ICES WGDEEP Report 2005

ICES Advisory Committee on Fishery Management
ICES CM 2006/ACFM:07
REF. D, G

Report of the Working Group on Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)

7 - 9 September 2005

ICES Headquarters

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer
H.C. Andersens Boulevard 44-46
DK-1553 Copenhagen V
Denmark
Telephone (+45) 33 38 67 00
Telefax (+45) 33 93 42 15
www.ices.dk
info@ices.dk

Recommended format for purposes of citation:
ICES 2006. Report of the Working Group on Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP), 7 - 9 September 2005, ICES Headquarters. ICES CM 2006/ACFM:07. 202 pp.

Contents

Report based on correspondence and extraordinary meeting in Copenheagen 7-9 September 2005

1 Introduction

1.1 Participants

WGDEEP members who contributed to the report, either by correspondence or during the extraordinary meeting, are listed in Appendix 1.

1.2 Terms of reference and special requests

The resolution 2ACFM02 reads: The Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources [WGDEEP] (Chair: O. A. Bergstad, Norway) will work by correspondence in 2005 to:

a) compile the available data on landings and effort of deep-water species, including blue ling, ling, and tusk, by ICES Sub-area or Division;

b) update descriptions of deep water fisheries in waters inside and beyond coastal state jurisdiction, for species such as grenadiers, scabbard fishes, orange roughy, forkbeards, ling, blue ling, and tusk, especially catch statistics by species, fleets and gear - and if possible the biological status of these stocks;

c) update the data on length/age at maturity, growth and fecundity and document other relevant biological information on deep-water species;

d) update information on quantities of discards by gear type for the stocks and fisheries considered by this group and make an inventory of deep-water fish community data;

WGDEEP will report by 31 August 2005 for the attention of ACFM, the Living Resources Committee, and the Resource Management Committee.

In addition to the TOR, special requests by NEAFC and the EC were presented to the WG in the first quarter of 2005. This significantly increased the workload of the WG, and in order to deal with the requests, it was decided to call an extraordinary meeting in the ICES Secretariat 7-9 September. The reporting deadline was therefore extended beyond 31 August.

The special requests are described and dealt with in separate sections of the report (Sections 7 and 8).

2 Available Data on Landings of Deep-Water Species, including Blue Ling, Ling, and Tusk, by ICES Subarea or Division

The estimated landings for the deep-water species by ICES Sub-area and Division for the period 1988-2004 are given in Table 2.1, and species-specific landings are provided as Annex 3, Tables 1-11. Data for both 2003 and 2004 are provisional and partly based on figures officially submitted to ICES, partly on numbers provided by working group members.

WGDEEP revised the entire data series during its meeting in 2004. However, it should be noted that some of the series remain incomplete, and for this reason some of the apparent fluctuations and trends should be interpreted with caution.

Highlighted trends

Landings of orange roughy in Subarea VII have declined and this is in accordance with advice issued previously.

There is a remarkable increase in roundnose grenadier landings from the Skagerrak (Division IIIa) to near 10.000 t in 2004. These Danish landings of this species, that are now the highest for any Subarea/Division in the ICES area, are used for reduction to meal and oil. This development is not in line with advice issued in 2004 and previously for this species.

Table 2.1. Estimated landings (tonnes) of deep-water species by ICES Sub-areas and Divisions, 1988-2004. Data for 2003 and 2004 are preliminary. Data are compiled from official provided by WG members. (Due to the transfer of responsibility for sharks to WGEF from 2002 onwards, data for this group have not been included)

I+II	Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	ALFONSINOS (Beryx spp.)																	
	ARGENTINES (Argentina silus)	11351	8390	9120	7741	8234	7913	6807	6775	6604	4463	8261	7163	6293	14369	7407	8917	11557
	BLUE LING (Molva dypterigia)	3537	2058	1412	1479	1039	1020	422	364	267	292	279	292	252	209	150	147	175
	BLACK SCABBARDFISH (Aphanopus carbo)																	
	BLUEMOUTH (Helicolenus dactylopterus)																	
	GREATER FORKBEARD (Phycis blennoides)			23	39	33	1								8	318	155	75
	LING (Molva molva)	6126	7368	7628	7793	6521	7093	6322	5954	6346	5409	9200	7651	5964	4957	7132	6157	6543
	MORIDAE																	
	ORANGE ROUGHY (Hoplostethus atlanticus)																	
	RABBITFISHES (Chimaerids)												1	6	5	15	57	21
	ROUGHHEAD GRENADIER (Macrourus berglax)			589	829	424	136				17	55		48	94	29	77	81
	ROUNDNOSE GRENADIER (Coryphaenoides rupestris)		22	49	72	52	15	15	7	2	106	100	46		2	12	4	27
	RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)																	
	SHARKS, VARIOUS	37	15											1				
	SILVER SCABBARDFISH (Lepidopus caudatus)																	
	SMOOTHHEADS (Alepocephalidae)																	
	TUSK (Brosme brosme)	14403	19350	18628	18306	15974	17585	12566	11617	12795	9426	15353	17183	14008	12050	12191	7933	7411
	WRECKFISH (Polyprion americanus)																	

III+IV	Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	ALFONSINOS (Beryx spp.)			1		2												
	ARGENTINES (Argentina silus)	2718	3786	2321	2554	5319	3269	1508	1082	3300	2598	3982	4319	2471	2925	1811	1166	1105
	BLUE LING (Molva dypterigia)	385	482	522	648	592	438	442	503	202	291	292	271	144	276	386	120	94
	BLACK SCABBARDFISH (Aphanopus carbo)	2		57				16	2	4	2	9	7	5	12	24	4	4
	BLUEMOUTH (Helicolenus dactylopterus)												5					
	GREATER FORKBEARD (Phycis blennoides)	15	12	115	181	145	34	12	3	18	7	12	31	11	26	585	233	142
	LING (Molva molva)	11933	12486	11025	10943	12154	14249	12288	14112	14531	12325	14472	10472	9858	8396	9642	6928	6770
	MORIDAE																	
	ORANGE ROUGHY (Hoplostethus atlanticus)																	
	RABBITFISHES (Chimaerids)					122	8	167		14	38	56	45	33	20	24	25	40
	ROUGHHEAD GRENADIER (Macrourus berglax)					7					36			4	11	3	2	

Table 2.1 (Cont'd)

	ROUNDNOSE GRENADIER (Coryphaenoides rupestris)	618	1055	1439	2053	2754	1441	771	85	2284	177	1854	3187	2406	3121	4258	4319	9896
	RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)																	
	SHARKS, VARIOUS				3	133	78	86	20	14	32	359	201	36	62			
	SILVER SCABBARDFISH (Lepidopus caudatus)					27												
	SMOOTHHEADS (Alepocephalidae)																	
	TUSK (Brosme brosme)	4490	6515	4319	4623	5029	5234	3433	3405	3576	2341	3474	2498	3411	3204	3082	2056	1733
	WRECKFISH (Polyprion americanus)																	

Va	Species	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
	ALFONSINOS (Beryx spp.)																	
	ARGENTINES (Argentina silus)	206	8	112	247	657	1255	613	492	808	3367	13387	6704	5657	3043	4960	2683	3645
	BLUE LING (Molva dypterigia)	2171	2533	3021	1824	2906	2233	1632	1635	1323	1344	1154	1877	1711	941	1377	1158	1204
	BLACK SCABBARDFISH (Aphanopus carbo)							1			1		9	18	8	13	0	0
	BLUEMOUTH (Helicolenus dactylopterus)																	
	GREATER FORKBEARD (Phycis blennoides)																	
	LING (Molva molva)	5861	5612	5598	5805	5116	4854	4604	4192	4060	3933	4302	4647	3743	3346	4518	4264	4606
	MORIDAE																	
	ORANGE ROUGHY (Hoplostethus atlanticus)				65	382	717	158	64	40	79	28	14	68	19	10 +		
	RABBITFISHES (Chimaerids)				499	106	3	60	106	21	15	29	2	5				
	ROUGHHEAD GRENADIER (Macrourus berglax)									15	4	1		5	3	11		
	ROUNDNOSE GRENADIER (Coryphaenoides rupestris)	2	4	7	48	210	276	210	398	140	198	120	129	67	57	60	0	0
	RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)																	
	SHARKS, VARIOUS		31	54	58	70	39	42	45	65	70	87	45	45	57			
	SILVER SCABBARDFISH (Lepidopus caudatus)																	
	SMOOTHHEADS (Alepocephalidae)					10	3	1	1									
	TUSK (Brosme brosme)	6855	7061	7291	8732	8009	6075	5824	6225	6102	5394	5171	7264	6391	4823	5578	5596	4836
	WRECKFISH (Polyprion americanus)																	

Table 2.1 (Cont'd)

Vb	Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	ALFONSINOS (Beryx spp.)			5		4			1									
	ARGENTINES (Argentina silus)	287	227	2888	60	1443	1063	960	12286	9498	8433	17570	8214	5204	10081	7471	6552	3604
	BLUE LING (Molva dypterigia)	9526	5264	4799	2962	4702	2836	1644	2440	1602	2798	2584	2932	2524	2119	2020	3815	2660
	BLACK SCABBARDFISH (Aphanopus carbo)		166	419	152	33	287	160	424	186	68	180	172	311	795	1751	1633	850
	BLUEMOUTH (Helicolenus dactylopterus)												58	16				1
	DEEP WATER CARDINAL FISH (Epigonus telescopus)												8	2	7			
	GREATER FORKBEARD (Phycis blennoides)	2	1	38	53	49	27	4	9	7	7	8	34	32	100	148	73	48
	LING (Molva molva)	4488	4652	3857	4512	3614	2856	3622	4070	4896	5657	5359	5238	3785	4588	4138	4893	6030
	MORIDAE				5								1		100	19	2	
	ORANGE ROUGHY (Hoplostethus atlanticus)			22	48	13	37	170	420	79	18	3	5	155	5	1	5	7
	RABBITFISHES (Chimaerids)								1				3	54	84	64	61	88
	ROUGHHEAD GRENADIER (Macrourus berglax)											9	58	1	4	3	15	15
	ROUNDNOSE GRENADIER (Coryphaenoides rupestris)	1	258	1549	2311	3817	1681	668	1223	1078	1112	1667	1996	1791	2016	1025	1532	1481
	RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)																	
	SHARKS, VARIOUS			140	78	164	478	192	262	380	308	433	470	409	543			
	SILVER SCABBARDFISH (Lepidopus caudatus)																	
	SMOOTHHEADS (Alepocephalidae)																	6
	TUSK (Brosme brosme)	5665	5122	6181	6266	5391	3439	4316	3978	3310	3319	2710	3964	2700	3993	3003	3292	3641
	WRECKFISH (Polyprion americanus)																	

VI+VII	Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	ALFONSINOS (Beryx spp.)		12	8		3	1	5	3	178	25	81	75	133	186	94	82	62
	ARGENTINES (Argentina silus)	10438	25559	7294	5197	5906	1577	5707	7546	5863	7301	5555	8856	13863	19050	15985	2444	480
	BLUE LING (Molva dypterigia)	9285	9434	6396	7319	6697	5471	4309	4892	6928	7361	8004	9472	8525	9534	6252	3605	3437
	BLACK SCABBARDFISH (Aphanopus carbo)		154	1060	2759	3436	3529	3101	3278	3689	2995	1967	2166	3712	4623	6327	3458	3355
	BLUEMOUTH (Helicolenus dactylopterus)												403	342	189	156	344	315
	DEEP WATER CARDINAL FISH (Epigonus telescopus)												279	241	383	976	991	811
	GREATER FORKBEARD (Phycis blennoides)	1898	1815	1921	1574	1640	1462	1571	2138	3590	2335	3040	3430	4919	4349	3352	3257	2400
	LING (Molva molva)	28092	20545	15766	14684	12671	13763	17439	20856	20838	16668	19863	15087	14613	11528	10435	8321	7762
	MORIDAE				1	25							20	146	190	158	265	
	ORANGE ROUGHY (Hoplostethus atlanticus)		8	17	4908	4523	2097	1901	947	995	1039	1071	1337	1158	3692	5788	622	490
	RABBITFISHES (Chimaerids)							2					236	355	722	573	472	425

Table 2.1 (Cont'd)

	ROUGHHEAD GRENADIER (Macrourus berglax)					18	5	2				34	9	44	12	12	19
	ROUNDNOSE GRENADIER (Coryphaenoides rupestris)	32	2440	5730	7793	8338	10121	7860	7767	7095	7070	6364	6538	9845	15261	9028	5743	5428
	RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)	252	189	134	123	40	22	10	11	29	56	17	23	20	51	25	38	31
	SHARKS, VARIOUS	85	40	43	254	639	1392	1864	2099	2176	3240	3023	1791	8		1		
	SILVER SCABBARDFISH (Lepidopus caudatus)						2						18	15		1		
	SMOOTHHEADS (Alepocephalidae)										7			978	4844	260	8	1218
	TUSK (Brosme brosme)	3002	4086	3216	2719	2817	2378	3233	3085	2417	1832	2240	1647	4504	2688	1794	1719	1411
	WRECKFISH (Polyprion americanus)	7		2	10	15				83		12	14	14	17	9	1	

VIII+IX	Species	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
	ALFONSINOS (Beryx spp.)			1		1		2	82	88	135	269	201	167	229	237	109	266
	ARGENTINES (Argentina silus)															191	37	
	BLUE LING (Molva dypterigia)										14	33	4	4	6	29	22	22
	BLACK SCABBARDFISH (Aphanopus carbo)	2602	3473	3274	3979	4389	4513	3429	4272	3815	3556	3152	2752	2404	2767	2725	2664	2310
	BLUEMOUTH (Helicolenus dactylopterus)												31	36	43	17	123	127
	DEEP WATER CARDINAL FISH (Epigonus telescopus)												3	5	4	8	5	9
	GREATER FORKBEARD (Phycis blennoides)	81	145	234	130	179	395	320	384	456	361	665	377	411	494	489	422	482
	LING (Molva molva)	1028	1221	1372	1139	802	510	85	845	1041	1034	1799	451	331	577	439	450	487
	MORIDAE								83	52	88			26	20	8	10	9
	ORANGE ROUGHY (Hoplostethus atlanticus)					83	68	31	7	22	23	14	39	52	20	20	31	8
	RABBITFISHES (Chimaerids)												2	2	7	6	2	6
	ROUGHHEAD GRENADIER (Macrourus berglax)																	
	ROUNDNOSE GRENADIER (Coryphaenoides rupestris)			5	1	12	18	5		1		20	16	5	7	3	2	2
	RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)	826	948	906	666	921	1175	1135	939	1001	1036	981	647	691	553	489	560	516
	SHARKS, VARIOUS	3545	1789	1789	2850	6590	3740	4	43	64	1104	2890	2287	704	549			
	SILVER SCABBARDFISH (Lepidopus caudatus)	2666	1385	584	808	1374	2397	1054	5672	1237	1725	966	3069	16	706	1832	1681	850
	SMOOTHHEADS (Alepocephalidae)										7							
	TUSK (Brosme brosme)	1										1						
	WRECKFISH (Polyprion americanus)	198	284	163	194	269	338	409	393	294	214	227	151	121	167	156	242	128

Table 2.1 (Cont'd)

X Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ALFONSINOS (Beryx spp.)	225	260	338	371	450	728	1500	629	550	983	229	175	229	199	242	172	139
ARGENTINES (Argentina silus)																	
BLUE LING (Molva dypterigia)	18	17	23	69	31	33	42	29	26	21	13	10	13				
BLACK SCABBARDFISH (Aphanopus carbo)				166	370	2		3	11	3	99	112	113	16	2	91	113
BLUEMOUTH (Helicolenus dactylopterus)												320	452	301	280	338	282
DEEP WATER CARDINAL FISH (Epigonus telescopus)													3		14	15	21
GREATER FORKBEARD (Phycis blennoides)	29	42	50	68	81	115	135	71	45	30	38	41	94	83	57	45	37
LING (Molva molva)																	
MORIDAE	18	17	23	36	31	33	42							1	100	125	87
ORANGE ROUGHY (Hoplostethus atlanticus)						1			471	6	177	10	188	28	22	1	403
RABBITFISHES (Chimaerids)																	
ROUGHHEAD GRENADIER (Macrourus berglax)												3					
ROUNDNOSE GRENADIER (Coryphaenoides rupestris)									3	1	1	6	74	0	0	1	1
RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)	637	924	889	874	1110	829	983	1096	1036	1012	1114	1222	947	1034	1193	1068	1075
SHARKS, VARIOUS	1098	2703	1204	3864	4241	1183	309	1246	1117	859	995						
SILVER SCABBARDFISH (Lepidopus caudatus)	70	91	120	166	2160	1722	373	789	815	1115	1186	86	28	14	10	25	29
SMOOTHHEADS (Alepocephalidae)																	
TUSK (Brosme brosme)																	
WRECKFISH (Polyprion americanus)	191	235	224	170	237	311	428	240	240	177	139	133	268	229	283	270	189

XII Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ALFONSINOS (Beryx spp.)								2									
ARGENTINES (Argentina silus)						6			1			2					4
BLUE LING (Molva dypterigia)	263	70	5	1147	971	3335	752	573	788	417	438	1353	594	675	1270	1069	644
BLACK SCABBARDFISH (Aphanopus carbo)					512	1144	824	301	444	200	154	112	244	118	1060	411	271
BLUEMOUTH (Helicolenus dactylopterus)																	
GREATER FORKBEARD (Phycis blennoides)					1	1	3	4	2	2	1		6	8	6	11	9
LING (Molva molva)			3	10			5	50	2	9	2	2	7	59	8	19	
MORIDAE													1	87	13	15	4
ORANGE ROUGHY (Hoplostethus atlanticus)					8	32	93	676	818	808	629	431	259	811	6	200	308
RABBITFISHES (Chimaerids)										32	42	115	48	79	9	22	80
ROUGHHEAD GRENADIER (Macrourus berglax)													**7**	10	7	2	28

Table 2.1 (Cont'd)

ROUNDNOSE GRENADIER (Coryphaenoides rupestris)	10600	9500	2800	7510	1997	2741	1161	644	1728	8676	11966	9659	8528	7805	11449	10816	10528
RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)							75										
SHARKS, VARIOUS				1	2	6	8	139	147	32	56	50	1069	1208			
SILVER SCABBARDFISH (Lepidopus caudatus)		102	20			19											
SMOOTHHEADS (Alepocephalidae)									230	3692	4643	6549	4146	3592	12538	6843	1206
TUSK (Brosme brosme)	1	1		1	1	12	1	18	158	30	1	1	5	52	27	83	16
WRECKFISH (Polyprion americanus)																	

Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ALFONSINOS (Beryx spp.)																	
ARGENTINES (Argentina silus)			6										217	66			
BLUE LING (Molva dypterigia)	242	71	79	155	110	3725	384	141	14	4	55	8	532	98	19	949	185
BLACK SCABBARDFISH (Aphanopus carbo)											2	0	90	0	8	2	0
BLUEMOUTH (Helicolenus dactylopterus)																	
GREATER FORKBEARD (Phycis blennoides)															23		
LING (Molva molva)	3	1	9	1	17	9	6	17	0	61	6	1	26	35	20	83	10
MORIDAE																6	
ORANGE ROUGHY (Hoplostethus atlanticus)																	
RABBITFISHES (Chimaerids)																3	5
ROUGHHEAD GRENADIER (Macrourus berglax)						52	5	2			6	14		26	53	33	55
ROUNDNOSE GRENADIER (Coryphaenoides rupestris)	52	45	47	29	31	26	15	27	25	59	126	124	57	97	282	293	20
RED (=BLACKSPOT) SEABREAM (Pagellus bogaraveo)																	
SQUALID SHARKS	2253	2151	3871	5610	7836	7985	7474	6801	7065	6158	6318	5636	7150	9175			
SHARKS, VARIOUS including some squalids	3630	1860	2026	4453	10429	9044	5757	5383	5974	7579	9602	7655	6764	7874			
SILVER SCABBARDFISH (Lepidopus caudatus)																	
SMOOTHHEADS (Alepocephalidae)													12		661	392	
TUSK (Brosme brosme)	2	23	32	135	202	80	25	87	281	118	15	9	11	72	62	88	40

3 Descriptions of Deep-Water Fisheries in Waters Inside and Beyond Coastal State Jurisdiction, Especially Catch Statistics by Species, Fleets and Gear.

A comprehensive overview of the fisheries by different nations was given in the 2004 report of WGDEEP and in previous reports from the Group. Working Documents submitted in 2005 contain detailed information on the status in 2004 (See list of WDs in Appendix 2). Overall there are few changes in the fisheries since the previous reporting period.

It continues to be difficult to allocate landings to waters inside and outside national jurisdiction because not all nations provide data split by EEZs and international waters. Such data are not available in ICES databases. The key deep-water fishing areas in international waters are the mid-Atlantic Ridge and the western Hatton Bank and Rockall. Reported landings from these waters do not seem to change much compared with previous years. Commercial fisheries for orange roughy, roundnose grenadier a.o, and experimental fisheries continue. Spain reported on new experimental fishing with long-lines on the mid-Atlantic Ridge in 2004, and the Faroe Islands resumed the trawl fishing for orange roughy.

Some nations report catches (or landings) by fleet and/or gear, but not all. Effort statistics remain incomplete, but several member states signal an intention to provide such data for the 2006 meeting. In 2004 the group initiated efforts to classify deep-water fishing fleets and this work will continue in the coming years.

Selected new developments:

The Danish fishery for roundnose grenadier and greater silver smelt in Division IIIa seems to be expanding. This is probably the only fishery for deep-water fishes that is almost entirely landing the catch for reduction to meal and oil. The news is that the landings have increased remarkably, contrary to the advice issued by ICES in 2004 and earlier.

The direct fisheries for greater silver smelt are declining in some areas, but ongoing in Va and IIa. In Vb, the Russian Federation reported direct fisheries for the first time in 2004, whereas the Faroese activity is more sporadic.

One of the major fleets fishing for ling and tusk in most Subareas, the Norwegian high-seas long liners, is declining in terms of number of vessels, but further investigations are needed to determine if this results in a decrease in effort.

The group expresses concern over the information generated by DEEPNET project, an international investigation on shelf edge and deepwater fixed net fisheries to the west and north of Great Britain, Ireland, around Rockall and Hatton Bank (Hareide *et al.* 2004). In particular, this project looked at the problem of lost nets and ghost-fishing. If the indirect evidence and preliminary data reflect the real state of these fisheries, ghost-fishing, discarding of catches and netting is a graver problem than anticipated.

The following country-specific data were extracted from 2005 WDs:

3.1 Iceland

Tusk, ling and blue ling remain the most important “deep-sea species” in Icelandic waters (WD by Sigurdsson 2005). In recent years, about 120 vessels were engaged in these fisheries with registered catches from less than 100 kg to nearly 1000 tonnes. In 2004 around 5600 tonnes of deep-water species were caught in bottom trawl, whereof 3600 were greater silver smelt. There has been reduction in the catches in recent years, mostly due to decrease in the greater silver smelt fishery, but also due to reduction in the catches of tusk. By long-line, nearly 5200 tonnes were caught, mostly tusk and ling, but also blue ling. Table 3-1 is an

overview of the Icelandic landings in 2004 by gear type and by month, and Table 3-2 and 3-3 give relevant fishing effort data fro longliners and trawlers, respectively.

Ling

Total of 3.726 tonnes were caught, whereof 2.016 tonnes with longline, 550 tonnes with gillnets and 976 tonnes with bottom trawl (Table 3-1). Since 1950 the landings of ling have been between 3200 and 15400 tonnes and have in general been decreasing since the early 1970s. Catches of ling are by-catches in the fisheries where the main targets are cod, tusk and others. The fishing grounds as recorded in the logbooks are shown in Figure 3-1 for 2000, 2002 and 2004. In addition to above-mentioned catches, there are reports of 744 tonnes of ling in Icelandic waters taken by Faroe Island & Norwegian vessels. According to the fishermen, there is more ling in Icelandic waters now than for many years and ling is difficult to avoid in the catches. In total 494 vessels reported catches in 2004. Appendix 1 of the WD by Sigurdsson (2005) gives details on catches divided by gear type and number of vessels involved in the fishery.

The ling fishery is regulated by a national TAC in accordance with recommendations from the Marine Research Institute of Iceland. The quotas for foreign vessels are regulated in bilateral agreements.

Blue Ling

Blue ling is mostly caught as a by-catch by bottom trawl and to some extent long-line. During the last decades, a direct trawl fishery for blue ling has sometimes been conducted during the spawning season on spawning aggregations. This has decreased during the last years, as the catch rates have been low. The total catch in 2003 was 1.090 tonnes of which 145 and 899 tonnes were taken by long-line and bottom trawl, respectively. The catches in 2004 were nearly same as in 2003 and 2002. The fishing grounds as recorded in the logbooks are shown in Figure 3-2 for 2000, 2002 and 2004. Total of 190 vessels reported catches in 2004 (Appendix 1 of WD by Sigurdsson), and this figure includes both vessels targeting blue ling and those reporting by-catch.

The recommendation from the Marine Research Institute of Iceland is to limit the direct fisheries on aggregations, and to close known spawning grounds during the spawning season. The fishery is currently not regulated by a national TAC.

Tusk

In the early 1990s directed fishing effort towards tusk started and the catches increased to 6400 tonnes in 1991 and 1992. Since then, the landings were between 4100 and 5800 tonnes until 2001. Since 2001 the Icelandic catch have been between 3400 and 4000 t, with over 95% taken by long-line. In addition, 1530 t of tusk in Icelandic waters were taken by Faroe Island & Norwegian vessels.

The fishing grounds as recorded in the logbooks are shown in Figure 3-3 for the period 2000, 2002 and 2004. Total of 512 vessels reported catches in 2004.

The tusk fishery is regulated by a national TAC in accordance with recommendations from the Marine Research Institute of Iceland. The quotas for foreign vessels are regulated in bilateral agreements. A further advice is for closure of juvenile tusk ground off the south and southeast coasts.

Greater Silver smelt

Greater silver smelt have been caught in bottom trawl for years, as a by-catch in the redfish fishery. Only small amounts were reported prior to 1996 as most of the fish was discarded.

Since 1997, a direct fishery for greater silver smelt has been ongoing and the catches increased significantly, from 800 tonnes in 1996 to 13000 tonnes in 1998. In 1999 and 2000, the catches were close to 6000 tonnes, but decreased to only 3000 tonnes in 2001. The catches in 2002 increased again to almost 5000 tonnes where the dominant gear was bottom trawl and further down to 2700 tonnes in 2003. Total landings in 2004 were 3600 t. The fishing grounds as recorded in the logbooks for 2000, 2002 and 2004 are shown in Figure 3-4. In total 34 vessels landed the species in 2004 and the range of the landed catch by vessel were from only a few kilograms to 700 tonnes.

The Marine Research Institute has recommended a TAC of 12000 t for the 2003-2224 and 2004-2005 quota years.

Table 3-1. Overview of the Icelandic deep-sea fishery in Icelandic waters (Va) in 2004 by gear type (t).

SPECIES AND GEAR		LANDINGS (TONNES)
Ling	Bottom trawl	976
	Danish seine	174
	Gillnet	552
	Hook	8
	Long-line	2016
	Pelagic trawl	0
Ling Total		3726
Blue ling	Bottom trawl	899
	Danish seine	39
	Gillnet	5
	Long-line	145
	Pelagic trawl	2
Blue ling Total		1090
Tusk	Bottom trawl	92
	Danish seine	0
	Gillnet	28
	Hook	8
	Long-line	3006
Tusk Total		3135
Greater silver smelt	Bottom trawl	3638
	Pelagic trawl	7
Greater silver smelt, Total		3645

Table 3-2. Effort in fisheries for ling, blue ling and tusk, as calculated from the Icelandic long-line logbook data. All sets where the species is reported in the logbooks. Includes all sets in which the species was reported in the catch.

