #85	LS	117	117	117	117	117	-	117	117	-	-
1964	July	INV II #3	SR	137	137	137	-	-	137	137	137	-	-
1964	Sept.	ATC #92	SR	340	340	340	-	-	-	340	340	-	-
1968	Mar.	ATC #143	SR	633	633	633	-	-	419	-	633	419 tags+178 obs.	-
1968	July-Aug.	ATC #149	SR	426	426	426	-	-	-	-	426	some with 161 vols.	-
1968	July-Aug.	ATC #149	LR	153	153	153	153	153	153	-	153	51 tags	-
1970	July	Prince #74	SR	62	62	62	-	-	-	-	62		-
1977	Feb.	ATC #257	SS	534	534	534	-	-	-	-	534	534	-
1978	Feb.	GADUS #5	SS	1890	1890	1890	186	186	-	-	1890	1890	186
1978	Nov.	ATC #284	SS	332	332	332	-	-	-	-	332	332	
1978	Nov.	ATC #284	LS	115	115	115	115	115	-	-	115	115	115
1979	Feb.	GADUS #17	SS	861	861	861	-	-	-	-	861	861	
1979	Feb.	GADUS #17	LS	133	133	133	133	133	-	-	133	133	133
1979	Mar.	GADUS #19	LS	176	176	176	176	176	-	-	176	176 tags	176
1979	Apr.-May	GADUS #20	LS	267	267	267	267	267	-	-	267	267 tags	267

* 135 Gill Weights

Table 7. (Cont'd)

Year	Lernea	Gonad Vol.	Guts Vol.	Liver Samples	Blood Samples	Gutted Wt.	Gonad Wt.	Liver Wt.	Liver Vol.	Stomach Wt.	Stomach Vol.	Gut Remains Wt.	Gut Remains Vol.	Stomach Wt.	Wall Vol.
1949*															
1950															
1951															
1956															
1958															
1958															
1961	267														
1961	-														
1961*															
1962															
1964	-														
1964	137														
1964	340	(25 gon. col.)													
1968	633	(633)	182												
1968	426	-	-												
1968	66	-	-												
1970															
1977	534	-	-	33											
1978	1890	186	-		97	186	186	186	186	186	186	186	186	186	
1978	332														
1978	115	115				115	115	115	-	115	115	115	115		
1979	861	861							861						
1979	133	133				133	133	133	-	133	133	133	133		
1979	176	176				176	176	176		176	176	176	176	176	176
1979	267	267				267	267	267		267	267	267	267	-	-

Table 8. List of data collected by NAFC, Canada on Flemish Cap redfish, 1949-1979.

YEAR MONTH VESSEL & TRIP NO. TYPE	1949 Aug. Inv. 6 Unknown	1950 July Inv. 8 Unknown	1956 July Inv. 5 Ment. Mar. Doubtful Unknown	1958 June-July Inv. 4 Ment. Mar. Doubtful	1958 Nov. ATC 1 Ment. Mar. Doubtful	1961 March ATC 36 Ment. Mar.
Length	168	1739	87 50 3	4491 1231 41	4748 923 66	3895 92
Sex	168	1739	87 50 3	4491 1231 41	4748 923 66	3895 92
Maturity	61	249	87 50 3	39 59 1	30 40 66	667 81
Round Weight	61	-	87 50 3	39 59 33	30 39 -	- 16
Dorsal Spines	61	238	87 50 3	39 59 38	29 38 81	667 81
Dorsal Rays	-	-	87 50 3	39 59 38	29 38 81	667 81
Anal Spines	-	-	87 50 3	39 59 38	29 38 81	667 81
Anal Rays	-	-	87 50 3	39 59 38	29 38 81	667 81
Gonad Volume	-	-	66 28 1	36 44 -	6 14 -	- -
Gonad Weight	59	-	21 22 1	3 15 -	12 9 -	- -
Vertebrae	58	249	74 46 2	36 57 -	28 38 -	667 81
Stomach Observations	-	-	- - 1	- - -	- - -	- -
Vol. of Penis & Sac	-	-	40 15 1	- - -	- - -	573 81
Greatest Width of testes	-	-	13 6 2	4 4 -	4 4 -	49 -
Otoliths	61	249	103 50 3	62 59 1	30 40 81	667 -
Otolith Weight	-	237	103 48 1	62 39 -	- - -	- -
Weight (G&G)	-	-	- - -	39 59 41	- - -	- -
Pectoral Fin	-	-	- - -	39 59 -	- - -	- -
Anal Height	-	-	103 48 -	62 39 -	- - -	- -
Beak to Inner edge of Lower Jaw	-	-	103 48 -	62 39 -	- - -	- -
Width head between orbits	-	-	103 48 -	62 39 -	- - -	- -
Width cranial Ridges Ant. end	-	-	103 48 -	62 39 -	- - -	- -
Body width	-	-	103 48 -	62 39 -	- - -	- -
Upper jaw to orbit	-	-	103 48 -	62 39 -	- - -	- -
Caudal Peduncle	-	-	103 48 -	62 39 -	- - -	- -
Length caudal fin to mid-fork	-	-	103 48 -	62 39 -	- - -	- -
Pectoral width	-	-	- - -	62 39 -	- - -	- -
Weight of eyes	-	-	- - -	62 39 -	- - -	- -
Length chin to mid-fork	-	-	103 48 -	62 39 -	- - -	- -
Length chin to end of caudal fin	-	-	103 48 -	62 39 -	- - -	- -
Length snout to mid fork	-	-	103 48 -	62 39 -	- - -	- -
Standard length	-	-	103 48 -	62 39 -	- - -	- -