EFFORT - NO OF HOOKS (*10000)			
	Ling	**Blue ling**	**Tusk**
1994	3401	269	7020
1995	4237	840	8487
1996	3952	586	8130
1997	3255	236	5221
1998	2972	64	4884
1999	5005	749	8176
2000	5558	606	9489
2001	4810	265	9462
2002	5523	375	9219
2003	7046	321	10564
2004	7019	429	11075

Table 3-3. Blue ling. Registered catch, hours trawled and CPUE from the Icelandic trawler fleet. Tows used for calculations are those where blue ling was more than 10% of total catch in each particular haul.

YEAR	CATCH (T)	HOURS	10%
1991	514700	963	534
1992	643129	1197	537
1993	3586509	2805	1279
1994	658941	1571	419
1995	405686	1135	357
1996	184792	764	242
1997	186010	924	201
1998	267140	1015	263
1999	710714	2048	347
2000	235869	1485	159
2001	132391	979	135
2002	228278	1834	124
2003	201215	1518	133
2004	199109	1327	150

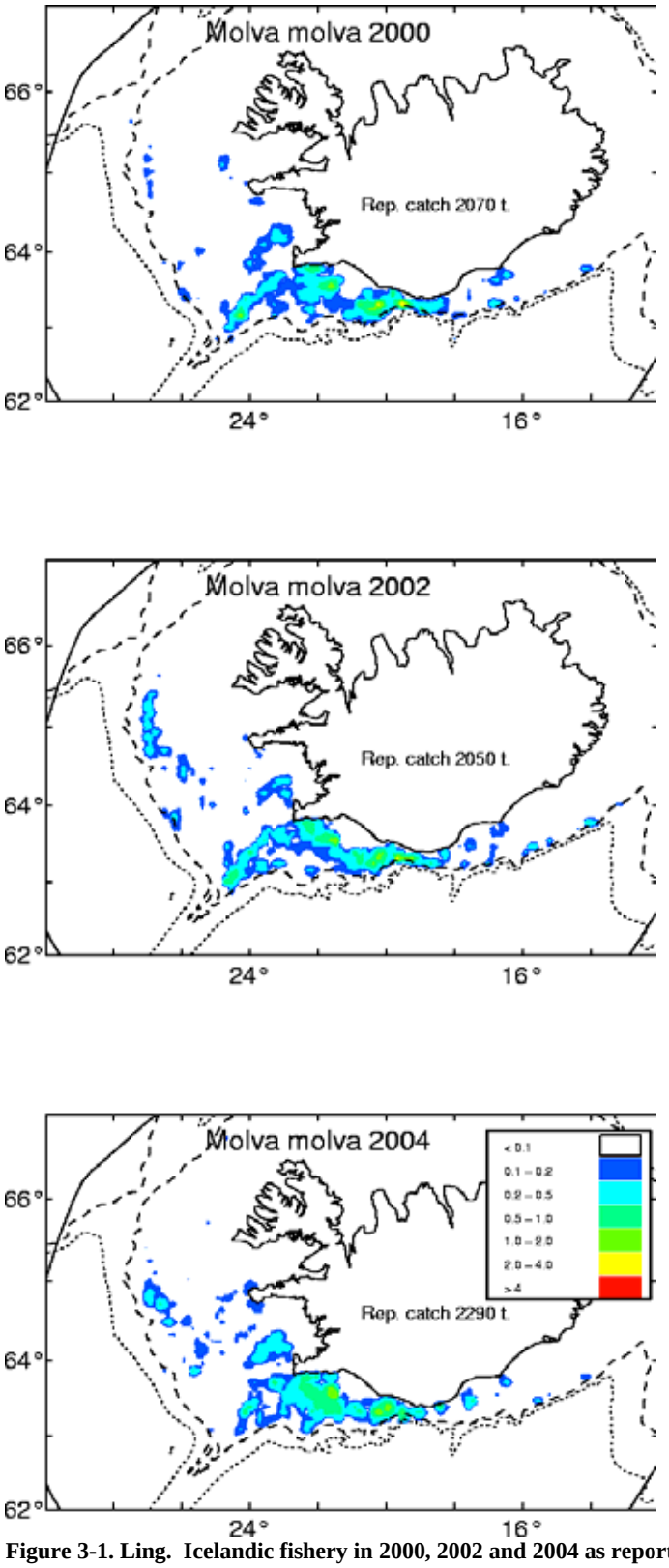


Figure 3-1. Ling. Icelandic fishery in 2000, 2002 and 2004 as reported in the logbooks. All gear types combined.

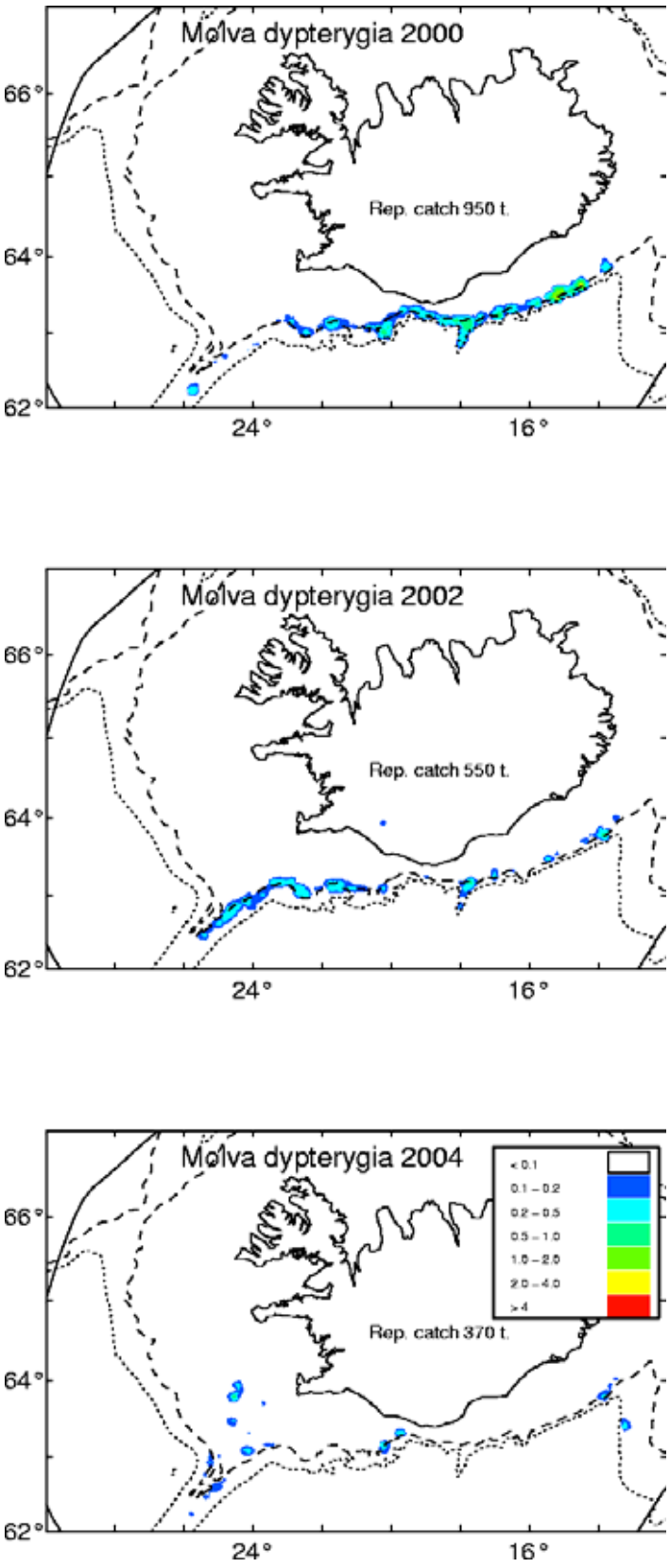


Figure 3-2. Blue ling. Icelandic fishery in 2000, 2002 and 2004 as reported in the logbooks. All gear types combined.

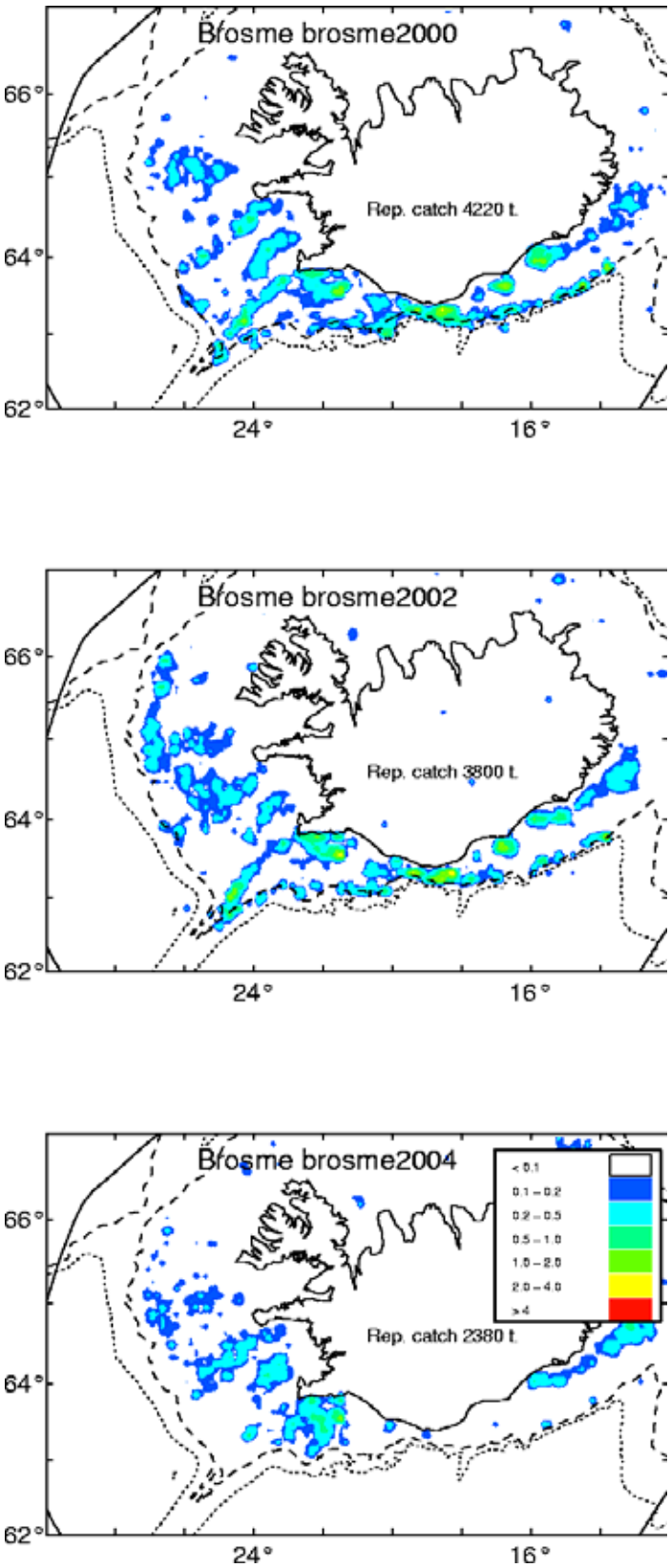


Figure 3-3. Tusk. Icelandic fishery in 2000, 2002 and 2004 as reported in the logbooks. All gear types combined.

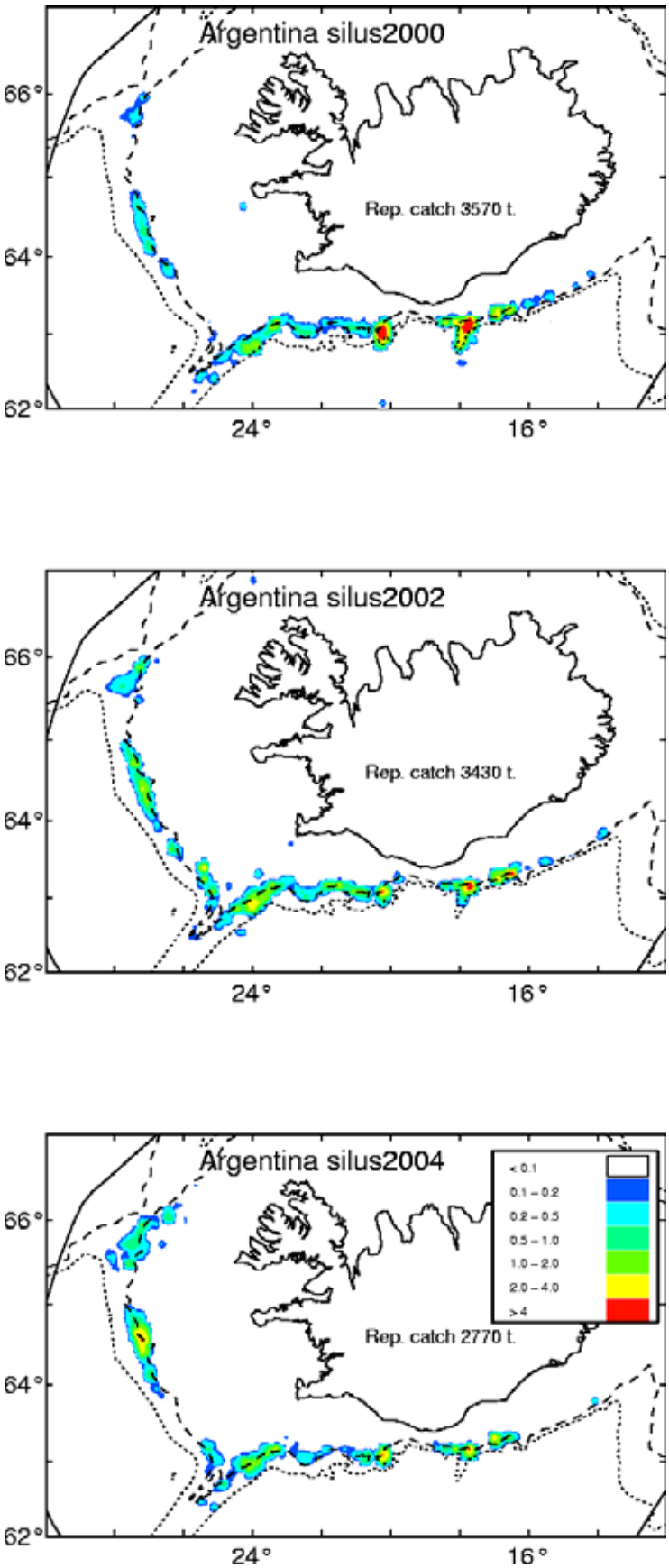


Figure 3-4. Greater silver smelt. Icelandic fishery in 2000, 2002 and 2004 as reported in the logbooks.

3.2 Russian Federation

Extensive information on the Russian Federation fisheries and biological investigations was given in two WDs by Vinnichenko *et al.* (2005a, b). Only a summary is provided here. Landings were included in Table 2.1.

The fishery for roundnose grenadier (*Coryphaenoides rupestris*) was conducted on the Mid-Atlantic Ridge. For the first time Russian vessels conducted directed fisheries for argentine (or greater silver smelt) (*Argentina silus*) in the Faroe Island EEZ and for ling (*Molva molva*) on the Rockall Bank. In other areas deep-water species were taken mainly as by-catches. Fisheries have been carried out in international waters on the Mid-Atlantic Ridge, Hatton and Rockall banks. In the rest areas landings are from inside EEZs.

The following account is based on the results of analysis of daily logbook reports and observers information from fishing vessels in 2004. Landings data were included in Table 2-1, but are also given in Table 3-4 and 3-5.

Mid-Atlantic Ridge

Roundnose grenadier was occasionally targeted in pelagic trawl fishery in June-July by one trawler (tonnage class 10). The vessel mainly operated in the ICES area XII, where daily catch rate varied from 6 to 30 tonnes and total catch was 371 tonnes (Table 3-4). In ICES Division XIVb the vessel made one haul and the catch was 19 tonnes (Table 3-4). Besides some roundnose grenadier (0.5 tonnes) was taken as by-catch in pelagic trawl fishery for deep-water redfish (*Sebastes mentella*) in the area of the Reykjanes Ridge. Argentine and alfonsino (*Beryx decadactylus*) were rarely registered in the same catches.

Hatton Bank

In May-July one long-liner operated in ICES area XII and average catch rate was 0.2 tonnes per 1000 hooks, which is 3.0 tonnes a day. The total effort was 506 thousand hooks and the total catch in this fishery was 85 tonnes. The catches consisted mainly of deep-sea sharks (64 t). Blue ling (*Molva dypterygia*) (7 t), tusk (*Brosme brosme*) (5 t), skates (5 t) and greater forkbeard (*Phycis blennoides*) were registered in by-catches. Besides there are reports about catch of 4 tonnes of argentine but the reliability of these data is uncertain.

The vessel from time to time operated in ICES Division VIb. Average catch rate in this area was 70 kg per 1000 hooks and average daily catch was 1.3 tonnes. The total effort was 227 thou. hooks and the total catch in this fishery was 16 tonnes. Sharks (9 t), tusk (2 t) and blue ling (2 t) were targeted in this fishery and the by-catches consisted of skates (2 t), argentine (1 t) and Greenland halibut (*Reinhardtius hippoglossoides*) (0.5 t).

In late April one vessel (tonnage type 10) operated in bottom trawl fishery during 7 days in ICES Division VIb and the total catch of deep-water species was 44 tonnes mainly roundnose grenadier (34 t). The by-catches consisted of Baird's smoothhead (*Alepocephalus bairdii*) (8 t), blue ling (1 t), Greenland halibut (0.5 t), Rabbit fish (*Chimaera monstrosa*) (0.4 t) and Black scabbard fish (*Aphanopus carbo*) (0.2 t).

In late September – early October the same trawler operated 2 days in ICES area XII, where it fished 15 tonnes of roundnose grenadier and 3 tonnes of smoothhead. In ICES Division VIb the vessel operated 3 days and the total catch during this period was 43 tonnes including 36 tonnes of roundnose grenadier and 7 tonnes of smoothhead.

Rockall Bank

In March-September in fishery for haddock (*Melanogrammus aeglefinus*) in international waters of ICES Division VIb argentine (12 t), blue ling and ling (3 t and 20 t correspondingly), roundnose grenadier (1.9 t), tusk (0.2 t) and rabbit fish (0.3 t) were registered in several bottom trawl catches.

In July-August one vessel operated in the southwestern part of the Rockall bank. Average catch rate was 140 kg per 1000 hooks, which is 4.7 tonnes a day. The total effort was 1698 thousand hooks and the total catch in this fishery was 232 tonnes including ling (160 t), tusk (57 t), skates (12 t), greater forkbeard (1 t) and blue ling (1 t).

In March some single individuals of golden eye perch (*Beryx splendens*) and alfonsino *(Beryx decadactylus)*occurred in catches taken in pelagic trawl fishery for blue whiting.

East Greenland

Roughhead grenadier (*Macrourus berglax*) was sometimes registered in catches during bottom trawl fishery for Greenland halibut in late July – early August in ICES area XIV and the total catch of roughhead grenadier was 2 tonnes.

In July-August roughhead grenadier occurred in catches taken in long-line fishery for Greenland halibut practically in all areas. The proportion of roughhead grenadier in catches varied from 3 to 88 % and the catch rate achieved was 600-740 kg per 1000 hooks. Due to by-catch regulation (not more then 10 %) the major part of roughhead grenadier was discarded and only 6 tonnes were kept on board. Apart from roughhead grenadier some blue ling, tusk, blue hake (*Antimora rostrata*), sharks and skates were also registered in these catches.

Faroe fishing zone

Argentine (*Argentina* spp.) occasionally occurred in catches in pelagic trawl fishery for blue whiting (*Micromesistius poutassou*) in April-May in ICES Division Vb (total catch was 0.5 t).

In May-June one vessel (tonnage class 10) conducted exploratory fishing on the slopes of the Lauzy Bank and Bill Bailies Bank. The total catch in 49 fishing days with bottom trawl was 856 t and the average daily catch rate was 17.5 t. The major part of catches was argentine (701 t). Blue whiting (89 t), blue ling and ling (13 and 2 t correspondingly), roundnose grenadier (5 t), smoothhead (6 t), black scabbard fish (0.1 t), rabbit fish (35 t), deep-water redfish (3 t) bluemouth (*Helicolenus dactylopterus*) (1 t), witch flounder (*Glyptocephalus cynoglossus*) (0.4 t), anglerfish (*Lophius piscatorius*) (1 t) and a few Greenland halibut, big eye (*Epigonus telescopus*) and golden redfish (*Sebastes marinus*) were taken as by-catch.

In August the catches of the same trawler on the Lauzy Bank and Bill Bailies Bank did not exceed 0.5 tonnes of deep-water redfish, argentine, black scabbard fish, roundnose grenadier, smoothhead and blue ling.

Norwegian Sea

In ICES Divisions IIa and IIb deep-water species were mainly taken as by-catch in long-line fisheries. The major part of it was tusk, greater forkbeard, blue ling and ling. Roughhead grenadiers was occasionally taken as by-catch in bottom trawl fishery (Table 3-4).

A few tusk occurred in catches but in large area and mostly in long-line fishery on the continental slope. The largest catches of tusk were registered in March on the Malangen and Kopytov Banks (ICES Division IIa), where catch rate reached 300 kg per 1000 hooks.

Greater forkbeard was taken as by-catch in July-October around South Cape Deep and on the western slope of the Bear Island Bank (ICES Division IIb).

Small by-catches of ling (1 – 2 t in a month) were reported in long-line fishery in March-May and July on the Malangen and Andøy Banks as well as around the Kopytov Bank (ICES Division IIa).

Blue ling occurred in catches in September in long-line fishery on the western slope of the Bear Island Bank (ICES Division IIb).

Barents Sea

Tusk and greater forkbeard occurred in catches by long-line in western part of the ICES area I. Some tusk was registered in catches during the whole year (monthly catches were 60-690 kg). Greater forkbeard was registered in catches in August – October and its catch was 40-50 kg.

Blue ling occurred in by-catches in trawl fishery for bottom fish in the southwestern part in May.

Table 3-4. Russian catches (t) of deep-water fish in 2004 (preliminary data)

SPECIES	ICES AREA							
	I	IIa	IIb	Vb	VIb	XII	XIVb	Total
Argentine	0	0	0	702	12	4	0	718
Baird's smoothhead	0	0	0	6	15	3	0	24
Roundnose grenadier	0	0	0	6	72	386	20	484
Roughhead grenadier	0	0	1	0	0	0	9	10
Tusk	2	61	5	0	60	5	0	133
Blue ling	0	0	1	13	5	7	0	26
Ling	0	5	0	2	182	0	0	189
Greater forkbeard	0	0	3	0	1	0	0	4
Bluemouth	0	0	0	1	0	0	0	1
Rabbit fish	0	0	0	36	0	0	0	36
Sharks	0	0	0	0	9	64	0	73
Total	2	66	10	766	356	469	29	1698

Table 3-5. Russian catches of roundnose grenadier on the Mid Atlantic Ridge in 2004 (preliminary data).

MONTH	VESSEL TONNAGE CLASS	NUMBER OF FISHING DAYS PER VESSEL	CATCH IN TONNES	
			per fishing day	Total
		ICES area XII		
June	10	5	21,3	106,6
July	10	18	14,7	264,4
		ICES area XIV		
June	10	1	19,3	19,3
Total		**24**	**16,3**	**390,3**

3.3 The Faroe Islands

Except for the traditional long-line fisheries for tusk and ling, which have been well established for many years, the Faroese deep-water fisheries started in the late 1970s following the expansion of the national EEZs to 200 nm and a wish to reallocate fishing effort from traditional shelf fisheries (WD by Reinert 2005). In the first years all fishing was within the Faroese EEZ. Later on the fishery was gradually expanded to more distant areas and to include more and more species/stocks. In many cases these fisheries started as more or less scientific exploratory fisheries/surveys evolving to commercial fisheries. However, availability of other more profitable species/stocks (higher commercial value, not so distant waters) has always determined the extent of the Faroese deep-sea fishery. Landings of the Faroese fleets (Table 3-6) have been given in Table 2-1.

The main deepwater fleet consist of 13 otter trawlers with engines larger than 2000 Hp. They have traditionally targeted saithe, redfish (*Sebastes* spp.), Greenland halibut, blue ling and to a lesser degree black scabbardfish (*Aphanopus carbo*) and roundnose grenadier (*Coryphaenoides rupestris)*. Most fisheries have taking place inside the Faroese EEZ, but some trawlers fish also further south to the Hatton Bank, e.g. targeting blue ling during the spawning season, then black scabbardfish in the summer time and later in the year roundnose grenadier became the most important species. A few of these trawlers have increased their effort on black scabbardfish, roundnose grenadier and blue ling in Vb with a corresponding increase in the landings of these species. Following a special exploratory trawl fishing programme initiated in 1992 with several vessels aimed at orange roughy (*Hoplostethus atlanticus*), one trawler was regularly fishing on the Mid-Atlantic Ridge. The fishery was directed towards orange roughy most of the time, but sometimes other deep-sea species as black scabbardfish, roundnose grenadier and deep-water sharks are taken. In 2002 and 2003 no such fishing took place but from 2004 this fishery has been re-established.

The traditional long line fleet fishing for ling, tusk and blue ling consist of 19 long-liners larger than 100 GRT; they are mainly targeting cod and haddock and in years where the availability of these species is high and market conditions satisfactory, they spend very little effort in deep water. Recently, a directed longline fishery with one vessel on deepwater sharks (*Centroscymnus coelolepis* and *Centrophorus squamosus*) was initiated; however, there has been no such fishery in 2002-2004.

In the 1990s, a gill net fishery directed at monkfish (*Lophius piscatorius*) and Greenland halibut (*Reinhardtius hippoglossoides*) developed in Vb and is now well established; by-catches in this fishery are among others deep-sea red crab and blue ling. More recently exploratory trap fisheries for deep-sea red crab have been performed but not on a regular basis.

A trawl fishery for greater silver smelt (*Argentina silus*) has been expanding rapidly in recent years. Three pair trawlers, which otherwise mainly target saithe (*Pollachius virens*), hold licences to this fishery that mainly takes place in late spring and summer.

Effort and CPUE series for the main Faroese fleets were updated, and the CPUE trends are shown in Chapter 4. There is also a groundfish survey series from Vb yielding data for some of the main species. Detailed data on geographical distribution of effort and catches from international waters, i.e. the mid-Atlantic Ridge and the Hatton Bank, were not presented.

Table 3-6. Faroese fleets conducting deep-water fisheries.

The Faroese fishing fleets in relation to deep-sea fisheries - a recent evaluation						
Fleet categories	**Deep-sea fisheries**	**Targeted deep-sea species (single/multi species)**	**By-catch deep-sea species**	**ICES areas**	**National zones/Reg.area**	
Open Boats	(+)		Ling, tusk	Vb	Faroes	
Longliners < 100 GRT	(+)		Ling, tusk	Va, Vb	Faroes, Iceland	
Longliners > 100 GRT	+	Ling, tusk	Blue ling	Va, Vb	Faroes, Iceland	
Singletrawlers < 400 HP	(+)		Ling, tusk	Vb	Faroes	
Singletrawlers 400-1000 HP	(+)		Ling, tusk	Vb	Faroes	
Singletrawlers > 1000 HP	+	Blue ling, black scabbard fish, roundnose grenadier, Greenland halibut, Orange roughy	Ling, tusk,deepwater sharks	Vb, VIb, VII, X, XII, XIVb	Faroes,Greenland, Reg. Area	
Pairtrawlers < 1000 HP	(+)		Ling, tusk	Vb	Faroes	
Pairtrawlers > 1000 HP	+	Greater silver smelt	Ling, tusk	Vb	Faroes	
Gill nets	+	Greenland halibut, monk fish	Blue ling, ling, deep-sea redcrab	Vb	Faroes	
Jiggers	-					
Others	-					

3.4 Norway

Descriptions of the Norwegian fisheries for deep-water species have been provided in previous reports. There are no major changes in target species, fishing patterns and the fleets landing deep-water species as by-catch. Landings have been reported to ICES and are included in Table 2-1.

The Norwegian fleets operate in the Norway, Faroe Island, Iceland and EU EEZs, and to a limited extent in the NEAFC Regulatory Area (Hatton Bank and mid-Atlantic Ridge). The 2003 and 2004 effort and catches in the NEAFC RA is presented in Table 3-7. The interest in deep-water fisheries has declined, and publicly funded exploratory efforts in deep-water areas have almost ceased.

Table 3-7. Estimated effort and catch of deep-water species in the NEAFC Regulatory Area in 2003 and 2004. Source: The Norwegian Directorate of Fisheries.

NORWAY 2003	Total	ICES-area	
Species:	NEAFC-RA	VI	XII
Tusk	166	84	83
Ling	128	111	17
Blue ling	198	57	142
Greenland halibut	237	26	211
Mora	75	60	15
Roundnose grenadier	-		
Roughhead grenadier	5	3	2
Greater forkbeard	23	15	8
Picked dogfish	45	30	16
Ray	23	22	1
Portugese dogfish	-		
Shark gulper, leafscale	-		
Other sharks	-		
Total	901	407	494
Other demersal species	52		
Total	952.6		
Cach pr. fishing day	3.26 tonnes		

Effort restriction for Norwegian vessels in 2003:	
	17 vessels
	675 fishing days
Effort used by Norwegian vessels in 2003:	
	12 vessels
	292 fishing days

As reported to NEAFC at the Annual Meeting in 2004.

NORWAY 2004	Total	ICES-area	
Species:	NEAFC-RA	VI	XII
Tusk	70	63	8
Ling	106	106	-
Blue ling	1	1	0
Greenland halibut	113	-	113
Mora	1	-	1
Roundnose grenadier	-	-	
Roughhead grenadier	29	-	29
Greater forkbeard	1	-	1
Picked dogfish	22	-	22
Ray	8	2	6
Portugese dogfish	-		
Shark gulper, leafscale	-		
Other sharks	58	0	58
Total	409	172	237
Other demersal species	4		
Total	413		
Cach pr. fishing day	2.40 tonnes		

Effort restriction for Norwegian vessels in 2004:	
	17 vessels
	675 fishing days
Effort used by Norwegian vessels in 2004:	
	4 vessels
	172 fishing days

The major fleet is the high-seas longliners (>21m in length) that have ling and tusk as target species for part of the year when not engaged in fisheries for e.g. higher-value species such as cod and Greenland halibut. In a WD by Helle and Pennington (2005), some data for this fleet are presented. The data are based on logbooks (for vessels of length>21 m and fishing 8 t or more per year of one of the target species), on reports and collections from vessels that collaborate with the Institute of Marine Research (the "reference fleet"), and official statistics from the Norwegian Directorate of Fisheries.

The vessel register kept by the Norwegian Directorate of Fisheries shows that the number of longliners of this character has declined from 65-75 in 1995-2000 to 43 in 2004. The number of vessels has always fluctuated (reflecting variable profitability, mainly in the cod fisheries), but the 2004 figure is the lowest recorded since the major modernization period in the 1980s. Landings of the target species also declined since 2000 (Fig. 3-5), but the annual catch per vessel has not changed significantly during the same period. Each vessel seems to maintain its catch level, but whether this is achieved by increased fishing effort or reflect enhanced availability of the resources is not known. Whether the vessels actually increased the effort or efficiency will be analysed further when logbooks for the most recent years have been processed.

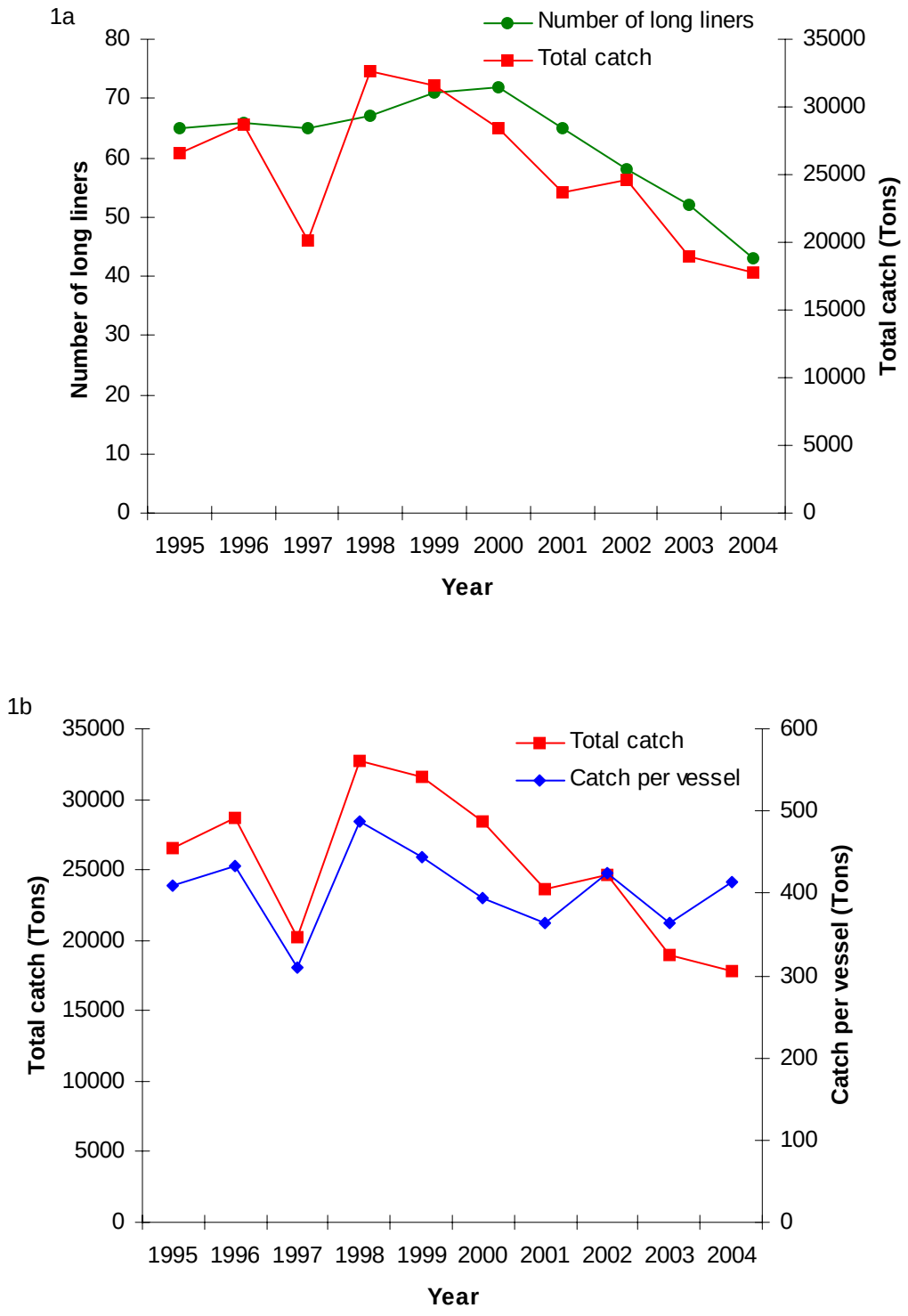


Figure 3-5. The number of long liners and the total reported catches for the period 1995- 2004 (upper), and the total catch and the annual mean catch-per-vessel (lower).

Entering the data from the logbooks is very time consuming because electronic logbooks have not been introduced. By the beginning of May 2005, 39 logbooks have been entered for 2000, 38 for 2001, 7 for 2002 and 17 for 2003. The data entry for 2000 and 2001 is almost complete, while there are a large number of logbooks that have not been processed for 2002 and 2003. Analyses will be made to determine what number of logbooks is sufficient to process in order to generate the essential data with sufficient precision.

3.5 Ireland

Irish deepwater fisheries continue to be active in several areas (WD by Johnston and Clarke 2005). The largest fishery is the directed orange roughy trawl fishery, mainly based on the continental slopes of the Porcupine Bank in Divisions VIIc and VIIk, the "Peak" fishery. Reported landings have been much lower in 2003 and 2004 than in previous years. In addition the spawning period, during which the largest catches are made as the fish aggregate, has decreased. Because of the decline in orange roughy landings, black scabbardfish is becoming the main target species of the Irish deepwater fleet on the so-called "Flats" fishery. Roundnose grenadier, blue ling and deepwater siki sharks were a small by-catch in orange roughy fisheries, but are also taken in the mixed species slope fisheries in these areas. Cardinal fish are also taken on the peak fishery, but are either kept or discarded depending on other species caught. If high value fish are caught on a trip, then the cardinals are discarded, however if fishing has been poor, then the cardinals are kept. Discard levels can therefore be very high and variable.

There is no longer a directed Irish pelagic fishery for argentines. The quota has been reallocated to allow for an unavoidable by-catch by deepwater demersal vessels.

As in previous years, ling and forkbeard were landed in sizeable quantities, from both deepwater and shelf-based fisheries.

The Irish landings data were presented in Table 2-1. Effort data were not presented to the WG.

3.6 France

No new information in addition to landings included in Table 2-1 was presented.

3.7 Spain

Data on existing, new, and exploratory fisheries by Spanish fleets were presented in WDs by Gil *et al.* 2005, Gil and Sobrino 2005, and Dúran Muñoz *et al.* 2005a, b. Landings data were included in Table 2.1, and landings by gear type are given in Table 3-8.

The major fishery is the bottom trawl fishery on the Hatton Bank (Dúran Muñoz *et al.* 2005a) but there are also wide-ranging smaller-scale fisheries by Basque and other Spanish regions vessels (see previous WGDEEP reports). Five limited trawl experiments were conducted on Mid Atlantic Ridge from 1997 to 2000, but commercial trawl fisheries was not developed in this area, except sporadic fishing activity, mainly in international waters of the Div. XIVb (Durán Muñoz *et al*. 2005a). The main trawl experiments have been reported to ICES in WDs. The interest in deep-water trawl in the Mid Atlantic Ridge has declined severely as a result of those experiences, and the trawl experiments ceased in 2000.

In 2004 a two month Experimental fishing with automatic and semi-artisanal bottom longlines was carried out on the Northern Mid Atlantic Ridge (Durán Muñoz *et al*. 2005b). During 2005 a three month Experimental fishing with bottom longlines was conducted in Hatton Bank and adjacent waters (Rockall Bank and Div. VIa). The experiment has finished recently, and for this reason the first results will be not available until the first half of year 2006.

Table 3-8. Spanish landings (tonnes) of deep-water species by gear type and ICES Subarea.

Species	Gear	2003						2004*					
		VI	VII	VIII	IX	XII	XIV	VI	VII	VIII	IX	XII	XIV
Molva molva	Hooks and (long)lines	8	431	92	0	0	0	5	354	59	0	0	0
	Gillnets	0	10	26	0	0	0	0	8	24	0	0	0
	Bottom trawl	67	161	29	0	0	0	37	150	27	0	0	0
	Others	0	5	1	0	0	0	0	18	3	0	0	0
Molva dypterygia	Hooks and (long)lines	0	15	3	0	0	0	0	1	3	0	0	0
	Gillnets	0	1	8	0	0	0	0	1	7	0	0	0
	Bottom trawl	194	21	6	1	971	909	24	10	3	1	610	177
	Others	0	4	2	0	0	0	0	3	4	0	0	0
Brosme brosme	Hooks and (long)lines	0	1	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	13	0	0	0	0	0	17	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Argentina silus	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Hoplostethus atlanticus	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Coryphaenoides rupestris	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	9684	272	252	0	0	0	8423	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Aphanopus carbo	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	1	0	403	2	17	0	1	0	165	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Pagellus bogaraveo	Hooks and (long)lines	0	5	35	227	0	0	0	3	38	195	0	0
	Gillnets	0	1	5	0	0	0	0	0	4	0	0	0
	Bottom trawl	0	0	35	1	0	0	0	0	21	4	0	0
	Others	0	1	12	100	0	0	0	0	21	52	0	0
Phycis spp	Hooks and (long)lines	64	359	103	5	0	0	1	147	205	0	0	0
	Gillnets	0	43	37	1	0	0	0	24	24	0	0	0
	Bottom trawl	66	541	167	34	71	0	57	837	98	29	34	0
	Others	0	27	10	31	0	0	0	65	53	33	0	0
Beryx spp	Hooks and (long)lines	1	51	80	2	0	0	0	31	119	0	0	0
	Gillnets	0	1	7	0	0	0	0	4	33	0	0	0
	Bottom trawl	1	1	8	0	0	0	0	2	8	0	0	0
	Others	0	0	0	2	0	0	0	9	39	3	0	0
Macrourus berglax	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	1	0	0	0	0	0	3	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Mora moro	Hooks and (long)lines	0	0	10	0	0	0	0	0	8	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Chimaera monstrosa & Hydrolagus spp.	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	59	1	4	0	0	0	48	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Alepocephalus	Hooks and	0	0	0	0	0	0	0	0	0	0	0	0

bairdii	(long)lines												
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	6864	392	1203	0	0	0	4344	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Polyprion americanus	Hooks and (long)lines	0	0	11	8	0	0	0	0	7	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	14	0	0	0	0	10	8	0	0
Helicolenus dactylopterus	Hooks and (long)lines	1	23	9	27	0	0	0	57	2	4	0	0
	Gillnets	0	0	0	0	0	0	0	3	7	1	0	0
	Bottom trawl	1	61	0	69	0	0	85	139	10	84	0	0
	Others	0	0	2	0	0	0	0	1	2	2	0	0
Lepidopus caudatus	Hooks and (long)lines	0	0	0	1004	0	0	0	0	0	646	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	654	0	0	0	0	0	140	0	0
Epigonus telescopus	Hooks and (long)lines	0	5	2	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	4	0	0	0
Argentina sphyraena	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	121	5	0	0	0	1	182	4	0	0
	Others	0	0	5	1	0	0	0	0	1	0	0	0
Notacanthus chemnitzii	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Pontinus kulhi	Hooks and (long)lines	0	0	0	0	0	0	0	0	0	0	0	0
	Gillnets	0	0	0	0	0	0	0	0	0	0	0	0
	Bottom trawl	0	0	0	0	0	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0	0	0	0	0	0
Conger conger	Hooks and (long)lines	3	714	780	1	0	0	3	542	869	1	0	0
	Gillnets	0	0	27	0	0	0	0	0	13	0	0	0
	Bottom trawl	9	263	125	23	0	0	23	248	124	34	0	0
	Others	0	42	174	244	0	0	0	36	241	412	0	0

Hatton bank fishery

Since the start of this fishery in 1996, monitoring was carried out by Spanish independent scientific observers on board, under the management of the IEO-Vigo. During the period 2002-04, 11% of the total fishing days were sampled each year.

The commercial fishery is carried out by Spanish stern bottom freezer trawlers in international waters of the Hatton Bank area (ICES XII & VIb). The presence of the majority of the vessels in this fishing ground is discontinuous. Vessels conducted fishing trips of variable duration (1 week to 3 month approx.). Fishing operations are conducted at depths mainly from 800 to 1600m. Since 2002, the fishing effort in the Hatton bank area has diminished. Roundnose grenadier and Baird's smoothhead are the most important species in the catches. At least one trawler occasionally fished blue ling during a few days in international waters of ICES XIVb.

Red seabream and silver scabbardfish fisheries in the Strait of Gibraltar

Since the early 1980s an artisanal fishery targeting the red seabream (*Pagellus bogaraveo*, known as "voraz") developed along the Strait of Gibraltar (ICES IXa south). The "voracera", a local mechanised hook line baited with sardine, is the gear used by the fleets from the ports of Tarifa and Algeciras (Cádiz, SW Spain). From 1997 onwards the Instituto Español de Oceanografía (IEO) has been monitoring and studying this fishery. Also, in a legal context, several measurements included in recovery plans have been taken (Gil et al., 2000; 2003 and Gil & Sobrino, 2001; 2002; 2004).

Fishery information was gathered for the period 1983-2004 from the sales sheets: monthly landings, monthly number of sales and the number of days in which those sales were carried out.

Figure 3-6 shows a continuous increase in the landings up to a maximum in 1994. Since 1994 landings have been decreasing, except in 1996 and 1997, to the mean value of the last three years (230 t).

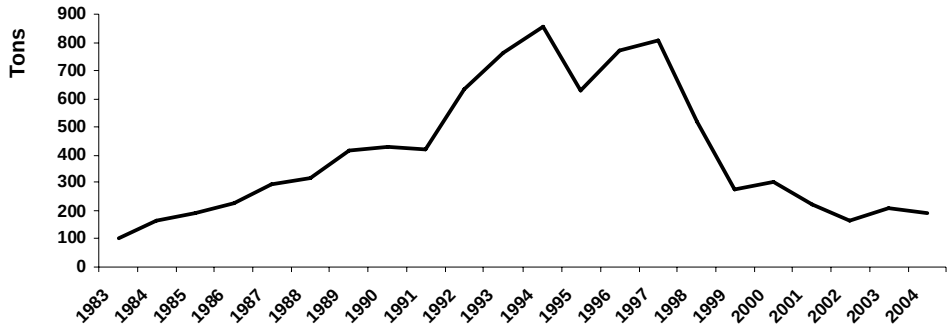


Figure 3-6. *Pagellus bogaraveo* of the Strait of Gibraltar: Landings (1983-2004).

Fishing effort (Figure 3-7), estimated as number of sales, also increased during the early years of the fishery to a maximum in 1997. Also, the number of fishing units increased, and from 1990 boats have incorporated several technological improvements (automatic machines for hauling the gear, sound for bottom register, GPS a.o.). Later, the number of sales shows a decreasing trend. However, it is important to emphasise that the effort unit chosen does not take account of trips that do not result in sales. It is likely that the number of trips that produce no marketable catch has increased in recent years. Therefore, the LPUE trends (Fig. 3-7) must be interpreted with some caution.

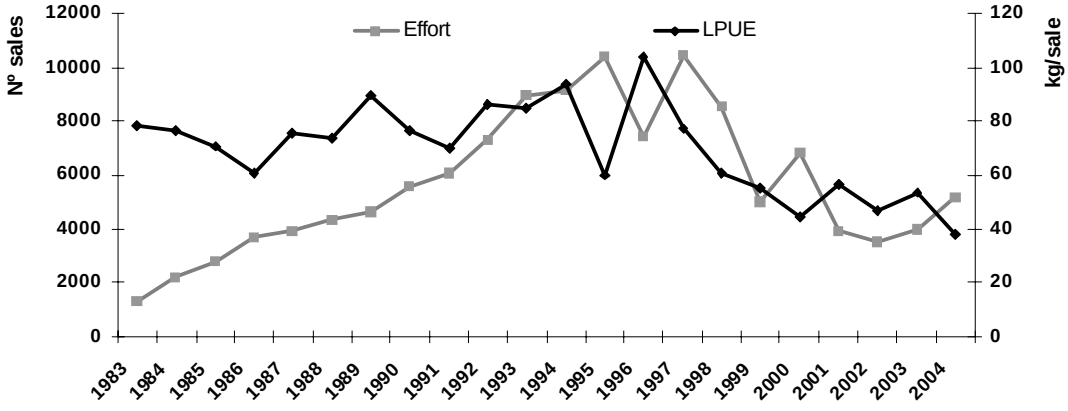


Figure 3-7. *Pagellus bogaraveo* of the Strait of Gibraltar: Effort (no. of sales) and LPUE (1983-2004).

Since 2001, some boats from Algeciras port adapted their gears to the fishing of silver scabbardfish (*Lepidopus caudatus*) as an alternative to the red (blackspot) seabream fishery. Later on, boats from Barbate and Conil ports joined this new fishery. The fishery mainly takes place between the Trafalgar (6° 02.00 W) and Punta Camarinal (5° 47.95 W) meridians in grounds of 200 fathoms depth.

At the moment, about 30 boats from Conil and Barbate carry out this fishery. Moreover, boats from Algeciras also fish in this area in spite of its belonging to the Mediterranean fishing area. In fact at the moment, these last ones are subjected to a fishing plan that allows 12 from a 18 boats authorized list to fish simultaneously in Gulf of Cádiz waters.

The gear used is a bottom longline with a maximum length of 7 000 m of line and 3 000 hooks. Separation between gangeons is almost a fathom, conforming each line 90 gangeons connected to hooks baited with sardine or mackerel. Gear can join up to 25 hook lines with an alternating floats and sinkers system (Figure 3-8).

Silver scabbardfish is the target species. By-catches are red (blackspot) seabream (*Pagellus bogaraveo*), bluemouth (*Helicolenus dactylopterus*), conger eel (*Conger conger*), and greater forkbeard (*Phycis* spp.). The implementation of a fishing plan includes the fishery by-catch regulation (maximum 5% of non-target species). Quantitative discard information is not available.

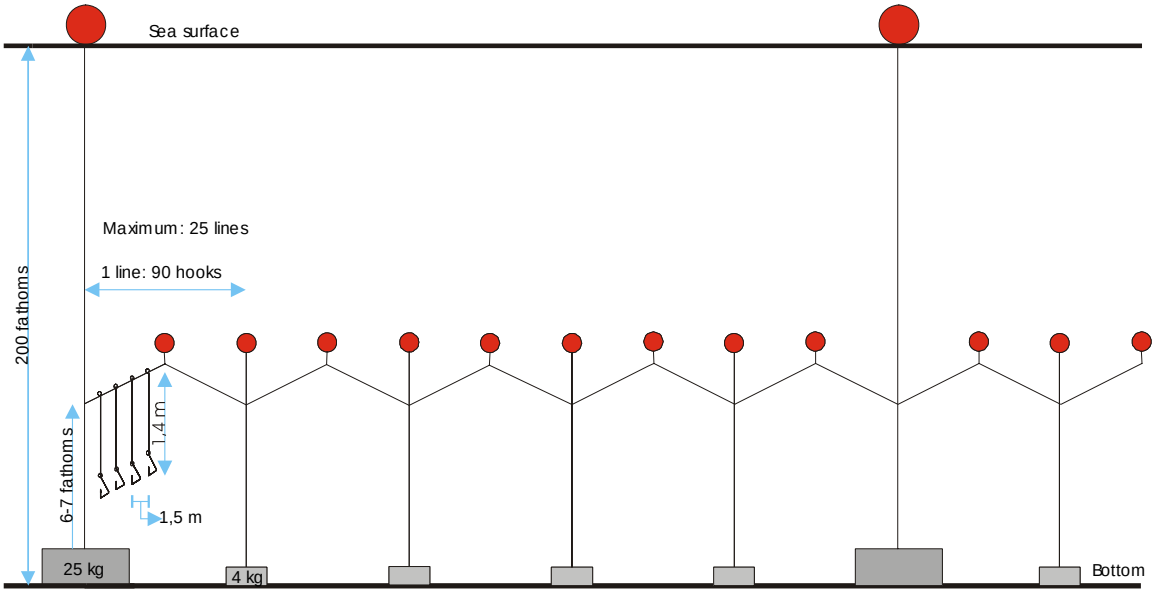


Figure 3-8. Longline gear used in the Silver scabbardfish fishery of the Gulf of Cádiz (ICES IXa south).

The fishery information was gathered for the period 2001-2004. 2004 data are preliminary. In some cases the landings are directly transfered to trucks that transport it to Portugal markets. These operations are carried out without public auction outside the fishmarket. Thus, landings could be underestimated but at least constitutes the fishery minimum values.

Silver scabbardfish landings are presented in Figure 3-9. A small percentage of these landings are the by-catch from the nearby red seabream fishery, but most of the volume comes from the target fishery on silver scabbardfish.

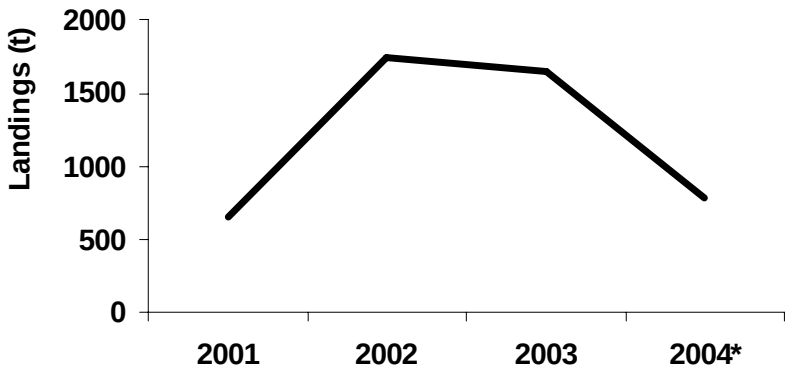


Figure 3-9. Silver scabbardfish landings in the Gulf of Cádiz (ICES IXa south). *Preliminary.

Landings increased from the 654 tons in 2001 to the maximum in 2002 and 2003 as a probable consequence of the fishery development and the increment of the number of boats. Then, in 2004, was observed a serious decrease back to the first year values. The time series of the landings seems to reflect a bloom and blast fishery. The state of the stock is unknown, and the current information is insufficient to determine if the fishery is sustainable.

At the moment the only available unit of effort is the number of operative units. Silver scabbardfish target fleet are composed by 30 boats from Conil and Barbate plus the 12 allowed in the fishing plan from Algeciras.

Long-line experiments on the mid-Atlantic Ridge

A two months exploratory survey was conducted in the second Quarter of 2004 by a polyvalent freezer longliner (186 TRB) in international waters of North Atlantic (Figure 3-10), on the mid-Atlantic Ridge (ICES X, XII and XIVb), using traditional bottom longline system and Norwegian automatic bottom longline system "MUSTAD AUTOLINE" (Table 3-9). The first one is a semi-artisanal gear, mounted and baited by hand, appropriate for demersal species, while the second one is a high-tech automated gear with hook separator, magazines and baiting machine, very efficient to catch deep-water species living close to the bottom. The geographic location of the investigated zones is shown in Table 3-10. As in all the other exploratory cruises conducted by Spain in recent years, a scientific observer was on board. Among other information, location, time, depth, catch, and discards were noted by the observer, station by station.

A total of 117,878 hooks were set during the cruise. Sampling was conducted in a wide geographical and bathymetrical range, mainly at depths from 500 to 1200m. Sampling effort was smaller in zone B than in the others due to the difficulties to find appropriate bottoms to set the longlines (Table 3-10). The list of species captured during the survey is given in Table 3-12. Great lanternshark appeared in the whole investigated area. Portuguese dogfish occurred in all area except in zone B. Leafscale gulper shark, cardinal fish common mora, and false catshark appeared in zone A. Tusk and both golden redfish and deepwater redfish were caught in zones B & C. Generally, the automatic longline system produced higher CPUE values in the depths from 800 to 1100m, capturing more deepwater sharks and common mora, while the CPUEs obtained with traditional longline system were higher at depths from 500 to 900 m, capturing redfishes, and cardinal fish, preferably (Tables 3-12 to 3-16). Regarding of fishing depths and target species, both gears were used in a certain complementary way.