Table 8. (Cont'd)

YEAR MONTH VESSEL & TRIP NO. TYPE	1949 Aug. Inv. 6 Unknown	1950 July Inv. 8 Unknown	1956 July Inv. 5 Ment. Mar. Doubtful Unknown	1958 June-July Inv. 4 Ment. Mar. Doubtful	1958 Nov. ATC 1 Ment. Mar. Doubtful	1961 March ATC 36 Ment. Mar.
Scales	?	?	103 48	?	?	?
Otolith length	-	-	103 48	-	-	-
Otolith width	-	-	103 48	-	-	-
Tail length	-	-	103 48	62 39	-	-
Head length	-	-	103 48	62 39	30 34	-
Snout to Ant. base of 1st anal spine	-	-	103 48	62 39	30 34	-
Diameter of orbit	-	-	103 48	62 39	30 34	-
Pectoral height	-	-	103 48	62 39	30 34	-
Snout to Post. end of pectoral	-	-	-	-	30 34	-
Length 7th dorsal spine	-	-	-	-	23 27	-
Length 3rd dorsal ray	-	-	-	-	24 32	-
Outside beak meas.	-	-	-	-	30 34	-
Length straddling gill raker	-	-	-	-	30 34	-
Liver weight	30	-	-	-	-	-
Ages	-	-	-	-	-	-

YEAR MONTH VESSEL & TRIP NUMBER TYPE	1964 Sept. ATC 92 Ment. Mar.	1968 Feb-Mar. ATC 143 Ment.	1968 Jul-Aug. ATC 149 Ment. Mar.	1973 June-Aug. Cape Farewell Ment. Mar.	1973 Sept. ATC 214 Ment. Mar.	1977 Feb. ATC 257 Ment. Mar.	1978 Jan-Feb. Gadus 5 Mar. Ment. Doubtful
Length	6444 238	833	18976 384	6272 400	981 140	3221 495	4951 109
Sex	6444 238	833	18976 384	6272 400	981 140	3221 495	4951 109
Maturity	779 238	355	824 296	696 88	-	483 253	666 -
Round Weight	-	262	742 298	-	-	-	-
Weight (G&G)	-	-	15 272	-	-	-	-
Vertebrae	779 238	93	818 296	-	-	-	-
Stomachs	-	266	388 281	-	-	143 666	666 -
Otoliths	779 238	355	824 296	696 88	-	483 253	666 -
Ages	-	-	-	-	-	-	-
Scales	?	-	-	-	-	-	-

Table 8. (Cont'd)