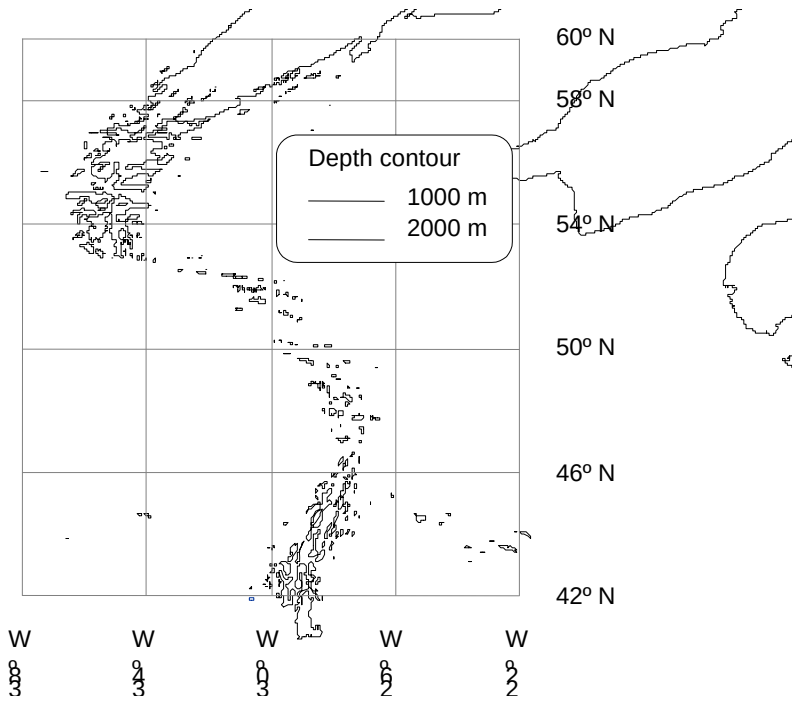


Figure 1.- Location of the investigated area at M.A.R. (international waters).

Figure 3-10. The section of the mid-Atlantic Ridge where the longline experiments was made.

Table 3-9. Longline main characteristics.

	NORWEGIAN AUTOMATIC SYSTEM	TRADITIONAL SEMI-ARTESANAL SYSTEM
MAIN LINE	HORIZONTAL (*)	OBLIQUE
HOOKS	12/0-8/0	3/0-4/0
BAITING	BY MACHINE	BY HAND
(*)ONE STATION WAS VERTICAL		

Table 3-10. Investigated areas on the mid-Atlantic Ridge (international waters).

Zones	Main Lat. límits
A	From 43º00'N to 46º00'N
B	From 48º00'N to 53º00'N
C	From 53º00'N to 60º00'N

Table 3-11. No. stations by investigated depth range and zone

	ZONES			TOTAL
	A	B	C	
Depth range (m)	600 - >1200	900 – >1200	<500 - 1200	<500 - >1200
TOTAL	46	4	64	114

Table 3-12.- List of species captured during the survey (preliminary).

FAMILY	LATIN NAME	COMMON NAME
Chimaeridae	*Hydrolagus affinis*	Smallyed rabbitfish
Chimaeridae	*Hydrolagus mirabilis*	Large-eyed rabbitfish
Centrophoridae	*Centrophorus squamosus*	Leafscale gulper shark
Centrophoridae	*Deania calceus*	Birdbeak dogfish
Dalatiidae	*Centroscymnus crepidater*	Longnose velvet dogfish
Dalatiidae	*Centroscyllium fabricii*	Black dogfish
Dalatiidae	*Centroscymnus coelolepis*	Portuguese dogfish
Dalatiidae	*Etmopterus princeps*	Great lanternshark
Dalatiidae	*Somniosus microcephalus*	Greenland shark
Dalatiidaee	*Etmopterus spinax*	Velvet belly lantern shark
Hexanchidae	*Hexanchus griseus*	Bluntnose sixgill shark
Pseudotriakidae	*Pseudotriakis microdon*	False catshark
Alepisauridae	*Alepisaurus ferox*	Longnose lancetfish
Alepocephalidae	*Alepocephalus sp*	Smothhead
Anarhichadidae	*Anarhichas denticulatus*	Northern wolffish
Anarhichadidae	*Anarhichas minor*	Spotted wolffish
Berycidae	*Beryx splendens*	Splendid alfonsino
Congridae	*Conger conger*	European conger
Epigonidae	*Epigonus telescopus*	Cardinal fish
Gempylidae	*Nesiarchus nasutus*	Black gemfish
Lotiidae	*Brosme brosme*	Tusk
Macrouridae	*Coryphaenoides rupestris*	Roundnose grenadier
Macrouridae	*Macrourus berglax*	Roughhead grenadier
Moridae	*Antimora rostrata*	Blue antimora
Moridae	*Lepidion eques*	North atlantic codling
Moridae	*Lepidion sp*	------
Moridae	*Mora moro*	Common mora
Phycidae	*Phycis blennoides*	Greater forkbeard
Sebastidae	*Helicolenus dactylopterus*	Blackbelly rosefish
Sebastidae	*Sebastes marinus*	Golden redfish
Sebastidae	*Sebastes mentella*	Deepwater redfish
Synaphobranchidae	*Synaphobranchus kaupi*	Kaup´s arrowtooth eel
Trachichthyidae	*Hoplostethus atlanticus*	Orange roughy
Trichiuridae	*Aphanopus carbo*	Black scabbardfish
Geryonidae	*Geryon affinis*	Crab
	Anthozoa	Stony and soft corals

Table 3-13.- Norwegian automatic system. CPUE (Kg/1000 hooks) of the main species by investigated zone (preliminary).

SPECIES	ZONE			TOTAL
	A	B	C	
Leafscale gulper shark	294	-	-	257
False catshark	145	-	-	127
Cardinalfish	68	-	-	59
Common mora	66	-	-	57
Great lanternshark	23	-	146	39
Portuguese dogfish	34	-	6	31
Tusk	-	-	108	14
Golden redfish	-	-	4	<1
Deepwater redfish	-	-	<1	<1

Table 3-14.- Traditional semi-artesanal system. CPUE (Kg/1000 hooks) of the main species by investigated zone (preliminary).

SPECIES	ZONE			TOTAL
	A	B	C	
Golden redfish	-	12	627	448
Cardinalfish	339	-	-	81
Deepwater redfish	-	8	102	73
Great lanternshark	9	102	47	41
Tusk	-	14	56	40
Common mora	15	-	-	4
Leafscale gulper shark	13	-	-	3
Portuguese dogfish	1	-	-	<1

Table 3-15.- Norwegian automatic system. CPUE (Kg/1000 hooks) of the main species by investigated depth range (preliminary).

Depth range	Species								
	Leafscale gulper shark	False catshark	Cardinal fish	Mora	Great lanternshark	Portuguese dogfish	Tusk	Golden redfish	Deepwater redfish
<500 m	-	-	-	-	-	-	25	18	-
501-600 m	-	-	-	-	-	-	-	-	-
601-700 m	-	-	-	-	-	-	-	-	-
701-800 m	133	51	-	51	157	-	135	2	<1
801-900 m	241	60	4	67	25	32	16	1	-
901-1000 m	301	120	110	73	2	17	-	-	-
1001-1100 m	321	260	51	41	77	44	-	-	-
1101-1200 m	49	43	1	12	84	77	-	-	-
>1201 m	86	128	-	3	13	146	-	-	-
TOTAL	257	127	59	57	39	31	14	<1	<1

Table 3-16.- Traditional semi-artesanal system. CPUE (Kg/1000 hooks) of the main species by investigated depth range (preliminary).

DEPTH RANGE	SPECIES							
	Golden redfish	Cardinal fish	Deepwater redfish	Great lanternshark	Tusk	Mora	Leafscale gulper shark	Portuguese dogfish
501-600 m	739	-	181	43	40	-	-	-
601-700 m	705	51	90	41	73	3	<1	-
701-800 m	397	151	68	36	35	7	2	<1
801-900 m	309	154	32	35	31	2	8	-
901-1000 m	22	6	7	39	13	-	9	5
1001-1100 m	-	36	-	79	2	-	6	-
1101-1200 m	-	-	1	51	-	1	8	-
>1201 m	-	-	-	39	-	-	11	-
TOTAL	448	81	73	41	40	4	3	<1

3.8 Portugal

Mainland slope waters

The artisanal segment of the commercial fishing fleet of mainland Portugal is responsible for the largest landings of deep-water species (85.6% of a total landing in 2004 of 5288 tonnes) (WD by Figueiredo and Machado 2005). The majority of these landings are due to fisheries operating in the Portuguese continental slope along the west coast of mainland Portugal, namely Viana do Castelo, Nazaré (near Peniche), Peniche, Sesimbra and Sagres (Table 3-17). The full landings data were included in Table 2.1.

Table 3-17. Landings (tonnes) of the most important deep-water species in some Portuguese landing ports in 2004.

	Viana Castelo	Póvoa Varzim	Nazaré	Peniche	Sesimbra	Sagres	Lagos	Portimão	V.R.Sto. António	*TOTAL*
Aphanopus carbo	0	0	0	10	2264					*2274*
Centrophorus granulosus	14	0	2	34	6	3		8	3	*69*
Centrophorus squamosus	71	5	0	0	365	5			0	*446*
Centroscymnus coelolepis			0	1	497	6				*503*
Conger conger	67	37	79	233	44	75	20	32	16	*604*
Deania calcea		0	0	2	143					*146*
Galeus melastomus			4	14		6		2	21	*47*
Oxynotus centrina		0	27	3		19		2	1	*53*
Pagellus acarne	5	1	26	84	19	22	57	117	4	*335*
Pagellus bogaraveo	3	0	9	58	3	71	1	3	0	*148*
Phycis spp.	1	1	8	82	31	44	9	16	8	*201*
Polyprion americanus	0	0	3	75	4	14		0	0	*97*
Scorpaenidae	0		6	46	8	16	0	17		*93*
Scyliorhinus Spp.	5	13	99	0	20	25	2	44	45	*254*

In late 2004 a collaboration was initiated by IPIMAR and the General Directorate of Fisheries and Aquaculture to collate the available information from log books of licensed fishing vessel for capturing deep-water species. During 2005 new estimates of effort should be available.

The Azorean archipelago

The Azores deep-water fishery is a multispecies and multigear fishery (WD by Pinho 2005, Fig 3-11). The changes over time in the fishery seem to be dominated by the dynamic of the target species *Pagellus bogaraveo*. However, others commercially important species are also landed and the target species seems to change seasonally according abundance, species vulnerability and market. The fishery is clearly a typical small-scale one predominating small vessels, <12m (90% of the total fleet) using mainly traditional bottom long-line and several types of hand lines. The ecosystem is a seamount type with fishing operations occurring in all available areas (coastal and seamounts within the Azorean EEZ) until 1000 m depth, catching species from different assemblages, with a mode on the 200-600 m strata (intermediate strata where the most commercially important species occur).

Since the 1990s the landings of most of the commercially important species have decreased (Fig. 3-11). In 1998 some technical measures were introduced by the regional government to prevent overexploitation (including fishing restrictions by area, vessel type and gear, fishing licence based on landing threshold and minimum lengths). Under the EU CFP TACs where introduced for some species, i.e. blackspot seabream (*Pagellus bogaraveo*), black scabbardfish *(Aphanopus carbo*), alfonsinos (*Beryx* sp.), and deep-water sharks. In order to reduce effort on traditional stocks, attempts have been made to start exploitation of the deeper strata (>700m), but the market has limited the expansion of the fishery.

Since 2000 the number of vessels using bottom long-line declined considerably because a significant proportion of the total available area to fishing (coastal areas on a range of 3 miles) was forbidden to this gear. Bottom long-line is now actually a seamount fishery. A change from bottom long-line to hand line has been observed with a higher frequency during the last

three years. However, no significant recovery has been observed on the landings for any of the species.

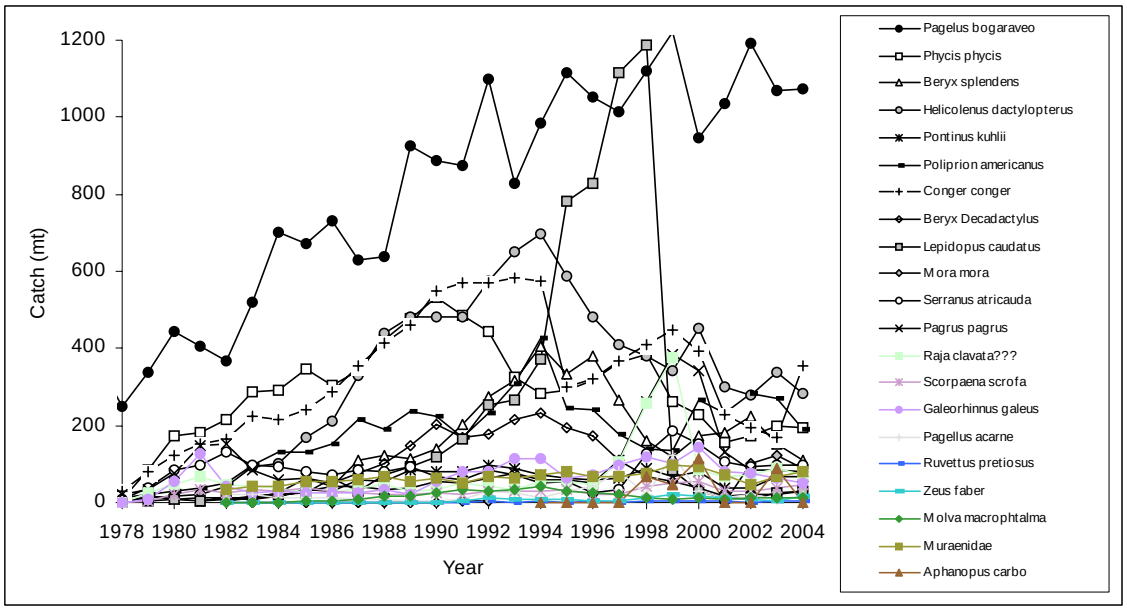


Figure 3-11. Landings of demersal species (includes deep-water) from the Azores (ICES area X).

Landings from the Azores were included in Table 2.1.

Disaggregated landing data by vessel is available from 1985. However, information by gear type is not available. Annual catches in weight include only the official landings collected in the Azorean port auctions (freeze or transformed landings are not quantified).

It must be noted that the definition of "deep-water species" is not quite appropriate for the Azorean fishery. Some species occur both in shallow and deep-water strata and literally all the Azorean fleet can be considered a deep-water one. However, landings of deep-water species as defined by ICES represent at the moment a minor fraction of total demersal landings. The exploitation of these species is not economically profitable under the actual framework of a small-scale fishery.

Standardized fishery effort and size frequency distributions for the landings will be reported during the 2006 assessment meeting.

3.9 The United Kingdom

England and Wales

No new information in addition to landings given in Table 2-1. England and Wales were the only countries that reported landings split by EEZs.

Scotland

No new information except landings given in Table 2-1 was presented.

3.10 Denmark

At present 4 species, classified as 'deep water species'; ling (*Molva molva*), tusk (*Brosme brosme*), roundnose grenadier (*Coryphaenoides rupestris*), and greater silver smelt *(Argentina silus*) are of some importance to the Danish fisheries (WD by Munch-Petersen 2005).

The Danish landings of ling and tusk are taken mainly as by-catches in various trawl fisheries carried out in ICES sub-areas IIIa and IVa (northern North Sea). A few Danish vessels have since the early 1990s conducted fisheries targeting roundnose grenadier and greater silver smelt in the deeper parts of the Skagerrak (ICES Sub-area IIIa) and the northern North Sea.

The Danish fisheries taking these species may be grouped according to mesh size in the trawls:

- Bottom trawls, mesh size > 100 mm. Fisheries targeting *Nephrops*, anglerfish and mixed roundfish species, mainly in the eastern part of the northern North Sea (Norwegian Deep).
- Bottom trawls, mesh size 70 - 100 mm. Fisheries targeting mainly *Nephrops* in IIIa and the northern North Sea. This mesh size is also used by the vessels targeting roundnose grenadier and greater silver smelt.
- Bottom trawls, mesh size 35 - 45 mm. Fisheries targeting deep-water shrimp (*Pandalus*) in Skagerrak and the northern North Sea.
- Bottom trawls, mesh size < 25 mm. Fisheries targeting fish species for reduction.

According to the Danish logbook records for these 4 species the majority of the by-catches of ling and tusk are taken by trawls with mesh size >100 mm in the northern North sea (Norwegian Deeps, IVa) in mixed fisheries for *Nephrops*, various roundfish species and anglerfish (see Tables 9.6, 11.4, 12.2 & 14.3 in WD by Munch-Petersen). In addition, small quantities of ling and tusk are taken in line fisheries. Of lesser importance are the by-catches in the shrimp fisheries (mesh size in trawl: 35 - 45 mm).

In the Skagerrak (IIIa) roundnose grenadier and greater silver smelt dominate the Danish landings of deep-sea species. These two species are taken by trawls with mesh size 70-100 mm (mixed *Nephrops* and roundfish trawls). The catches of roundnose grenadier are taken in the deeper part of the Skagerrak, while greater silver smelt is also taken in the northern North Sea. Particularly in the northern North Sea, there is a mixture of *Argentina silus* and *Argentina sphyraena.* At present two vessels target silver smelt and roundnose grenadier. At present most of the Danish landings of roundnose grenadier are used for oil and meal, while a significant part of the landings of greater silver smelt is for human consumption.

Small quantities of blue ling, rabbitfish (*Chimaera monstrosa*) and lantern shark (*Etmopterus*) have been recorded in the by-catches.

Working group estimates of the total 2004 landing of roundnose grenadier was 9871 tonnes (the Danish landings estimates used by the WG is based on logbook data and biological sampling. They differ from the official figures, but are considered to be better estimates.) 2005 landings data reported by the Danish Directorate of Fisheries (available on www) suggest that the exploitation is at the 2004 level or higher. ***This means that the landings from IIIa are by far the highest for any of the ICES Sub-areas, and far exceeds the EU TAC for the IIIa.*** It is remarkable that this fishery has expanded rapidly over the last few years (landings in 2002 and 2003 reported to WGDEEP were about 4250 t) during which repeated recommendations for reductions have been issued by ICES.

3.11 Others

Germany and Greenland reported minor landings that were included in Table 2.1. The Greenland landings were all by-catches in trawl fisheries targeting Greenland halibut in Division XIVb.

Countries/vessels that are not members of ICES but fishing in the NEAFC convention area are supposed to report landings and effort to the Commission. The WG therefore requested data from NEAFC but did not receive any. Of special interest would be data for activity and landings from the NEAFC Regulatory Area (i.e. international waters).

4 The Biological Status of the Stocks

WGDEEP does not carry out assessments by correspondence, so the following is merely a presentation of available updated information on e.g. CPUE trends and size compositions without an evaluation of trends in abundance or status. New assessment rounds are due at the WGDEEP meeting in 2006.

As has been noted in previous reports, the stock structure of most of the deep-water species is uncertain. Therefore, the following account summarises new data and updated time-series by ICES Sub-area or Division, but does not assume that areas referred to are inhabited by separate stocks.

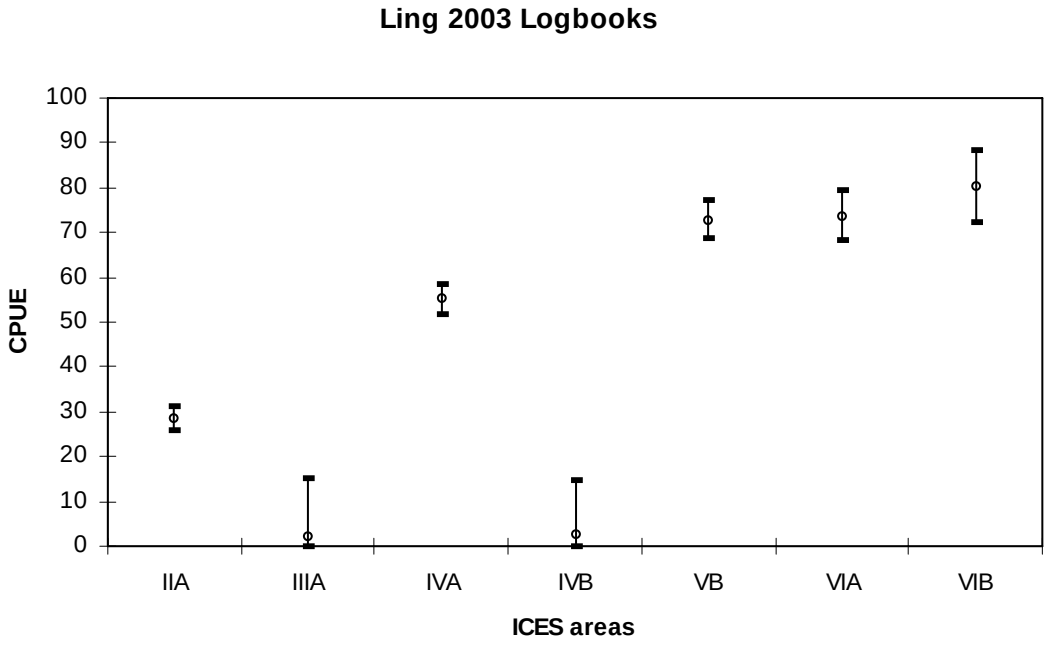
4.1 Ling

Norwegian long-liner CPUE data (several ICES sub-areas and Divisions)

Provisional estimates of the catch-per-unit of effort (CPUE) generated by logbook data and the data from the reference fleet (four vessels that provide data directly to the Institute of Marine Research) were presented and compared (WD by Helle and Pennington 2005).

The data series remains very short because logbook data of satisfactory quality and quantity has only recently become available (2000-).

The estimate of CPUE is the average weight (kg) of fish caught per 1000 hooks per day. Only for 2003 are there sufficient data to estimate CPUE for the reference fleet that can be compared with estimates generated by the logbooks (Figures 4-1). The figures show that the data from the reference fleet tracks the data from the logbooks relatively well when there is enough data, such as for Division IIa.



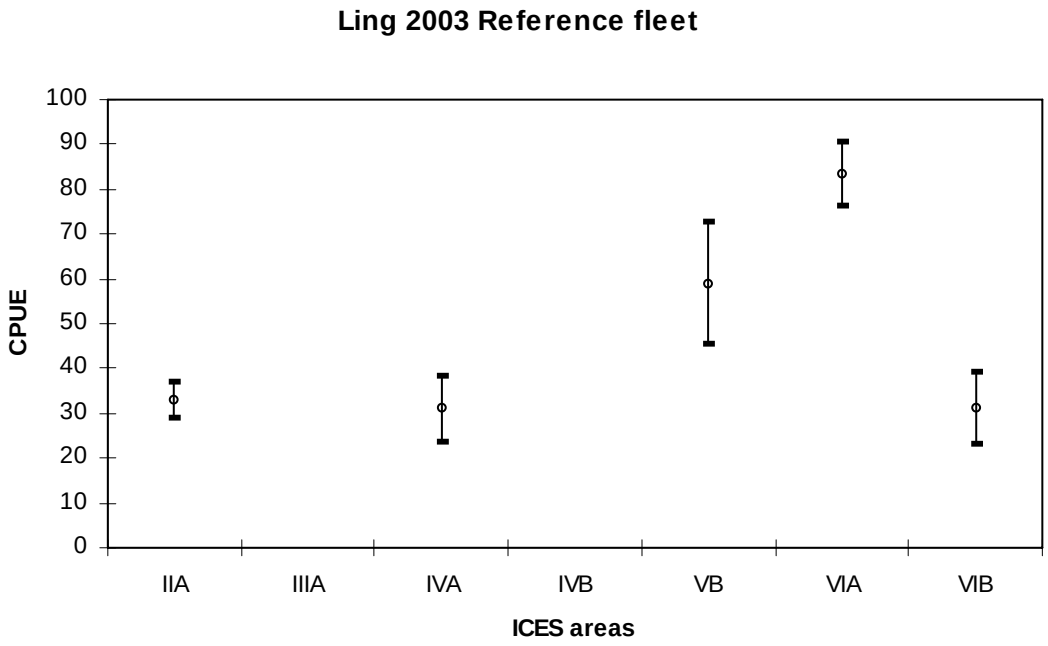


Figure 4-1. The estimated CPUE of ling in 2003 from the logbooks and the reference fleet, the bars denote the 95 percent confidence intervals.

Division IIIa and IVa

The Danish series of CPUE data from trawls of different mesh sizes was extended (WD by Munch-Petersen 2005). Ling is a by-catch in these fisheries. The CPUE seems to vary without any trend (Table 4-1)

.

Table 4-1. Ling. Landings and CPUE for Danish trawlers. Based on Danish logbook records.

DENMARK: Log-book recorded catch and effort Species: Ling ICES area: IIIA + IV

Year	Mesh size in Trawl: >100 mm			70 - 100 mm			30 - 45 mm			< 25 mm			All trawls
	Kg	days	CPUE	Kg	days	CPUE	Kg	days	CPUE	Kg	days	CPUE	CPUE
1992	47244	400	118.1	215082	2143	100.4	6374	249	25.6	236253	1593	148.3	115.2
1993	32804	378	86.8	222476	1937	114.9	20473	608	33.7	262401	1830	143.4	113.2
1994	12137	156	77.8	236736	2148	110.2	7822	250	31.3	167136	1075	155.5	116.8
1995	8174	123	66.5	208869	1482	140.9	6867	227	30.3	119825	700	171.2	135.8
1996	4845	95	51.0	325041	2414	134.6	8391	196	42.8	76445	754	101.4	119.9
1997	82595	227	363.9	430248	2340	183.9	4660	130	35.8	47360	459	103.2	179.0
1998	42280	329	128.5	295028	1605	183.8	14949	174	85.9	47588	459	103.7	155.8
1999	80053	437	183.2	373549	2363	158.1	17262	405	42.6	22141	330	67.1	139.5
2000	36006	281	128.1	353925	2861	123.7	8332	235	35.5	32625	375	87.0	114.8
2001	141515	645	219.4	463486	3465	133.8	12750	299	42.6	118585	355	334.0	154.6
2002	465998	3478	134.0	32569	611	53.3	7040	182	38.7	29769	466	63.9	113.0
2003	703087	4184	168.0	38299	479	80.0	5854	156	37.5	25640	370	69.3	148.9
2004	498048	3041	163.8	54181	858	63.1	8838	199	44.4	31152	313	99.5	134.3

Division Va

The following was extracted from the WD by Sigurdsson (2005)

Icelandic survey data

In the Icelandic Groundfish survey which has been conduced annually in March since 1985 gives trends on fishable biomass of many exploited stocks on Icelandic fishing grounds. Total of more than 500 stations are taken annually in the survey at depths down to 500 meters. Therefore the survey area does not cover the most important distribution area of ling and blue ling as their distribution area goes to greater depths. Figure 4-2 shows the trend in the fishable biomass of ling. Number of stations with the species differs from year to year. Survey length distributions of ling are shown on Figure 4-3.

The survey index for each species is a biomass index of the fishable stock, computed by using a fishable stock ogive. The index (see Pálsson *et al*, 1989) is depth stratified. The index indicates a decrease in the fishable biomass of ling since the survey started in 1985 until 2001, but since then the indices for all the species have increased significantly. The index of fishable stock of ling is now higher than it was in 1985 after a steep increase in the last 3 surveys.

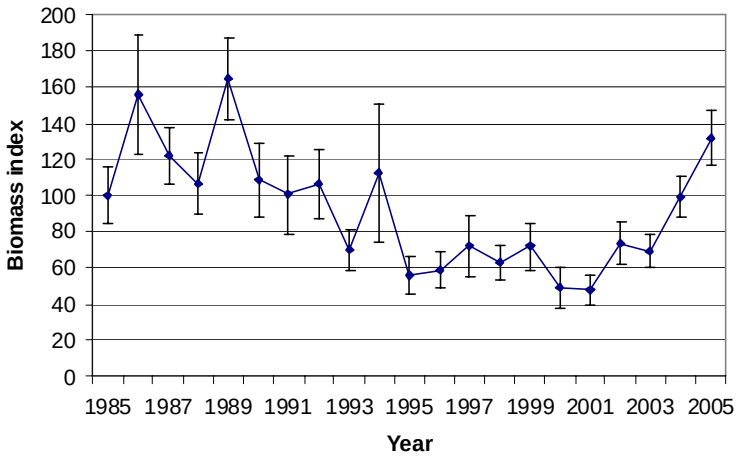


Figure 4-2. Ling. Index on fishable biomass calculated form the Icelandic groundfish survey at the Icelandic shelf.

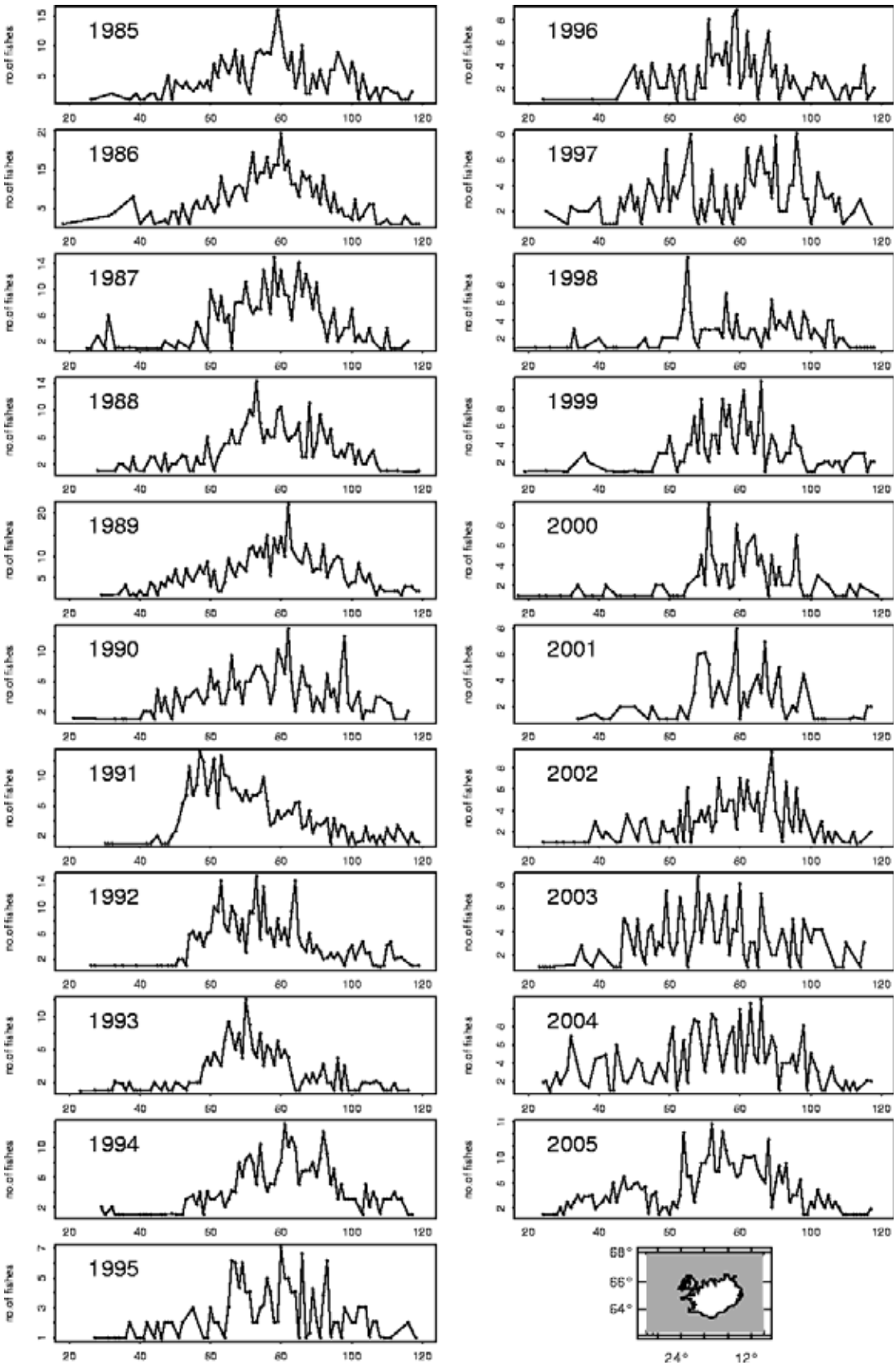


Figure 4-3. Ling length distributions in the Icelandic groundfish survey in March 1985-2005.

Catch per unit of effort and effort data from the commercial fleets

Figures 4-4 shows catch per unit of effort of ling in the Icelandic long-line fishery. The CPUE is calculated using all long-line data where catches of the species was registered. Ling has been rather stable in the long-line fishery from 2000, since the decrease in 1998-1999. CPUE based on data from the trawler fleet shows an increasing trend from 1999 to 2003 but a decrease in 2004 (Fig 4-5).

The mean length in the catches has been 83-93 cm since 1996, highest in 2002 and 2003. Based on the length distributions there are no indications of any significant recruitment to the fishable stock, and the peak in the lengths are usually between 75-110 cm (Figure 4-6).

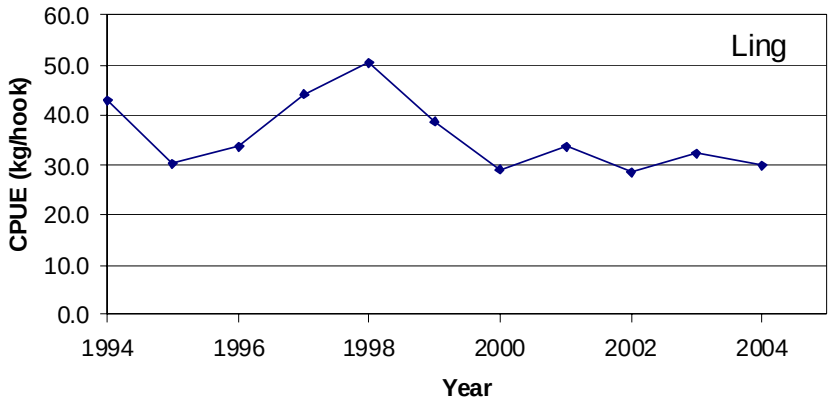


Figure 4-4. Ling catch per unit of effort calculated from the Icelandic long-line fishery (see further details and figures in WD by Sigurdsson (2005)).

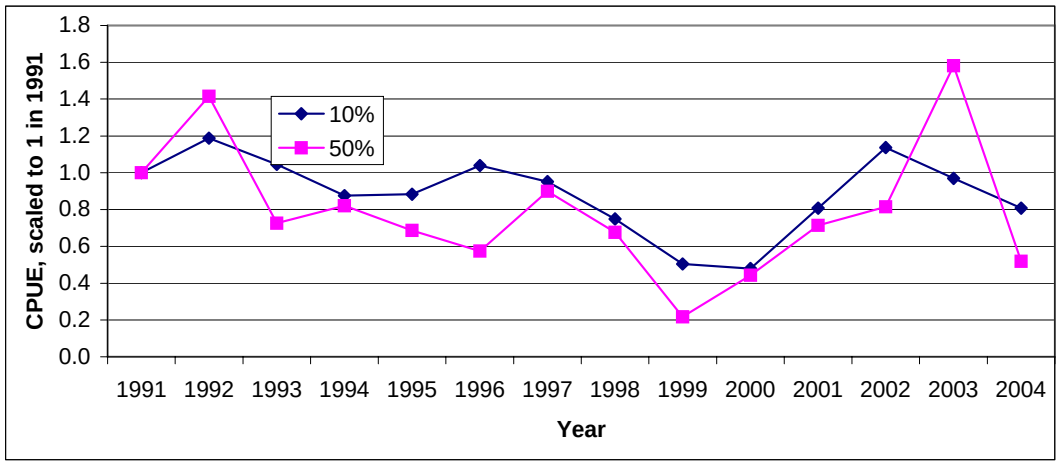


Figure 4-5. Ling catch per unit of effort calculated from the Icelandic trawler fleet. Less than 20% of the total ling in Icelandic waters is caught by bottom trawl.

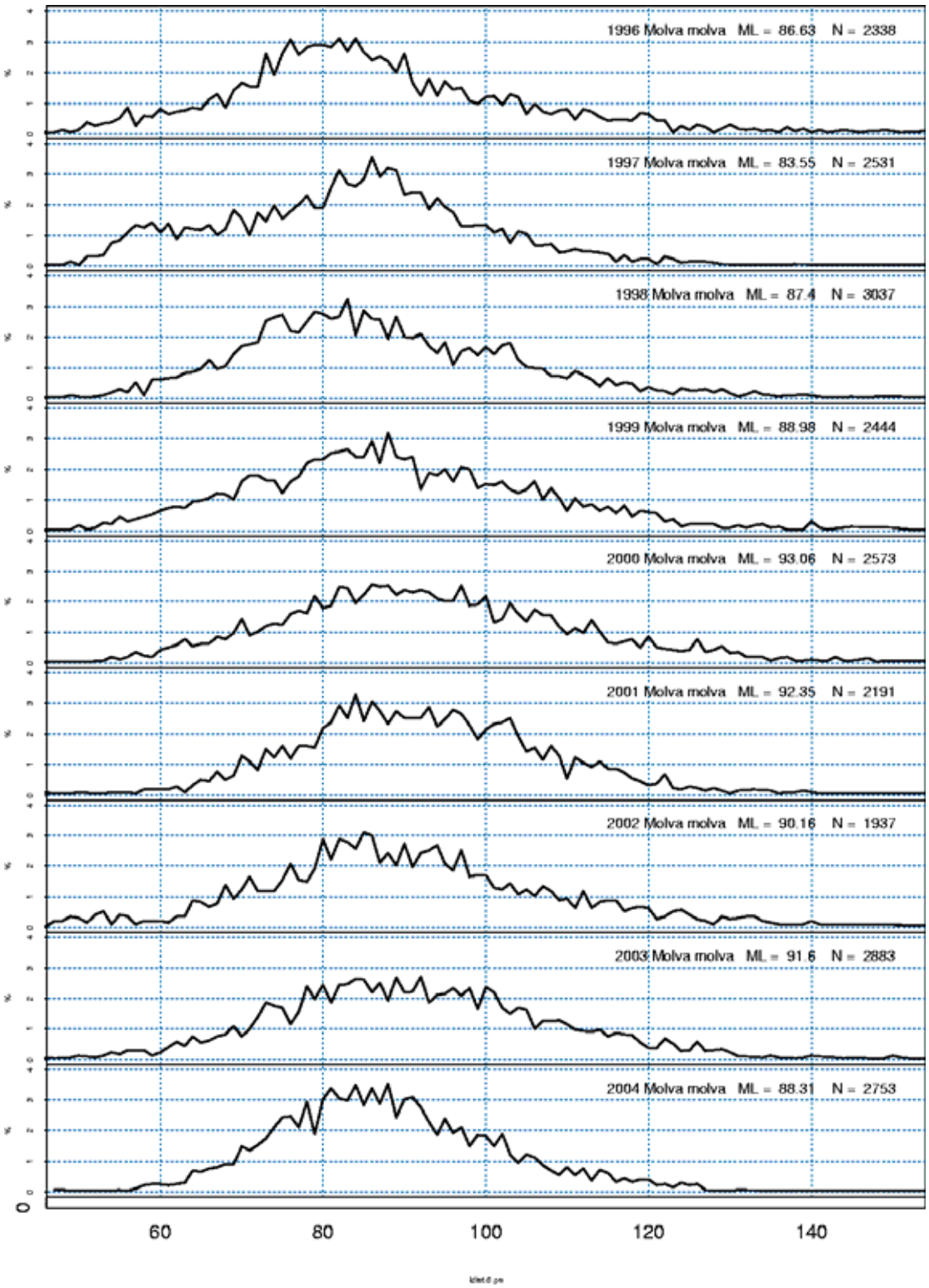


Figure 4-6. Length distribution of ling in the Icelandic catches. The number of measured fishes and mean length is also given.

Division Vb

Faroese survey and commercial CPUE were presented in the WD by Reinert (2005) and the relevant graphs for ling are shown in Figure 4-7 and 4-8.

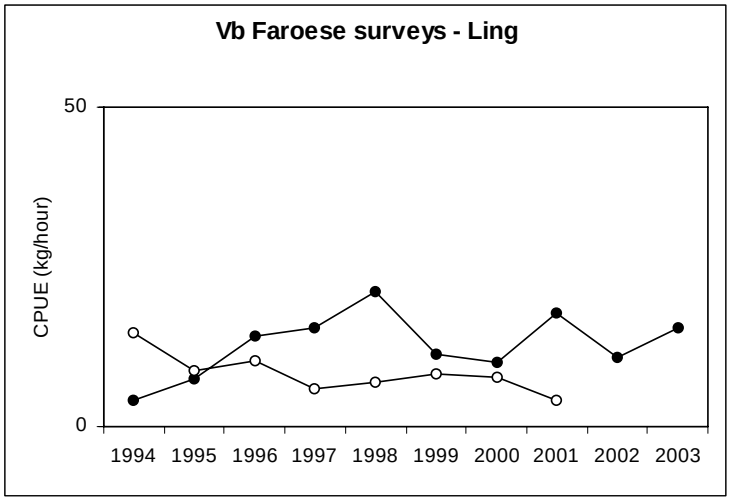


Figure 4-7. Ling in Vb. CPUE in the Faroese groundfish survey.

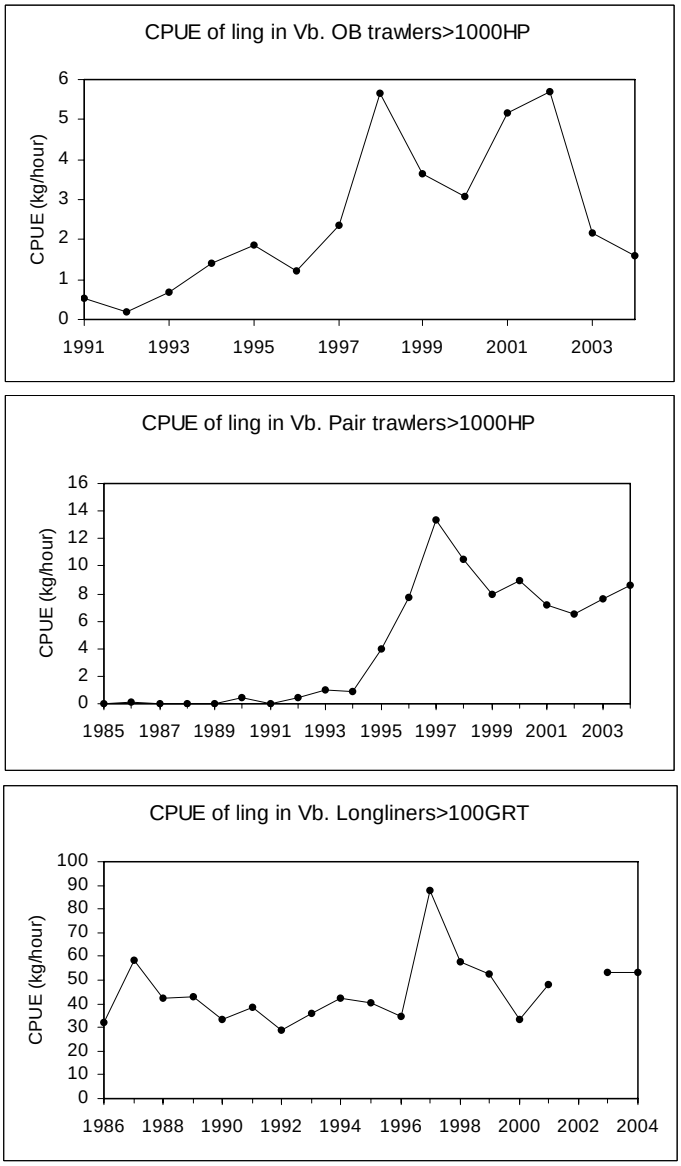


Figure 4-8. Ling in Vb. CPUE in commercial long-line and trawl fisheries.

4.2 Blue Ling

Division Va

Icelandic survey data

The blue ling index, which has a high variance, decreased by 90% in the period 1985-1995 (Fig 4-9). It remained very low until 2003, but in the two last surveys (2004 and 2005) the index has increased from being 20% of the 1985 value to the level of the 1980s. As can be seen from the length distribution in the survey (Figure 4-10), there seems to be some sign of recruitment into the fishable stock in nearest future.

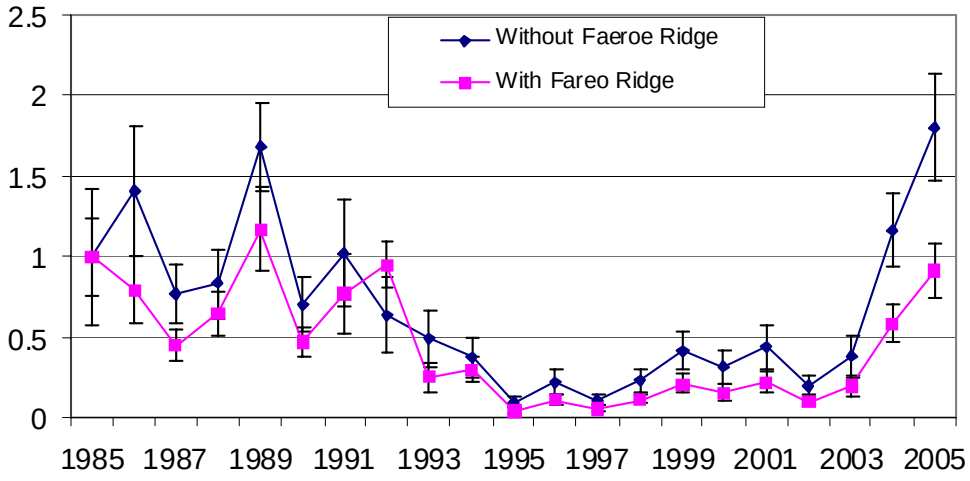


Figure 4-9. Blue ling. Index on fishable biomass calculated from the Icelandic groundfish survey on the Icelandic shelf.

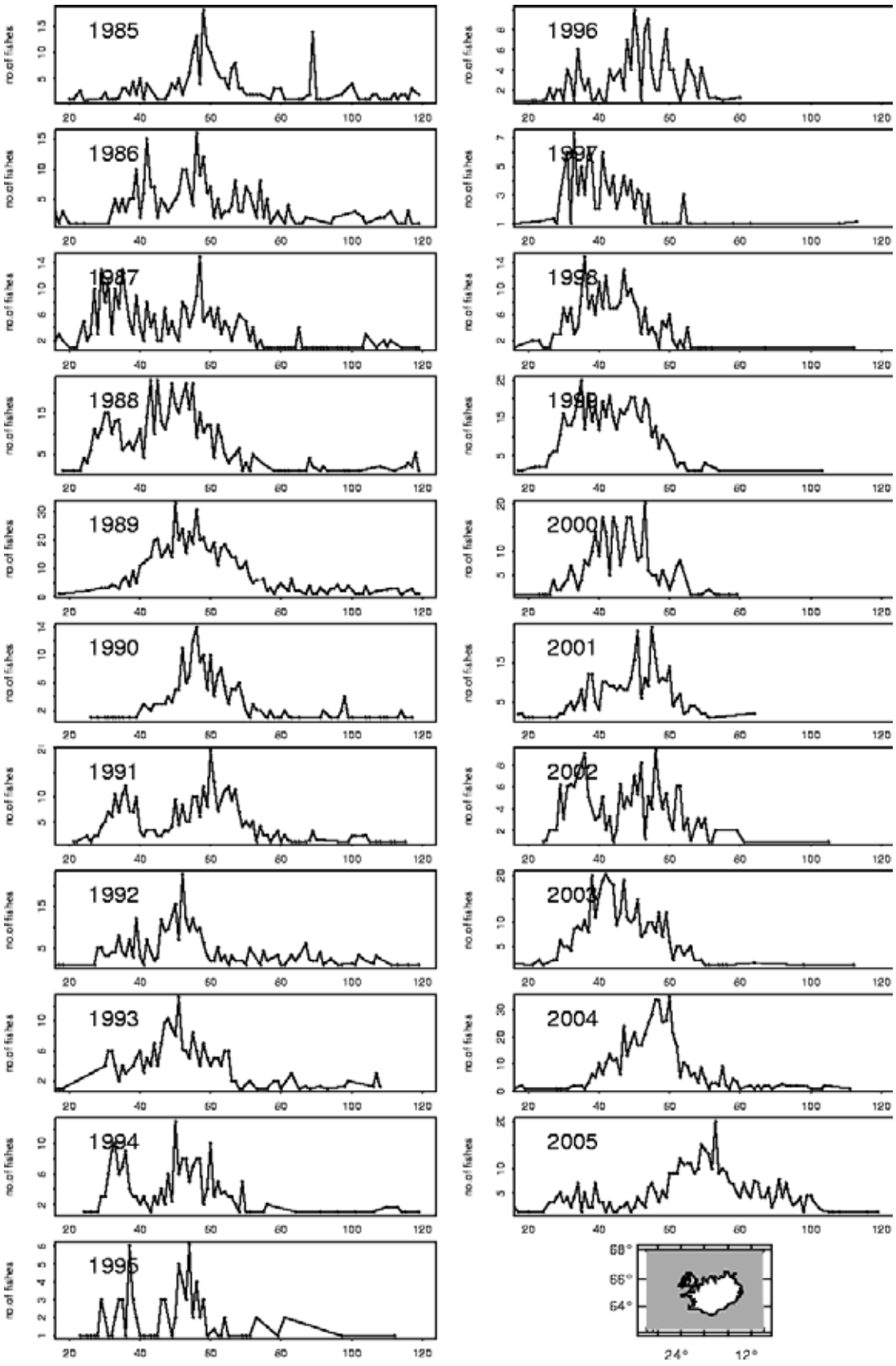


Figure 4-10. Blue ling length distributions in the Icelandic groundfish survey in March 1985-2005.

Catch per unit of effort and effort data from the commercial fleets

The blue ling CPUE from long-liners (Fig. 4-11) was higher in 1999-2000 than have been observed in the period from 1994, but the value in 2002-2004 is similar to the values prior to 1999.

Figure 4-12 shows the blue ling CPUE from the trawler fleet, based on logbooks, selecting hauls where blue ling is 10% or more of total catches in each haul.

The number of fishes measured from the catches are low, only about 1200 fishes per year on average, and therefore this low sampling might not reflect the actual lengths of the catches. However, from the length distributions (Fig. 4-13) an increased proportion of small fish (60-70 cm) that was first seen in 2000 has been followed through the length distribution from the fishery and a growth of around 4-5 cm per year is observed.

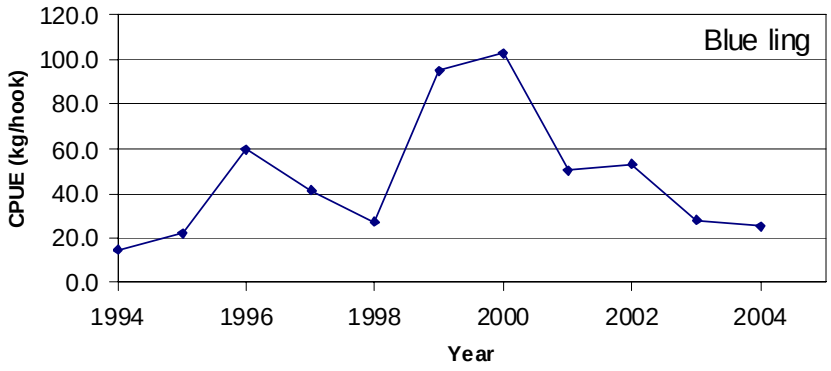


Figure 4-11. Blue ling catch per unit of effort calculated from the Icelandic long-line fishery. Very few sets reported.

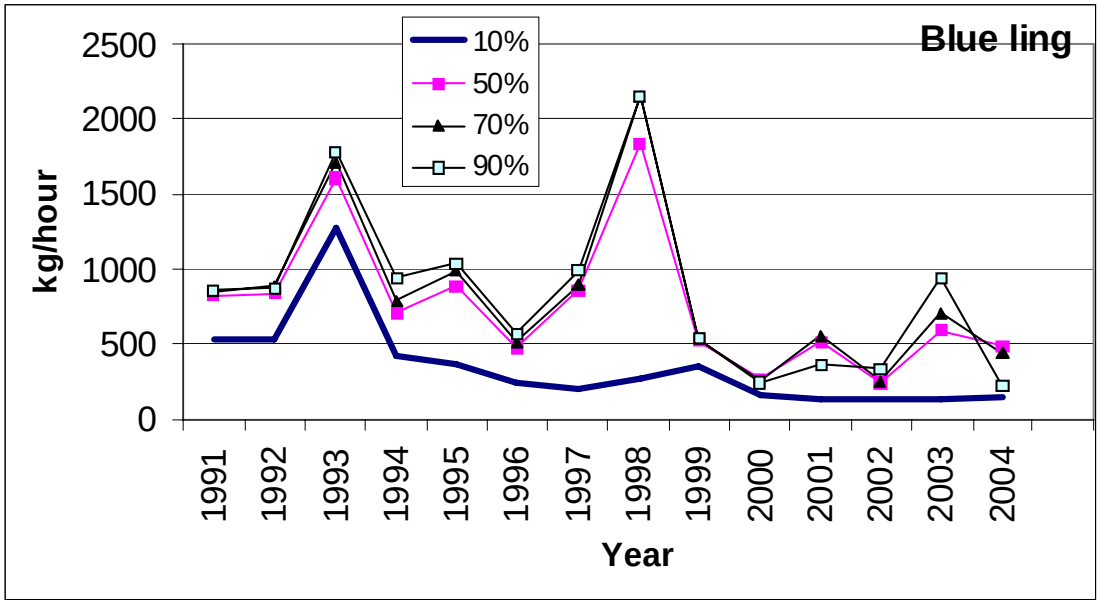


Figure 4-12. Blue ling catch per unit off effort calculated from the Icelandic trawl fishery.