YEAR MONTH VESSEL & TRIP NO. TYPE	1978 April Gadus 8		1978 Nov. ATC 284		1979 Jan.-Feb. Gadus 17		1980 Jan. Gadus 30	
	Ment.	Mar.	Ment.	Mar.	Ment.	Mar.	Ment.	Mar.
Length	15059	1605	7716	217	17802	2051	29546	1982
Sex	15059	1605	7716	217	17802	2051	29546	1982
Maturity	565	212	523	-	635	454	617	524
Round weight	-	-	-	-	-	-	-	-
Weight (G&G)	-	-	-	-	-	-	-	-
Vertebrae	-	-	-	-	-	-	-	-
Stomachs	565	212	523	-	635	454	617	524
Otoliths	565	212	523	-	635	454	617	524
Ages	-	-	-	-	-	-	-	-

Table 9. List of data collected by NAFC, Canada on Flemish Cap for ichthyoplankton, zooplankton, chlorophyll, nutrients, primary production and oceanography, 1977-1979.

YEAR	MONTH	TRIP	DATA COLLECTED	SAMPLING EQUIPMENT	NO. OF STATIONS
1977	October	Dawson	Oceanography Ichthyoplankton Zooplankton	Knudsen bottles, MBT, XBT 60 cm BONGO 60 cm BONGO	68 56 56
1978	June	ATC 278	Oceanography Ichthyoplankton Zooplankton	Knudsen bottles, MBT, XBT 60 cm BONGO 60 cm BONGO	63 56 56
1978	July	Gadus 11	Oceanography Ichthyoplankton Zooplankton	Knudsen bottles, MBT, XBT 60 cm BONGO 60 cm BONGO	63 56 56
1979	March	Gadus 19	Oceanography Ichthyoplankton Zooplankton	CTD, XBT 60 cm BONGO 60 cm BONGO	5 56 56
1979	April-May	Gadus 20	Oceanography Ichthyoplankton Zooplankton Groundfish Chlorophyll <u>a</u> Nutrients (NO ₃ , NO ₂ , SiO ₃ , PO ₄) Primary Production Incident light	CTD, XBT 60 cm BONGO surface net 60 cm BONGO surface net trawl Rosette bottle fluorometer Rosette bottle Rosette bottle light meter	165 66 53 66 53 10 76 23 23 4
	July	Dawson 79016	Ichthyoplankton and	60 cm BONGO	20

Table 10. List of oceanographic data collected by BIO, Canada on Flemish Cap, 1979 and 1980.

YEAR	MONTH	TRIP	DATA COLLECTED	SAMPLING EQUIPMENT	NO. OF STATIONS
1979	January	Hudson 79001	Oceanography (4 moorings, 2 drift buoys)	CTD	133
1979	July	Dawson 79016	Oceanography (1 drift buoy) Ichthyoplankton and Zooplankton (in conjunction with NAFC)	CTD 60 cm BONGO	80 20
1980	January	Hudson 80002	Oceanography	CTD	10

Table 11. Plankton data collected by the Polish vessel R.V. Wieczno April, 1978.

YEAR	MONTH	VESSEL	DATA COLLECTED	SAMPLING EQUIPMENT	NO. OF STATIONS
1978	April	Wieczno	Ichthyoplankton	60 cm BONGO	56

Table 12. Number of zooplankton samples collected with a Nansen net (1959) and a Juday net (1962-1980) by Soviet research vessels in the Flemish Cap Bank area.

Year	Month	Layer of fishing			Year	Month	Layer of fishing		
		50-0	50-100	100-200			50-0	50-100	100-200
1959	May	1	2		1974	Apr	14	14	14
1962	Mar	7	11	14		May	44	44	39
	Aug	2	2	2		Jul	5	5	5
1963	Jan	1	-	-	1975	Jun	8	7	6
	May	18	17	17		Sep	2	1	1
1965	Jul	12	11	10	1976	Mar	6	6	6
1967	Mar	12	12	10		May	13	13	11
	Apr	3	2	2	1977	Apr	2	2	2
1970	May	12	12	12		Jun	8	10	9
1971	Mar	20	20	20	1978	Jan	2	2	2
	Apr	27	27	27		Feb	30	30	26
	May	19	19	18		May	21	21	18
1972	Apr	17	17	24		Jun	20	20	18
	May	16	18	18		Jul	14	13	12
1973	Apr	15	15	14	1980	May	34	34	-
	May	32	32	30		Jun	59	59	-