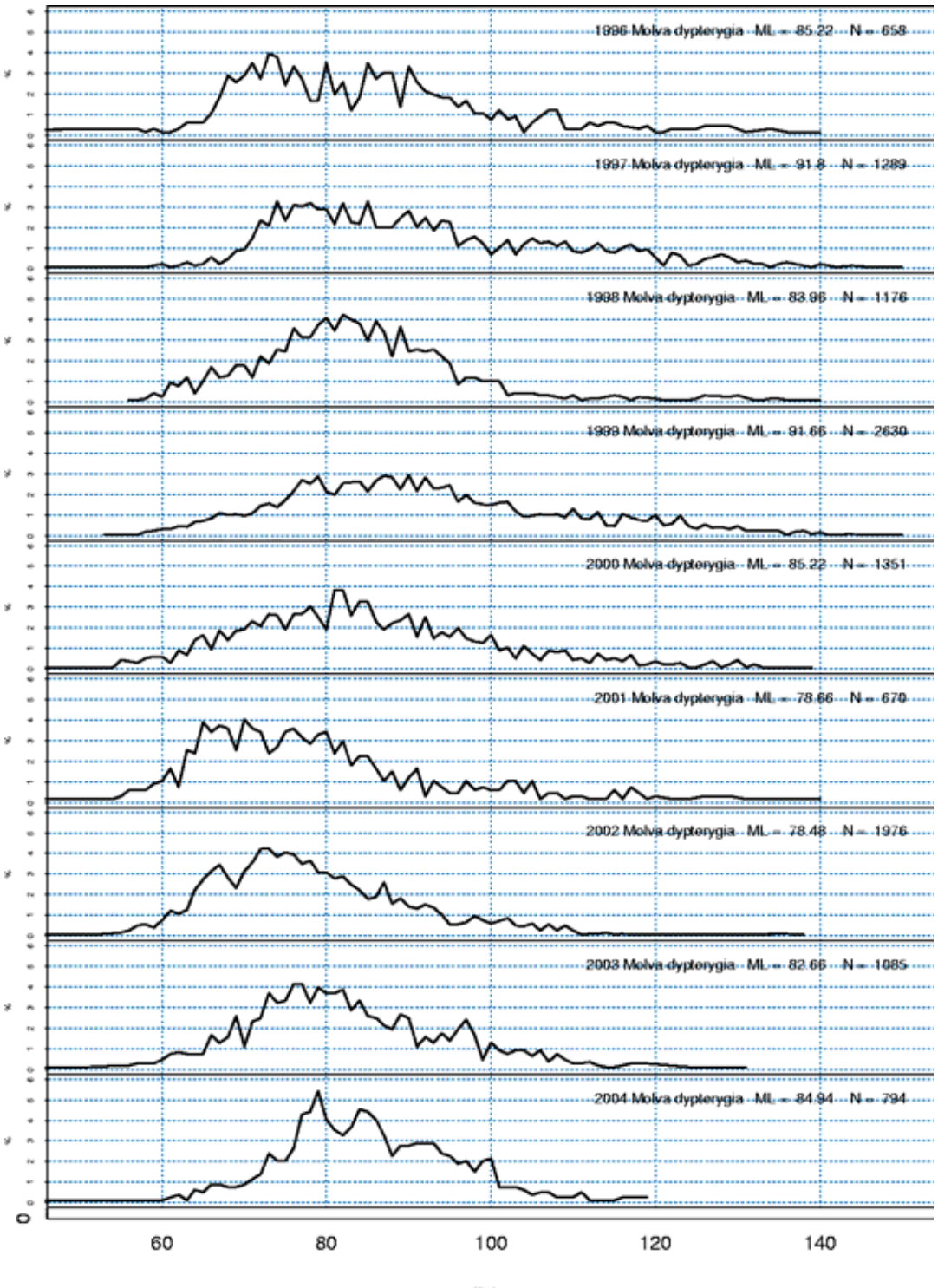


Figure 4-13. Length distribution of blue ling in the Icelandic catches. The number of measured fishes and mean length is also given.

Division Vb

Faroese survey and commercial CPUE were presented in the WD by Reinert (2005) and the relevant graphs for blue ling are shown in Figure 4-14 and 4-15.

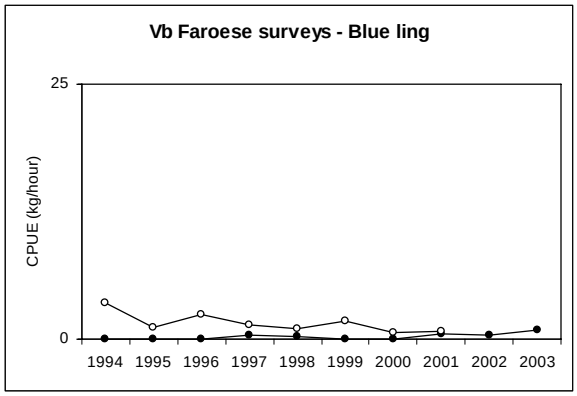


Figure 4-14. Blue ling in Vb. CPUE from groundfish survey.

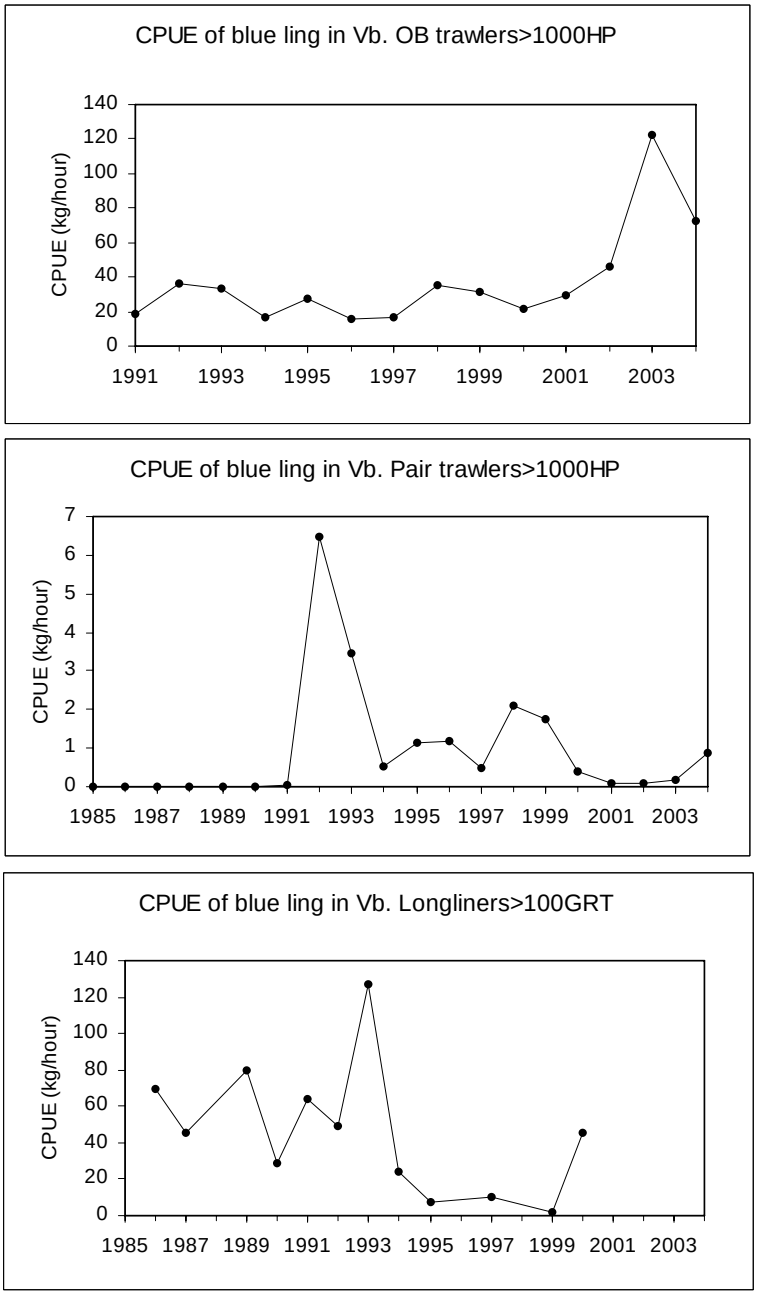


Figure 4-15. Blue ling in Vb. CPUE from Faroese trawlers and longliners.

4.3 Tusk

Norwegian long-liner CPUE data (several ICES sub-areas and Divisions)

Norwegian data were presented in the WD by Helle and Pennington (2005). Please see Ch. 4.1 on ling for further details. Results for 2003 are given in Fig. 4-16 based on data from logbooks and the reference vessels reporting directly to the Institute of Marine Research.

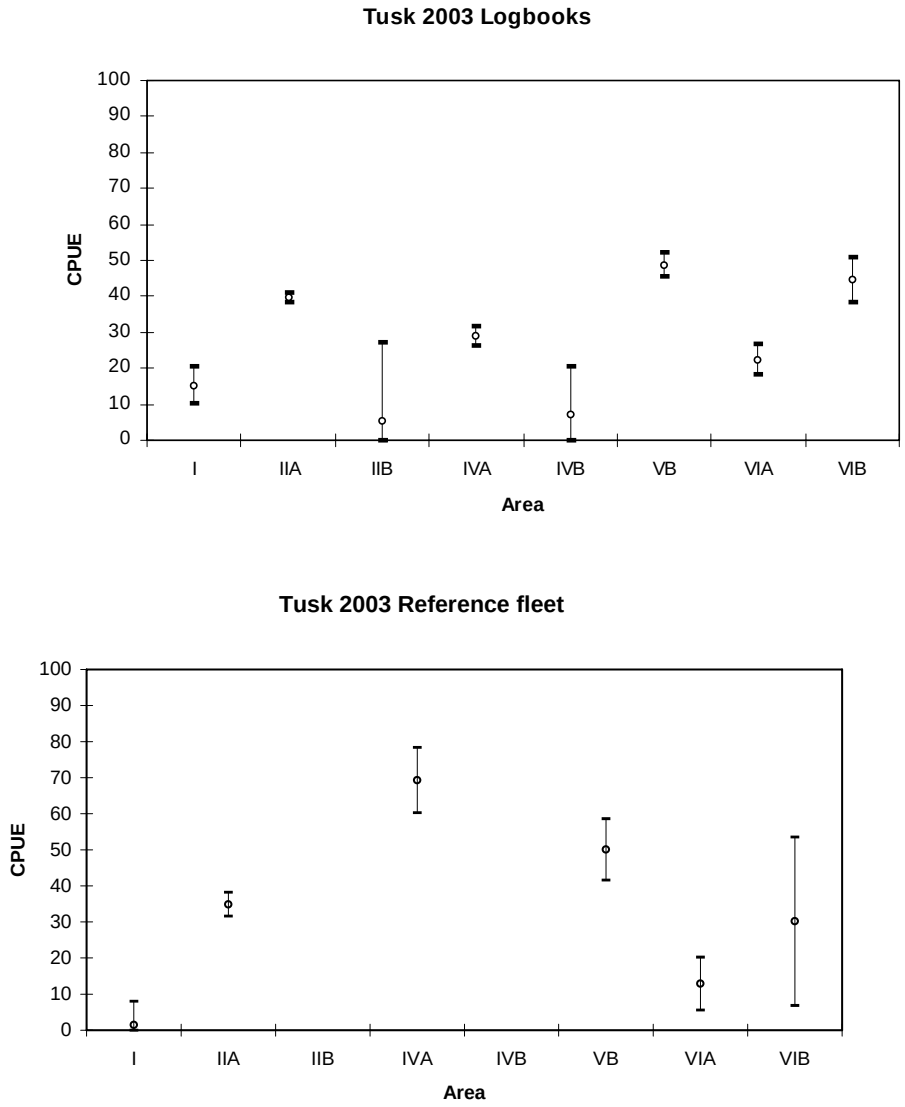


Figure 4-16. The estimated CPUE of tusk in 2003 from the logbooks and the reference fleet, the bars denote the 95 percent confidence intervals

Division IIIa and IVa

The Danish series of CPUE data from trawls of different mesh sizes was extended (WD by Munch-Petersen 2005). Tusk is a by-catch in these fisheries. The CPUE seems to have remained stable since an apparent decline in the early 1990s (Figure 4-17).

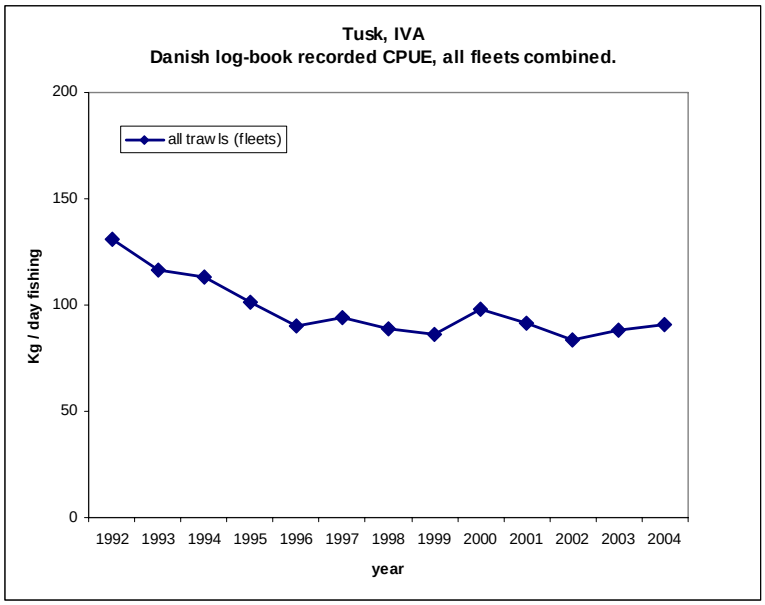


Figure 4-17. Tusk in IIIa and IV. Danish CPUE from all (trawler) fleets combined.

Division Va

Icelandic survey data

The index of fishable biomass of tusk has increased from being below 50% of the 1985 index in 2001 to being around 75% of the 1985 value (2005) (Fig. 4-18). The index of tusk has also increased since 2001 and is now around 75% of the 1985 value. Length distributions are shown in Fig. 4-19.

Catch per unit of effort and effort data from the commercial fleets

The tusk CPUE decreased continuously from 1997-2001 (Fig. 4-20). After a small increase in 2002 and 2003, the CPUE in 2004 was lower than has been observed in the whole period since 1994. More than every second fish is below 55 cm, i.e. immature fish. It should be noted that area closure has been in force for the last 4 years to protect juveniles on important tusk fishing areas along the south coast.

As has been stated in previous reports, it is expected that recruitment to the fishable stock might be occurring. Mean length of tusk decreased from 1999-2002 but has increased slightly again in 2003 and 2004, (Fig. 4-21). This decrease in mean length in 1999-2002 can, at least partly, be explained by the increased recruitment. As known, tusk is slow growing fish that can be more than 20 years old. It becomes mature at age of about 8-10 years and at that time it is around 55 cm length. At 56 cm length, approximately 50% of the tusk in Icelandic waters is mature, but that is close to the mean length in the catches. This means that large proportion of the tusk is caught as juveniles.

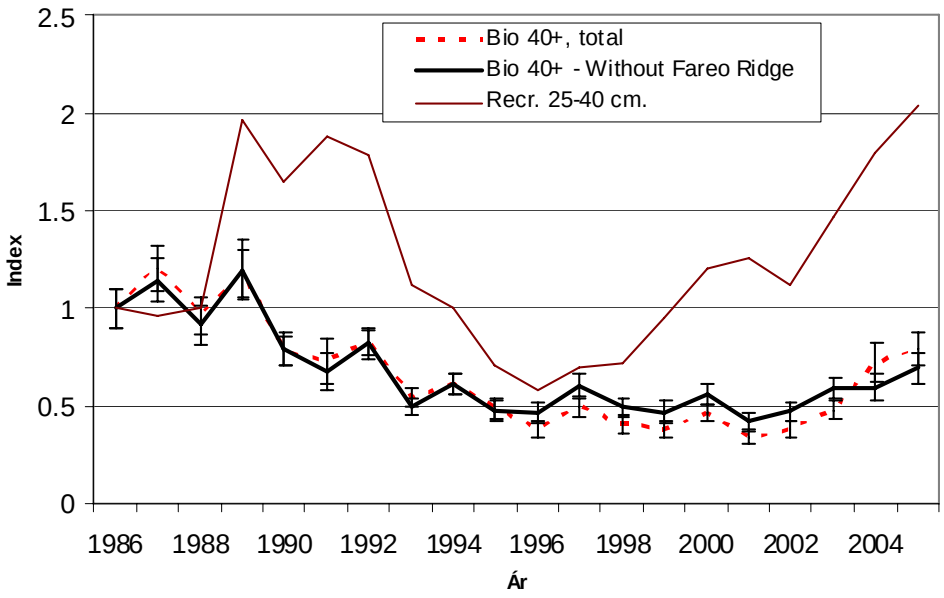


Figure 4-18. Tusk. Index on fishable biomass calculated from the Icelandic groundfish survey

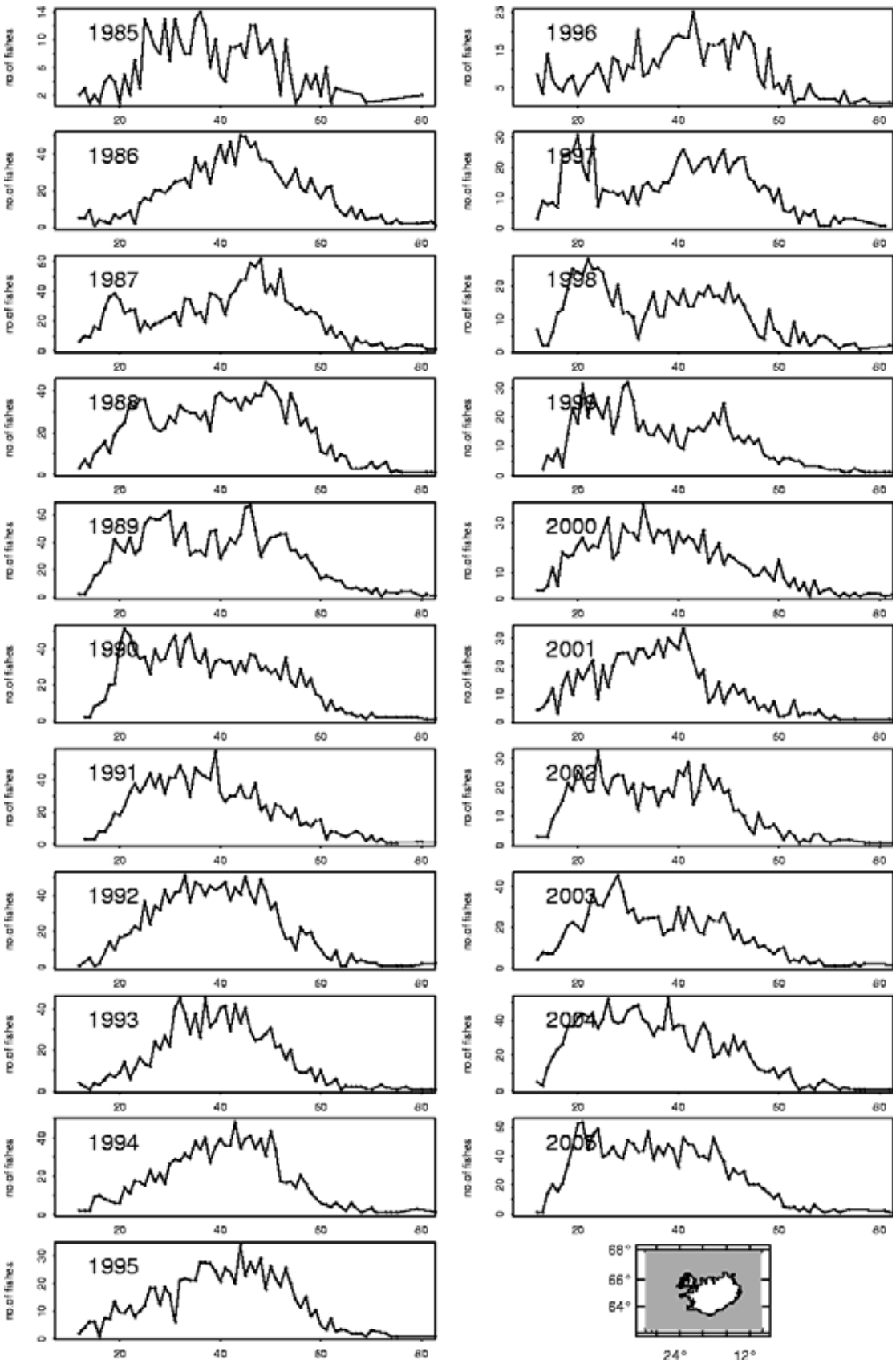


Figure 4-19. Tusk length distributions in the Icelandic groundfish survey in March 1985-2005.

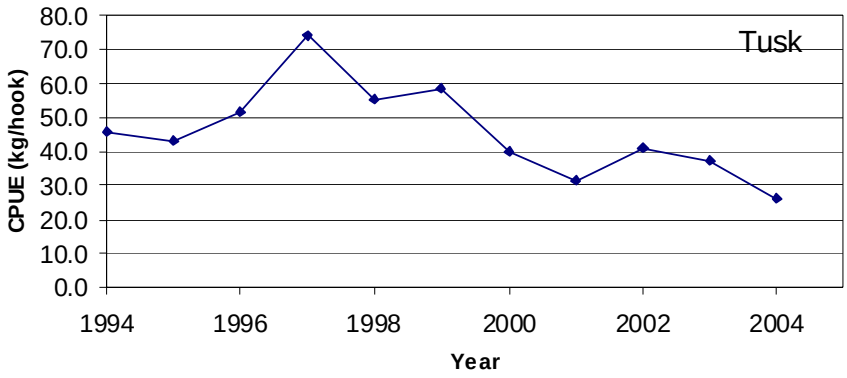


Figure 4-20. Tusk catch per unit of effort calculated from the Icelandic long-line fishery.

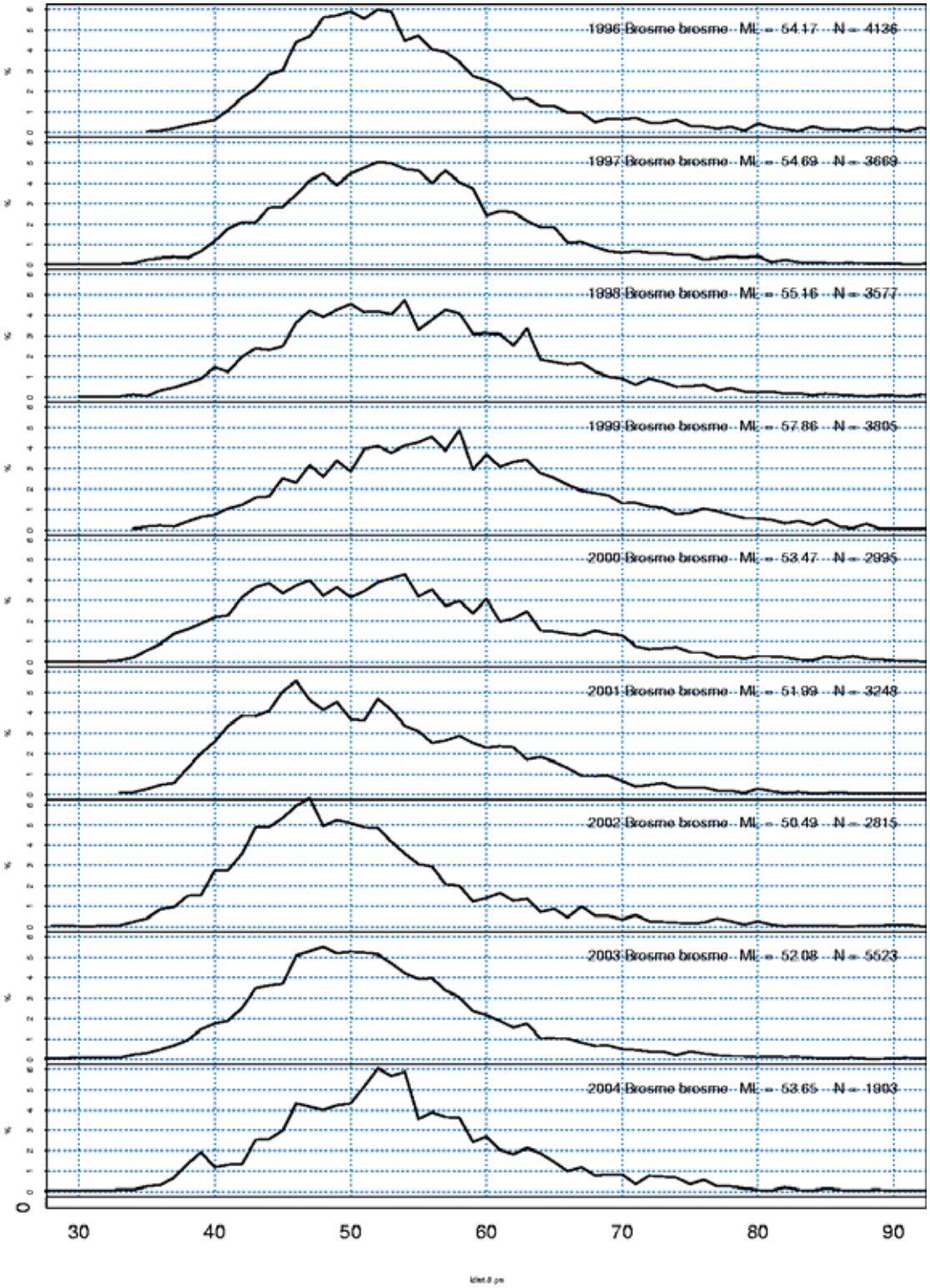


Figure 4-21. Length distribution of tusk in the Icelandic catches since 1996. The number of measured fishes and mean length is also given.

Division Vb

Faroese survey and commercial CPUE were presented in the WD by Reinert (2005) and the relevant graphs for tusk are shown in Figures 4-22 and 4-23.

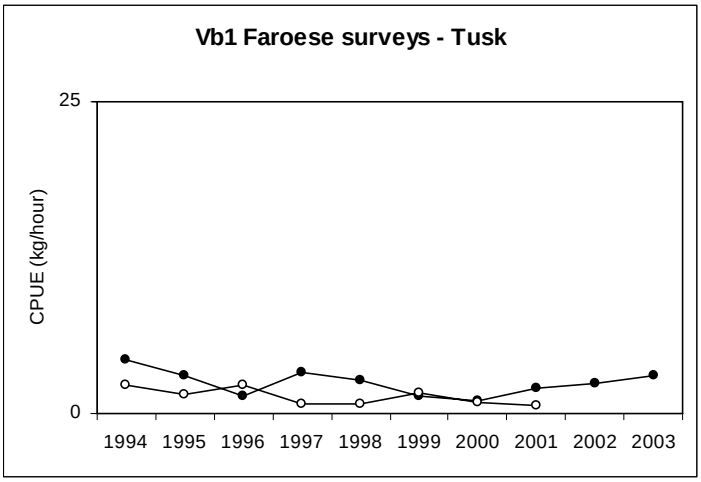


Figure 4-22. Tusk in Vb. Survey CPUE, Faroese groundfish survey.

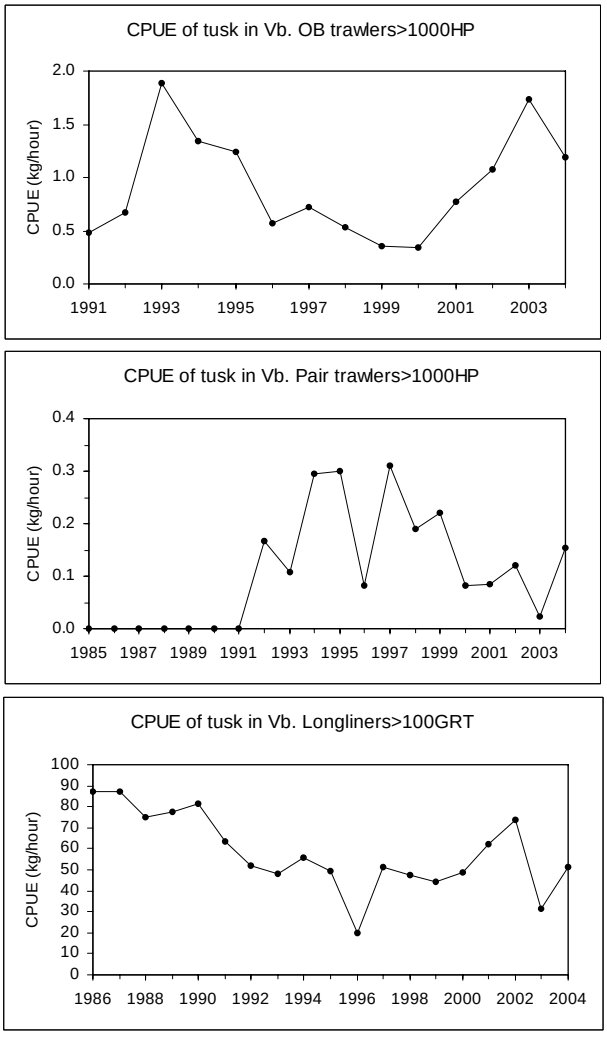


Figure 4-23. Tusk in Vb. CPUE of commercial Faroese long-liners and trawlers.

4.4 Orange roughy (*Hoplostethus atlanticus*)

The following information was provided by Ireland (WD by Johnston and Clarke, 2005).

In 2005 the Marine Institute, together with University College Cork and Bord Iascaigh Mhara carried out an orange roughy acoustic survey on the slopes to the west and north of the Porcupine Bank. The objectives of the study were:

1. 1. To collect acoustic data over selected areas on the western and northern rises of the Porcupine area using a scientific echosounder system mounted within a deep towed vehicle
2. 2. To use these data in conjunction with biological samples collected by the MFV Mark Amay to produce abundance estimates for orange roughy population identified within specific area
3. 3. To survey fished and un-fished areas as identified by the National Seabed Survey and other research surveys on carbonate mounds
4. 4. To deploy an ROV and multibeam echosounder over selected sea-mounds to map orange roughy habitats.
5. 5. To obtain hydrographic data from within the survey area.

Biological and discard data were collected on board a commercial fishing vessel during this survey. These data will be presented to the 2006 WGDEEP meeting.

4.5 Roundnose grenadier (*Coryphaenoides rupestris*)

CPUE data for Danish trawlers fishing roundnose grenadier in the Skagerrak for reduction to meal and oil was provided in the WD by Munch-Petersen (2005) (Table 4-2).

Figure 4-24 shows Faroese CPUE for trawlers fishing in Division Vb. This fleet traditionally has performed a mixed deep-sea fishery for blue ling, redfish, black scabbardfish and roundnose grenadier. Also they have been fishing in more shallow waters for saithe, cod and haddock. The CPUE series has been selected as a mixed deep sea fishery. However, it should be noted that in recent years they have targeted more specifically black scabbardfish, roundnose grenadier and blue ling. This has not been accounted for in selection of data.

Table 4-2. Roundnose grenadier. CPUE for Danish trawlers.

DENMARK: Log-book recorded catch and effort	**Species:**	**Roundnose Grenadier**	**ICES area:** **IIIA**

Year	Mesh size in Trawl: >100 mm			70 - 100 mm			30 - 45 mm			< 25 mm			All trawls
	Kg	days	CPUE	Kg	days	CPUE	Kg	days	CPUE	Kg	days	CPUE	**CPUE**
1992				668290	68	9827.8	56000	36	1555.6	92500	11	8409.1	**7102.5**
1993	515	2	257.5	567215	71	7988.9	419800	45	9328.9	65000	4	16250.0	**8627.3**
1994				1467785	95	15450.4	121500	46	2641.3				**11271.5**
1995				1105522	66	16750.3	974250	172	5664.2				**8738.5**
1996				1016505	79	12867.2	62100	34	1826.5				**9545.2**
1997				1321280	82	16113.2				35000	3	11666.7	**15956.2**
1998				3893000	132	29492.4	5000	5	1000.0	100000	3	33333.3	**28557.1**
1999				1586175	82	19343.6	450	5	90.0				**18237.1**
2000				1305955	98	13326.1	330000	11	30000.0	160000	6	26666.7	**15617.0**
2001				1922900	130	14791.5				112500	9	12500.0	**14643.2**
2002				2825500	134	21085.8						#DIV/0!	21085.8
2003				165150	26	6351.9							6351.9
2004	61200	7	8742.9	3073250	270	11382.4							11315.7

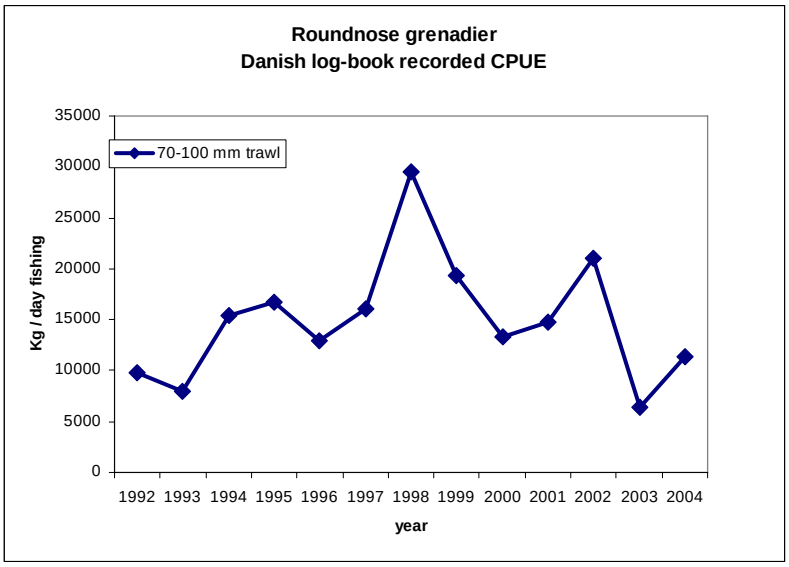


Figure 4-24. Roundnose grenadier. CPUE of Danish trawlers in IIIa. Only trawlers fishing with cod-end mesh sizes 70-100mm were included.

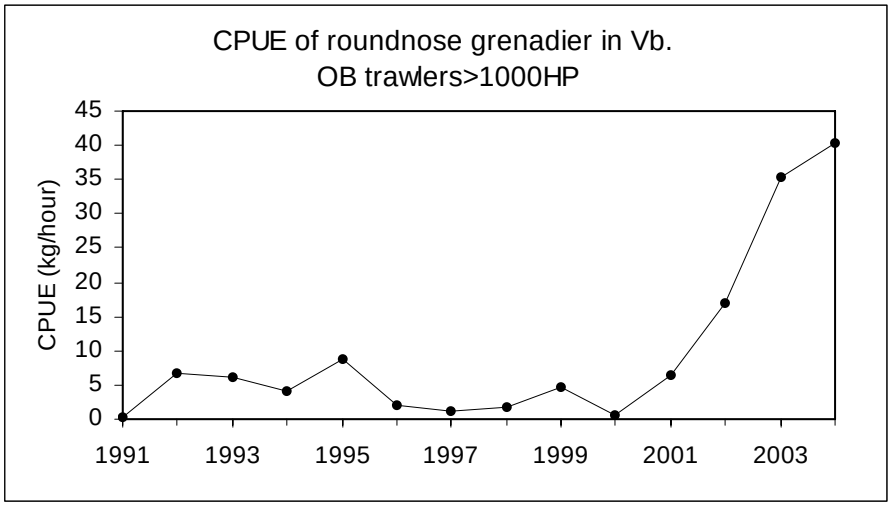


Figure 4-25. Roundnose grenadier in Vb (Faroes). CPUE of trawlers.

4.6 Greater silver smelt (*Argentina silus*)

CPUE data for Danish trawlers fishing greater silver smelt in the Skagerrak (Division IIIa) for reduction to meal and oil was provided in the WD by Munch-Petersen (2005) (Table 4-3 and Fig. 4-25).

CPUE for Faroese pair trawlers occasionally fishing greater silver smelt in Division Vb is given in Table 4-4.

Table 4-3. Greater silver smelt in the Skagerrak. CPUE for Danish trawlers.

DENMARK: Log-book recorded catch and effort | **Species:** Greater Silversmelt | **ICES area:** IIIA

Year	Mesh size in Trawl: >100 mm			70 - 100 mm			30 - 45 mm			< 25 mm			All trawls
	Kg	days	CPUE	Kg	days	CPUE	Kg	days	CPUE	Kg	days	CPUE	**CPUE**
1992				592430	62	9555.3				77601	10	7760.1	**9306.0**
1993				885880	71	12477.2	720000	36	20000.0	77200	4	19300.0	**15162.9**
1994				978300	78	12542.3	212000	7	30285.7				**14003.5**
1995				647140	67	9658.8	423848	98	4325.0	10000	1	10000.0	**6512.0**
1996				1303420	84	15516.9							**15516.9**
1997				808360	69	11715.4				136000	4	34000.0	**12936.4**
1998				703180	56	12556.8							**12556.8**
1999				885900	65	13629.2	907900	66	13756.1	22000	1	22000.0	**13756.1**
2000				767300	89	8621.3	169000	9	18777.8	27600	4	6900.0	**9450.0**
2001				788520	103	7655.5				83000	7	11857.1	**7922.9**
2002	150	5	30.0	791000	92	8597.8							8156.2
2003				25000	2	12500.0							12500.0
2004				100000	11	9090.9							9090.9

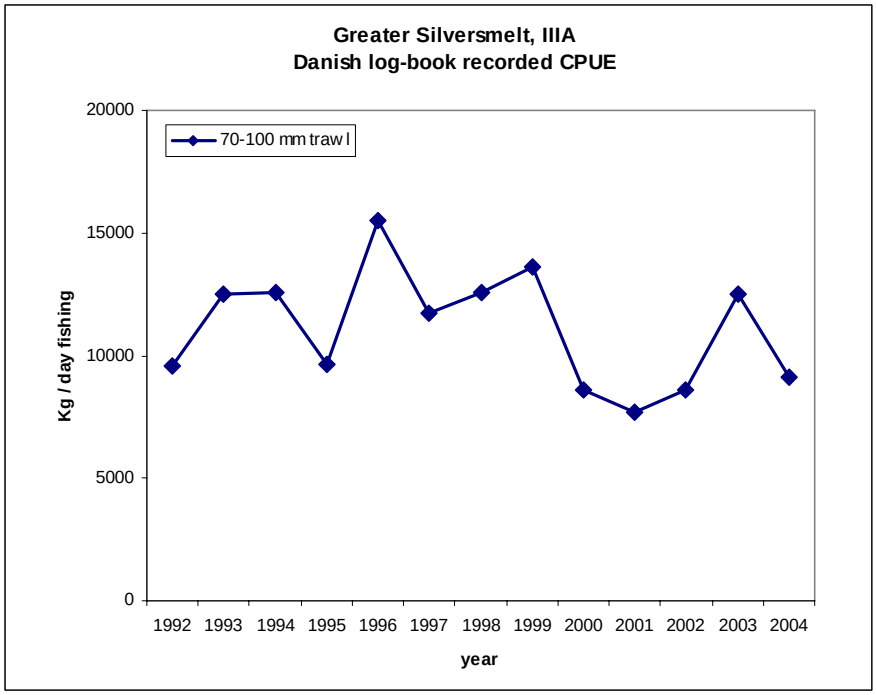


Figure 4-24. Greater silver smelt. CPUE of Danish trawlers in IIIa. Only trawlers fishing with cod-end mesh sizes 70-100mm were included.

Table 4-4. Greater silver smelt in DivisionVb. CPUE of pair trawlers. Note: the pair trawlers only occasionally take part in this fishery.

FLEET	YEAR	CATCH, KG	EFFORT (TRAWL HOURS)	CPUE (KG/HOUR)
Pair trawlers>1000HP	1992	42625	41	1052
	1993	No data available		
	1994	No data available		
	1995	63250	71	889
	1996	240150	155	1549
	1997	No data available		
	1998	139240	125	1112
	1999	No data available		
	2000	5000	1	6000
	2001	No data available		
	2002	No data available		
	2003	No data available		

5 New Data on Length/Age at Maturity, Growth and Fecundity and Other Relevant Biological Information

5.1 Ling

There are only very limited new data on the biology of ling. The following were extracted from available WDs:

Length distributions from Icelandic surveys and catches in Division Va were presented in Ch 4 and further details are given in the WD by Sigurdsson (2005).

In the WD by Helle and Pennington (2005), time series of mean lengths of ling in the Norwegian longline catches from different fishing areas are presented. In the period 1988-2004, the mean length appears to have varied without trend, and the level is the same as in an earlier year 1976 included for comparison.

The following are Russian observations reported in a WD by Vinnichenko *et al. (*2005a): On the Rockall Bank (Division VIb), the ling occurred in April in the depth range of 210 to 310 m. The fish length in catches varied between 60 cm and 141 cm and constituted on the average 98.8 cm in males and 104.1 cm in females. Males outnumbered females in the ratio 1:0.7. Most of males (46%) and a part of females (22%) had running gonads. Prespawning and spawned individuals were also observed: males – 39% and 8%, and females – 33% and 22%, respectively. The ling fed moderately (MISF – 1.6) on haddock (80%) and squids (20%). In many individuals, stomachs were everted.

In the Faeroes Fishing Zone (Division Vb) the ling were caught in small quantities on the Lauzy and Bill Baileys banks. The length varied from 90 to 150 cm and constituted 130.0 cm on the average. In prespawning and postspawning state were 67% and 33% of individuals, respectively. Of six stomachs examined, only in one fish were found.

In the Norwegian Sea (Subarea II) the ling occurred from time to time in trawl catches taken in February-March and November-December. The length of individuals ranged between 75 and 96 cm and made up 84.6 cm on the average.

5.2 Blue ling

There are only very limited new data on the biology of blue ling. Icelandic length distributions from Division Va were shown in Ch. 4. The following Russian data were extracted from the WD by Vinnichenko *et al.* (2005a):

The Hatton Bank (Subarea XII, Division VIb)

In April, catches taken by bottom trawl in the depth range of 805-815 m consisted of individuals 58-143 cm in length. Females were much larger than males and outnumbered males in the ratio of 1:3.3. Immature individuals accounted for 23.3%, and the number of immature males was two times higher than that of females. Some males were in spawning (23%) and postspawning (15%) state. Ovaries in most of the females (61%) were at the stage of postspawning recovery. Feeding intensity was quite low (MISF equal to 0.1). In stomachs, fish and shrimps were found.

In September-October, the blue ling occurred in catches in single instances. Individuals caught were 82-112 cm long, with mean length of males being 87.2 cm and females 102.7 cm.

The Faeroes Fishing Zone (Division Vb)

On the Lauzy Bank in April-May in the depth range of 510-1185 m catches taken by bottom trawl comprised individuals of 53-141 cm in length. Their mean length constituted 81.2 cm.

The ratio of males and females made up 0.7:1. The majority of females (57%) and males (44%) were immature. A part of females had postspawning gonads (18%) or were at the stage of postspawning recovery (24%). Some males were at prespawning and spawning stages (17% each). The blue ling fed scantily (MISF was 0.5) on argentine and blue whiting.

On the Bill Baileys Bank in May-June, the blue ling occurred in catches in the depth range of 590 to 860 m. Catches included individuals of 57-129 cm long; males were predominantly of 78-96 cm in length, and females 84-93 cm. Ratio between males and females was 1:0.13. Most of individuals were in the spawning (43%) or postspawning (37%) state. In small quantity, maturing, prespawning, immature individuals and fish at the stage of postspawning recovery were also caught. Food (shrimp and digested fish) was found only in two individuals; the other had empty or everted stomachs.

In August on the Bill Baileys Bank in the 650-1020 m depth range, only single individuals were captured. The fish length made up 62-100 cm averaging 83.0 cm in males and 91.8 cm in females.

The East Greenland (Division XIVb)

The blue ling occurred occasionally in long-line catches in the depth range of 330 to 1390 m, most often at a depth of 330 m. Length composition was represented by males of 60-94 cm in length and females 61-118 cm long.

In addition, some observations were reported by Spain from the Hatton Bank trawlers (WD by Durán Muñoz *et al.* (2005); i.e. maturity data (Table 5-1) and length distributions (Fig. 5-1).

Table 5-1. Number of blue ling individuals sampled, and maturity data (Hatton bank area 2002-04). Spanish trawlers.

	2002					2003					2004			
Maturity stage	Males	Females	Total	%		Males	Females	Total	%		Males	Females	Total	%
Inmature	2	-	2	6		2	12	14	8		9	12	21	2
Resting-developing	9	11	20	56		35	57	92	50		319	518	837	90
Spawning	11	-	11	31		29	39	68	37		1	66	67	7
Post-spawning	1	2	3	8			11	11	6		-	3	3	<1
Total Nos. sampled	23	13	36			66	119	185			329	599	928	

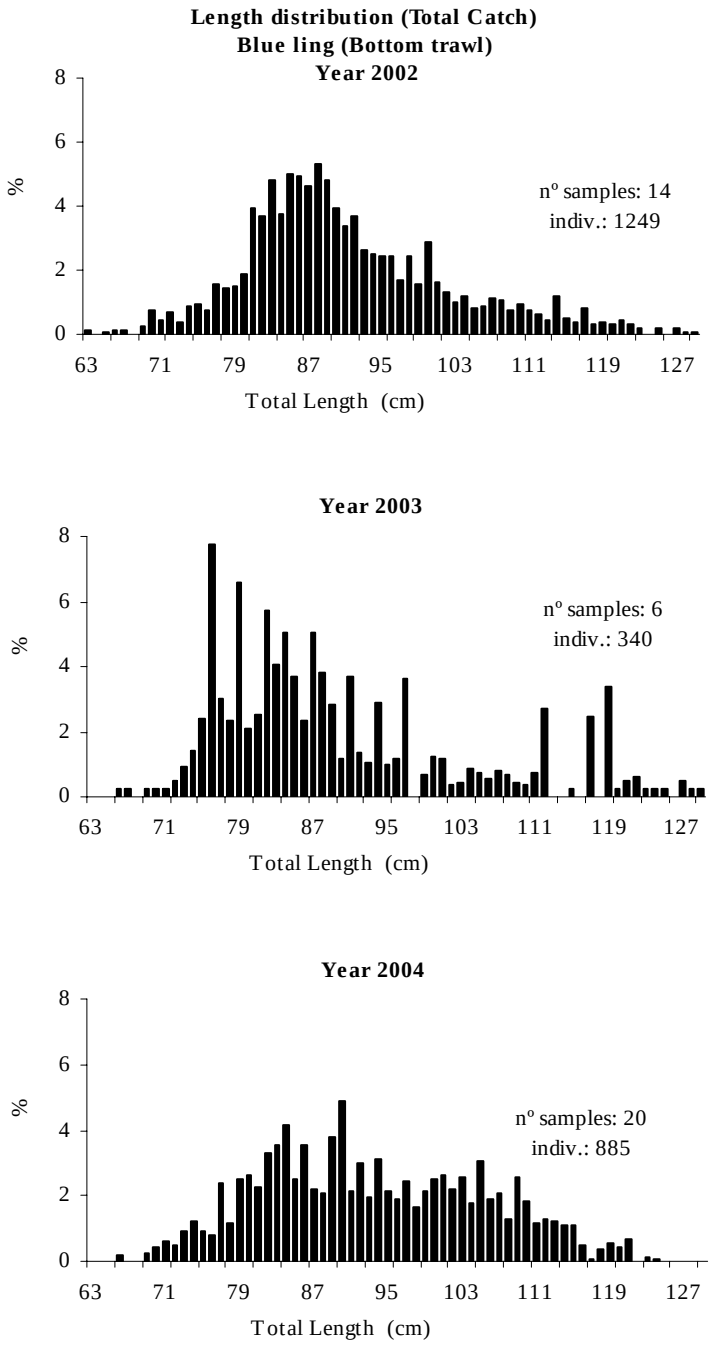


Figure 5-1. Length distributions of blue ling in the Total Catch (Hatton bank area 2002-04). Spanish trawlers.

5.3 Tusk

Very little new information on the biology of tusk was reported.

Icelandic length distributions from Division Va were shown in Ch 4.

In the WD by Helle and Pennington (2005), time series of mean lengths of tusk in the Norwegian longline catches from different fishing areas are presented. In 1976 (the first year in the series), the mean length was about 10-15 cm higher than in the period 1988-2004 when there was variation without any apparent trend.

Russian data extracted from WD by Vinnichenko *et al*. (2005a) included the following:

In East Greenland (Division XIVb) the tusk were caught occasionally at the depths down to 400 m (less than 400 m) by a long-line. The length of individuals varied between 35 and 59 cm and made up 48.6 cm on the average.

On the Rockall Bank (Division VIb) in April-May, the tusk occurred in catches from time to time. The fish length was 38 –87 cm; the mean length constituted 66.7 cm. Of 9 individuals examined, 45% were immature, 22% - postspawning and 33% - at the stage of postspawning recovery. In the stomachs of two individuals fisheries wastes were found; the rest of stomachs were everted.

In the Norwegian Sea (Subarea II) in February – March and October - November, individuals of 32-73 cm long (the mean length 55.1 cm) were caught by trawl and long-line.

In the Barents Sea (Subarea I) in October-December, trawl and long-line catches included individuals of 13-72 cm in length; the mean length made up 54.2 cm.

5.4 Roundnose grenadier (*Coryphaenoides rupestris*)

Only limited new information on biology was presented.

The following data was provided by Russia (WD by Vinnichenko *et al.* (2005a):

The Hatton Bank (Subarea XII, Division VIb)

Roundnose grenadier occurred in catches taken by bottom trawl in the depth range of 800 to 1490 m. In April, males of the total length 38-104 cm were caught. Among them, individuals of 57-68 cm in length were predominant. Females were from 29 to 107 cm in total length, mainly being 60-71 cm long. Pre-anal length of males varied from 9 to 20 cm and that of females ranged between 7 and 22 cm. Mean individual weight made up 590 g. Number of males exceeded that of females in the ratio of 1:0.88. Most of the roundnose grenadier (73% of males and 61.3% of females) had maturing gonads; individuals at the stage of postspawning recovery were also found (11%). Besides, a few postspawning females were noted. The rest of males (19%) and females (36.8%) were immature. The roundnose grenadier fed scantily (MISF was estimated at 1.1), mostly on shrimp and jellyfish, and to a lesser extent, on comb-jelly, squid, cephalopods and fish.

In September-October, catches comprised roundnose grenadier of 21-96 cm in total length and were dominated by individuals 45-72 cm long. Pre-anal length of males and females varied from 5 to 20 cm and 5 to 21 cm, respectively. Age composition of catches was represented by individuals at age 5-14 with individuals aged 8-9 years being predominant. Size composition by sex showed similarity, however, among large individuals females prevailed. The ratio of males and females constituted 1:0.74. In this period, spawning of the roundnose grenadier was registered, which was indicated by the presence of prespawning, spawning and postspawning individuals in catches. Besides, maturing and immature individuals were also observed. It was

impossible to characterize the intensity and structure of feeding as most of individuals caught had everted stomachs.

The Faroes Fishing Zone (Division Vb)

In April-May, the roundnose grenadier occurred in catches taken by bottom trawl on the Lauzy Bank in the depth range of 800-1100 m. Total length of males varied from 46 to 92 cm, and that of females ranged between 52 and 103 cm. Pre-anal length of males varied within the range of 10 to 16 cm, and that of females was from 11 to 19 cm. The majority of males (75%) had maturing gonads and only 5% of them were immature. Most of females were observed to be at the stage of postspawning recovery; percentage of immature individuals was estimated at 37%. The roundnose grenadier fed scantily (MISF - 1.2) on shrimp, fish and jellyfish .

In August the roundnose grenadier were found in small quantities on the Bill Baileys Bank at a depth of 1020 m. The catches consisted of individuals of 26-100 cm in total length; mean length of males made up 58.7 cm, and that of females was 68.2 cm. Pre-anal length of males and females ranged from 7 to 18 cm and from 6 to 21 cm, respectively.

The Reykjanes Ridge (Division XIVb)

In this area, the roundnose grenadier occurred in single instances in redfish catches taken by pelagic trawl in the 620-920 m layer. The catches comprised immature females of pre-anal length of 9-11 cm and mean weight of 213 g. The roundnose grenadier fed actively (mean index of stomach fullness was 3.0) on euphausids, shrimps and *Themisto*.

Spain reported the following data from the Hatton Bank trawl fisheries (WD by Durán Muñoz *et al*. (2005); including total length distributions (Fig. 5-2), maturity at length ogive (Fig. 5-3), and length-weight relationship (Fig. 5-4).

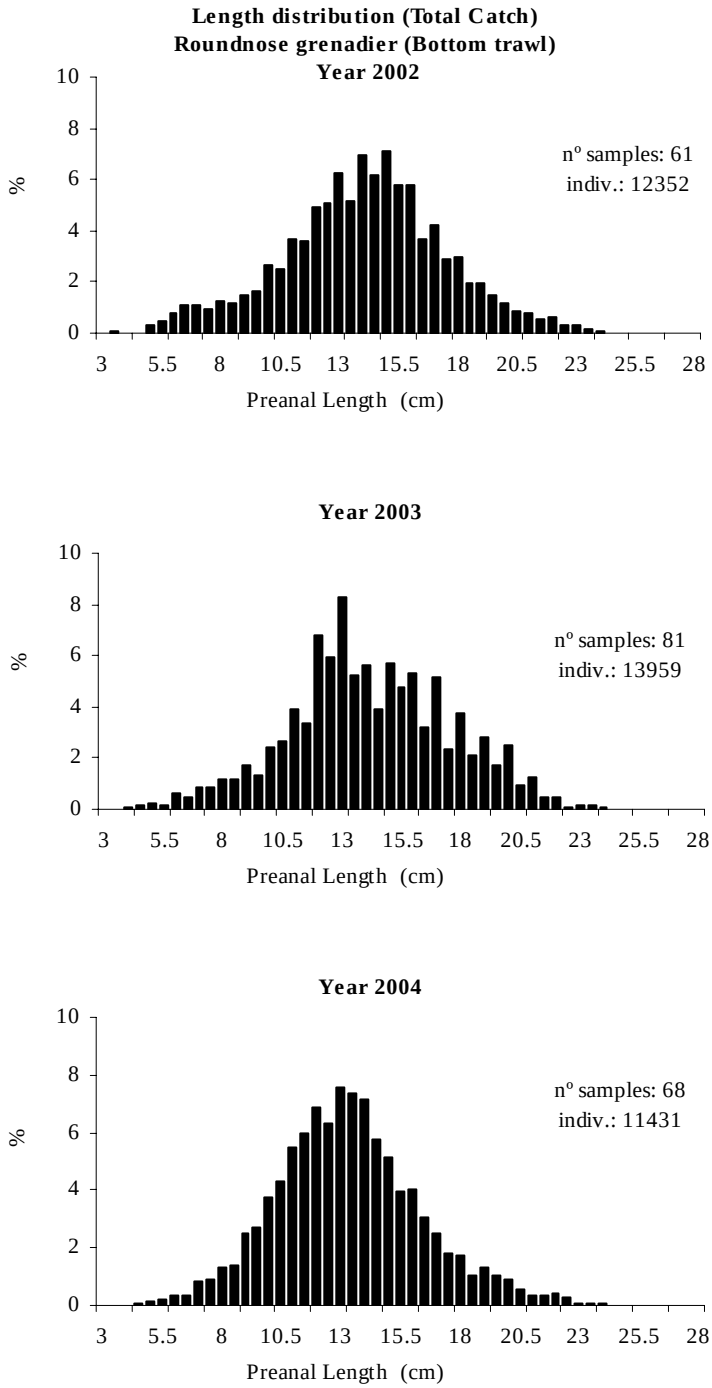


Figure 5-2. Length distributions of roundnose grenadier in the total catch from Spanish trawlers on Hatton Bank 2002-2004.

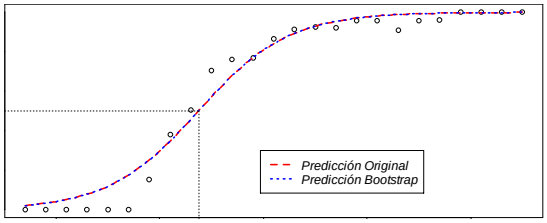


Figure 5-3. Maturity at length curve for roundnose grenadier based on Spanish observer data from the Hatton Bank.

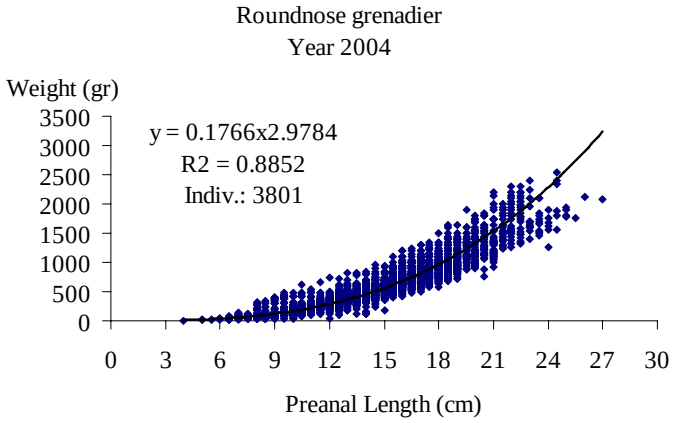


Figure 5-4. Length-weight relationship for roundnose grenadier. Spanish data from the Hatton Bank.

5.5 Greater and lesser silver smelt

Only limited new information on biology of these species was presented. The following data was provided by Russia (WD by Vinnichenko *et al.* (2005a):

Greater silver smelt (*Argentina silus*)

The Faroes Fishing Zone (Division Vb)

On the Lauzy Bank in April-May in the depth range of 510-850 m catches by bottom trawl comprised individuals of 31-49 cm in length and were dominated by fish 35-39 cm long. Females were larger than males. Mean individual weight made up 385 g. Males and females ratio was 1:0.7. Most of males (87%) and females (50%) had gonads at the stage of postspawning recovery. Prespawning (1.6%), spawning (8.4%) and postspawning (19.0%) individuals also occurred in catches. Feeding intensity was not high (mean index of stomach fullness – 0.3); main food items were tunicates, fish and echinoderms.

On the Bill Baileys Bank in May-June catches taken in the depth range of 590-780 m (water temperature in the 460-610 m depth range was measured at 8.5-8.8°C and salinity at 35.5) consisted of 31-54 cm long individuals and were dominated by fish of 37-46 cm in length. Size of females was greater than that of males. Mean weight of fish constituted 601 g. The majority of males (59%) and females (54%) were at the spawning stage. A part of females (20%) had prespawning gonads. The rest of individuals had already spawned. The greater silver smelt fed scantily (MISF – 0.1) on echinoderms, jellyfish, tunicates, shrimp, comb-jelly, euphausids, sea cucumbers and squids.

Age composition of catches taken on the Lauzy Bank and Bill Baileys Bank comprised greater silver smelt at age 6-20 with individuals at age 10-13 being predominant.

In August on the Bill Baileys Bank, individuals of 31-50 cm in length occurred in catches taken by bottom trawl at a depth of 650 m. Mean length of males was 30.5 cm, that of females made up 42.3 cm. Males prevailed in number (89%). All males and a half of females were at the postspawning stage. The rest of females had prespawning gonads. The greater silver smelt almost did not feed; digested food was found only in the stomach of one individual.

The Reykjanes Ridge (Division XIVb)

In May-June, single individuals of 26-36 cm in length were caught by pelagic trawl together with redfish. The mean length of males was estimated to be 30.5 cm and that of females made up 34.0 cm. Mean weight of males constituted 227 g, and that of females was 321 g. Males were predominant in catches (75.0 %). Nearly a half of individuals were at the prespawning or postspawning stages. The remaining fish were immature. Intensity of feeding was low (MISF–0.2).

The Rockall Bank (Division VIb)

In April-June, the greater silver smelt were captured occasionally by bottom trawl. The length of individuals was measured to vary from 23 cm to 45 cm having constituted 32.0 cm on the average. Most of fish were immature (62%) and 19% were at the postspawning stage.

The Norwegian Sea (Subarea II)

The greater silver smelt occurred in small quantity in February and November in catches taken by bottom trawl. Individuals of 8-46 cm in length were caught, which mean length made up 26.2 cm.

The Barents Sea (Subarea I)

In February, March and December immature individuals were caught by bottom trawl from time to time. The length of fish was 8-16 cm; the mean length constituted 11.8 cm.

Lesser silver smelt (*Argentina sphyraena*)

The Rockall Bank (Division VIb)

In March, catches taken by bottom trawl consisted of individuals of 20-39 cm in length; on the average the length was 27.4 cm. In June, individuals 20-25 cm long (22.2 cm on the average) were noted. Most of the fish were immature (89%); the rest had maturing gonads. Intensity of feeding was at a low level; mean index of stomach fullness constituted 1.1. Stomach content was dominated by *Calanus* (48%) and digested food (36%); *Themisto* (12%) and ophiuroids (4%) were also present.

The Norwegian Sea (Subarea II)

In November, in catches taken by bottom trawl, individuals 12-23 cm long occurred, the mean length of which constituted 17.1 cm.

5.6 Black scabbardfish

Portuguese data from Division IXa (Portugal mainland slope) was provided by Figueiredo and Bordalo Machado (2005). For the period 2000-2004, the total length range of sampled specimens varied between 79 and 135 cm (Fig. 5-5). Sampled weight corresponded to 15 % of the sampled vessels total landings. Along the years the modal length class was about 111 cm.

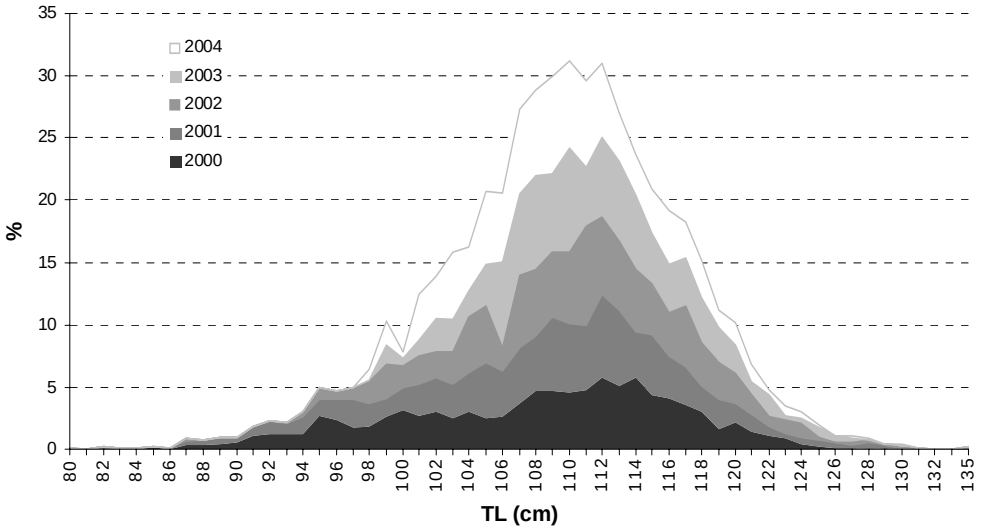


Figure 5.5 Total length frequencies of black scabbardfish specimens sampled at Sesimbra landing port from 2000 to 2004.

Biological sampling included the recording of total and standard lengths, total and gutted weights, liver and gonad weights, sex, maturity stage and the removal of otoliths. Macroscopic maturity stages were assigned using the five-stage maturity scale defined in Gordo et al. (2000). The large majority of individuals were immature, exhibiting stages 1 (immature/resting) and 2 (developing) (Table 5-1). Two stage 3 (pre-spawning) males were also recorded. Females were more frequent than males.

Mat.stage	F	M
1	70	19
2	45	14
3	-	2
4	-	-
5	-	-

Table 5.1. Number of black scabbardfish individuals sampled by sex and maturity stage in 2004

IPIMAR together with FCUL (Faculty of Sciences of the University of Lisbon) has started to analyse black scabbardfish otoliths collected from 1999 to 2002. A detailed study on age and growth of the species is now being prepared. Others variables beside length are analysed together with age in order to understanding and model the growth pattern of the species.

Russian information was extracted from the WD by Vinnichenko *et al. (*2005a): On the Hatton Bank (Subarea XII, Division VIb) the black scabbardfish occurred in small quantities in April in catches by bottom trawl in the depth range of 805-815 m. The length of individuals caught was from 76 to 106 cm constituting on the average 87.7 cm.

On the Bill Baileys Bank in the Faroese Fishing Zone (Division Vb) in August, at a depth of 1020 m, individuals of 74-111 cm in length were caught by bottom trawl. The mean length of males and females was estimated to be 88.8 cm and 89.3 cm, respectively.

Spanish data were reported in the WD by Dúran Muñoz *et al.* (2005), and included length distributions from trawlers fishing on the Hatton Bank (Figure 5-6):

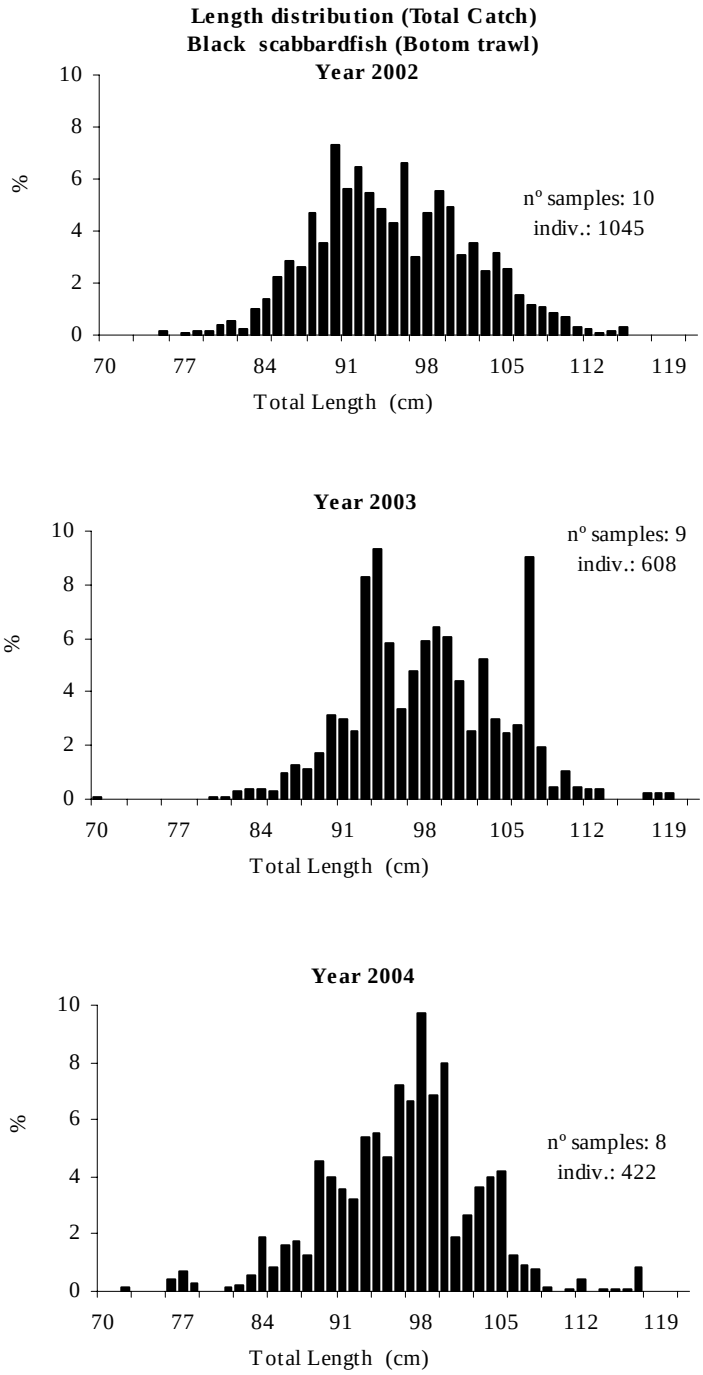


Figure 5-6. Length distributions of black scabbardfish from Spanish trawlers on the Hatton Bank.

5.7 Red seabream (*Pagellus bogaraveo*).

Gil *et al.* 2005 reported new data for the Gibraltar Straits. During 2004 monthly biological samples were taken from commercial landings of the port of Tarifa. Monthly gonadosomatic index (GSI), for males and females, were estimated as follows: GSI=gonad weight*100/gutted weight.

For males L50 was determined after fitting the percentage of mature specimens (EMS III to V) to a logistic curve of the form:

P = 1/(1+e-r(L-L50))

The smallest specimens are mainly males maturing at L_{50}=29.5 cm (Figure 5-7). Later, a large number of the individuals change sex (sexual transition) to become females.

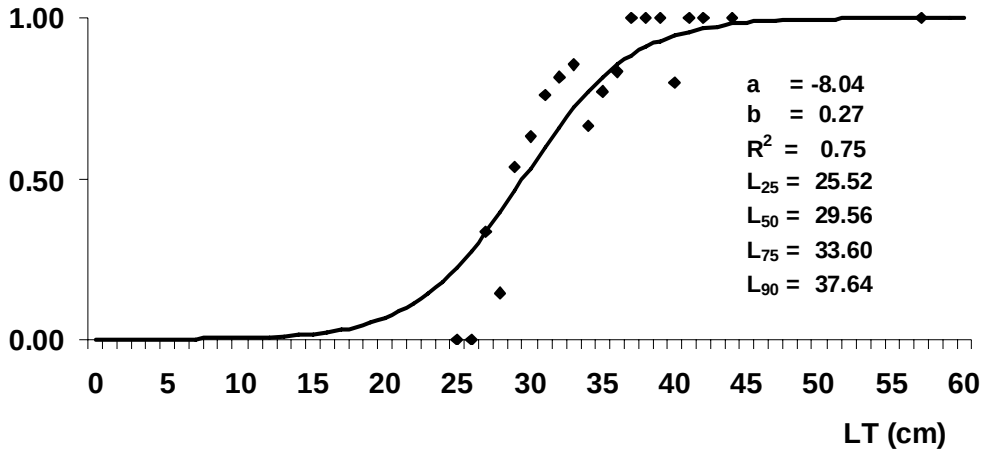


Figure 5-7. *Pagellus bogaraveo* of the Strait of Gibraltar: Males length at first maturity (L_{50}).

The spawning season coincides with that previously observed in the same area, i.e. during the first quarter of the year.

5.8 Other species

5.8.1 Baird's smoothhead (*Alepocephalus bairdii*)

From the Hatton Bank (international waters of Subarea XII and VIb), Spanish length distributions (Fig. 5-8) and data for maturity at length (Fig. 5-9) and length-weight relationships (Fig. 5-10) were reported:

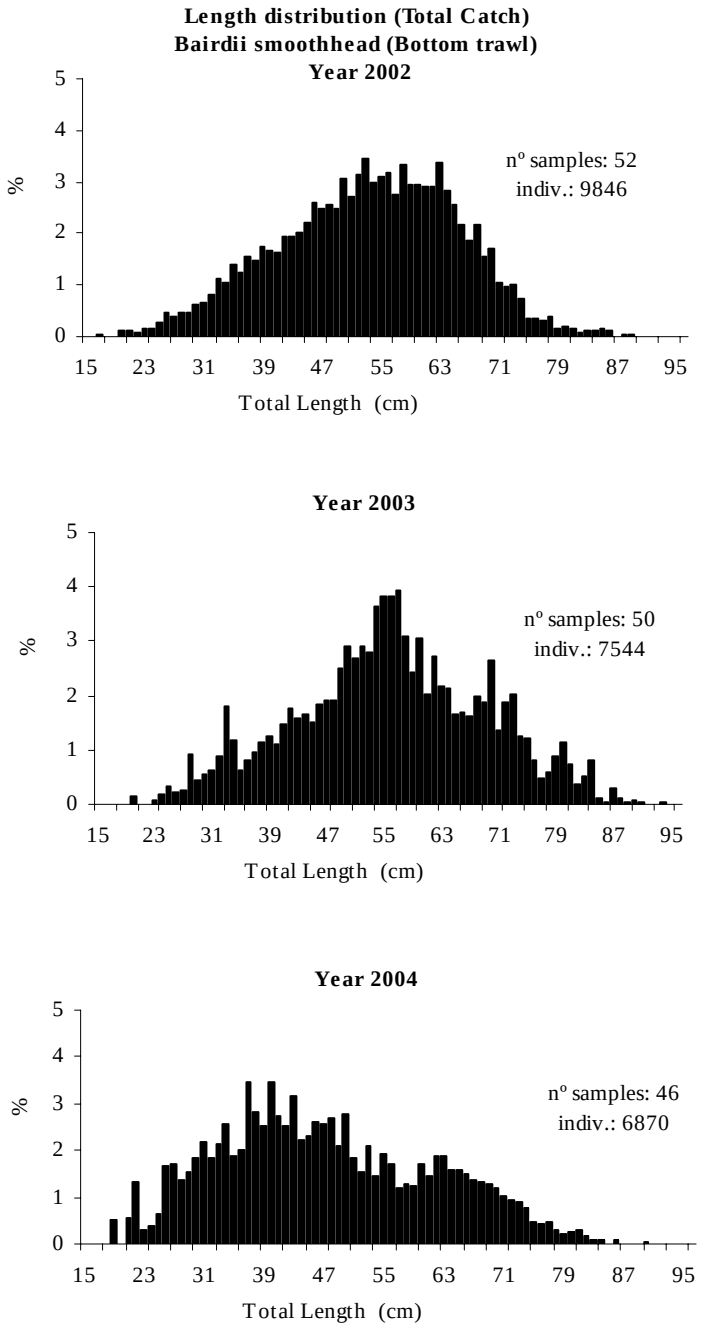


Figure 5-8. Length distributions of Baird's smoothhead from Spanish trawlers on the Hatton Bank.

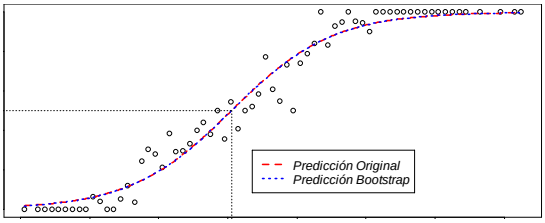


Figure 5-9. Maturity at length of Baird's smoothhead on the Hatton Bank. Spanish data.

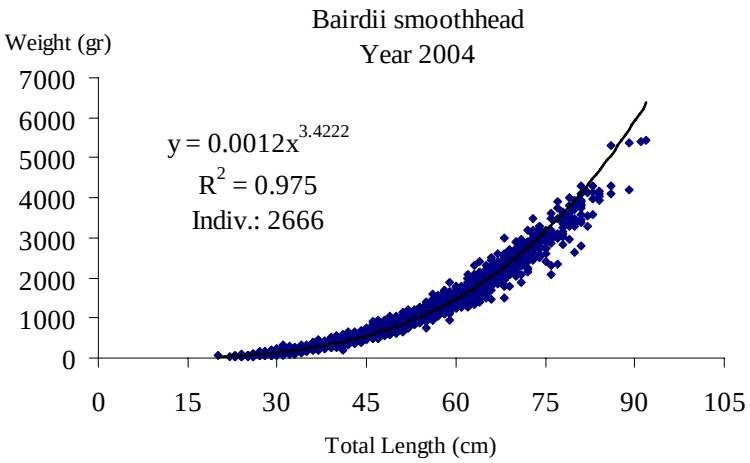


Figure 5-10. Length-weight relationship of Baird's smoothhead from the Hatton Bank. Spanish data.

There is furthermore Russian data from the Hatton Bank and the Faroese zone (Division Vb) as reported in the WD by Vinnichenko *et al.* (2005a):

The Hatton Bank (Subarea XII, Division VIb)

The smoothhead were fished in April in the depth range of 1250 m to 1440 m; the largest catches were taken between 1350 m and 1440 m depths. Males were measured to be 37-77 cm long; females were 35-78 cm in length. Mean individual weight constituted 992 g. Age composition of catches was represented by individuals at age 6 – 13; the catches were dominated by fish aged 8-11 years. Sex ratio depended on depth (at lesser depths males were predominant, while greater depths were dominated by females) and on the average was estimated at 0.9:1. Most of individuals (56%) were immature; gonads of mature fish were found to be at the stage of postspawning recovery. The smoothhead fed scantily (MISF – 0.3) chiefly on jellyfish (76%), as well as on shrimps and lanternfishes.

In September-October, catches taken in the depth range of 1360-1450 m consisted of individuals 24-84 cm in length, predominantly of 30-42 cm. Ratio of males and females was 0.88:1. Gonads in most of individuals (76%) were at the stage of postspawning. The smoothhead almost did not feed. Food was found only in six stomachs and consisted of shrimp, comb-jelly and fish.

The Faroes Fishing Zone (Division Vb)

On the Lauzy Bank in April-May in the depth range of 820-1100 m, males of 25-54 cm (one fish of 71 cm) and females of 28-53 cm (one fish of 62 cm) in length were caught. Predominant length of both sexes was 36-38 cm. More than 90% of individuals were immature, and the rest had gonads at the stage of postspawning recovery. The smoothhead fed scantily (MISF – 1.0). All food in the stomachs was well digested.

On the Bill Baileys Bank in May-June catches taken in the depth range of 740-1185 m comprised individuals of 32-90 cm in length. Two third of all males were immature; the rest were at the stage of postspawning recovery. The smoothhead fed scantily (mean index of stomach fullness was 0.1) on echinoderms, tunicates and other benthos.

In August on the Bill Baileys Bank at a depth of 1020 m the smoothhead being 52-76 cm long were caught. Mean length of males and females was estimated at 62.1 cm and 66.7 cm, respectively.

5.8.2 Roughhead grenadier (*Macrourus berglax*)

The following was reported by Russia in the WD by Vinnichenko *et al.* (2005a) (please see WD for figures):

The East Greenland (Division XIVb)

In July – August, the roughhead grenadier occurred in long-line catches almost everywhere between 62° and 66°N in the depth range of 330 to 1460 m. Catches comprised males of 33-67 cm long and females of 34 –109 cm long and were dominated by males of 47-50 cm and females of 54-62 cm in length. The catches consisted mainly of immature individuals; percentage of maturing males and females (maturity stage 3) accounted for 87.9% and 35.0%, respectively. Sex ratio of males and females was 1:2.9. Feeding intensity was at the average level (MISF was estimated at 2.2). The main food items were fish (25.4%), ophiuran (21.8%), long-line bait (15.4%) and shrimp (11.1%).

The Norwegian Sea (Subarea II)

The roughhead grenadier were fished in September-December in the Bear-Island Spitsbergen area. Length composition of trawl catches was represented by males being 32-70 cm long and females of 31-81 cm in length. Long-line catches were composed of individuals of 43-83 cm long; the mean length was 59.8 cm. The catches were dominated (90%) by immature individuals. The feeding intensity was not high (MISF was 1.3). The stomach content was dominated by digested fish (30.4%), shrimp (20%) and digested food (13.0%).

The Barents Sea (Subarea I)

In September, two males of 20 and 22 cm long were caught.

5.8.3 Common mora (*Mora moro*)

No new data were reported except references in a WD by Vinnichenko *et al.* (2005a) to the species occurring in catches taken on the Bill Baileys Bank (Vb) using bottom trawl at a depth of 1020 m. The length of individuals was measured to be from 46 to 62 cm.

5.8.4 Deep-water cardinal fish (*Epigonus telescopus*)

Vinnichenko *et al.* (2005a) reported that the cardinal fish occurred occasionally in Russian trawl catches in the Faroes Fishing Zone (Division Vb) on the Bill Baileys Bank in the depth range of 600-840 m. The individual length varied from 35 to 52 cm and averaged 43.8 cm at the mean weight of 1005 g. The ratio of males and females was 0.5:1. All the individuals were

observed to be at the stage of postspawning recovery. The black cardinal fish fed scantily (MISF was 1.2) on shrimp (75%) as well as of echinoderms and fish.

5.8.5 Rabbit fish (*Chimaera monstrosa*)

The following Russian observations were reported in the WD by Vinnichenko *et al. (*2005a). On the Hatton Bank (Subarea XII, Division VIb) the rabbit fish occurred in March-April in small quantity in catches by bottom trawl in the depth range of 800-850 m. The length varied from 46 to 107 cm and averaged 79.6 cm.

On the Lauzy Bank in the Faroes Zone (Division Vb), the rabbit fish was found everywhere in catches by bottom trawl in the depth range of 500 m to 1100 m. The length of fish varied between 54 and 118 cm. The ratio of males and females was 0.9:1. Among males, individuals with gonads at maturity stage 3 were predominant (69%). In females, gonads at different maturity stages were represented in approximately equal proportion with a slight domination of individuals with gonads at maturity stage 4. The rabbit fish fed moderately (MISF – 1.8) on crustaceans, echinoderms and sea urchins.

On the Bill Baileys Bank (Vb) in May-June, the rabbit fish occurred in catches taken by bottom trawl in the 700-950 m depth range. The length of males and females fluctuated from 68 to 97 cm and from 71 to 112 cm, respectively. An overwhelming majority of males (91%) had gonads at maturity stage 3; the remaining males were immature. All females were mature; the greater part of them (64%) had gonads at maturity stage 4; the rest of females (36%) were at maturity stage 3. The rabbit fish fed moderately (MISF –1.6) on sea urchins, other echinoderms, gastropods and fisheries wastes.

In August, on the Bill Baileys Bank in the depth range of 650-1020 m, individuals of 66-99 cm in length were caught. Mean length of males and females made up 76.3 cm and 88.0 cm, respectively.

In the Norwegian Sea (Subarea II) the rabbit fish occurred in small quantities in March and November. In catches, individuals of 70-100 cm in length (83.5cm on the average) were found.

6 Discards and Deep-Water Fish Community Data

6.1 Spanish trawlers on Hatton Bank

Some discard data from Spanish trawlers fishing on the Hatton Bank were reported by Durán Muñoz et al. (2005). Length distributions for the discards of roundnose grenadier and Baird's smoothhead are shown in Figure 6-1 & 2. Total length distributions (i.e. representing the entire catch) of the same species were given in Ch. 5.

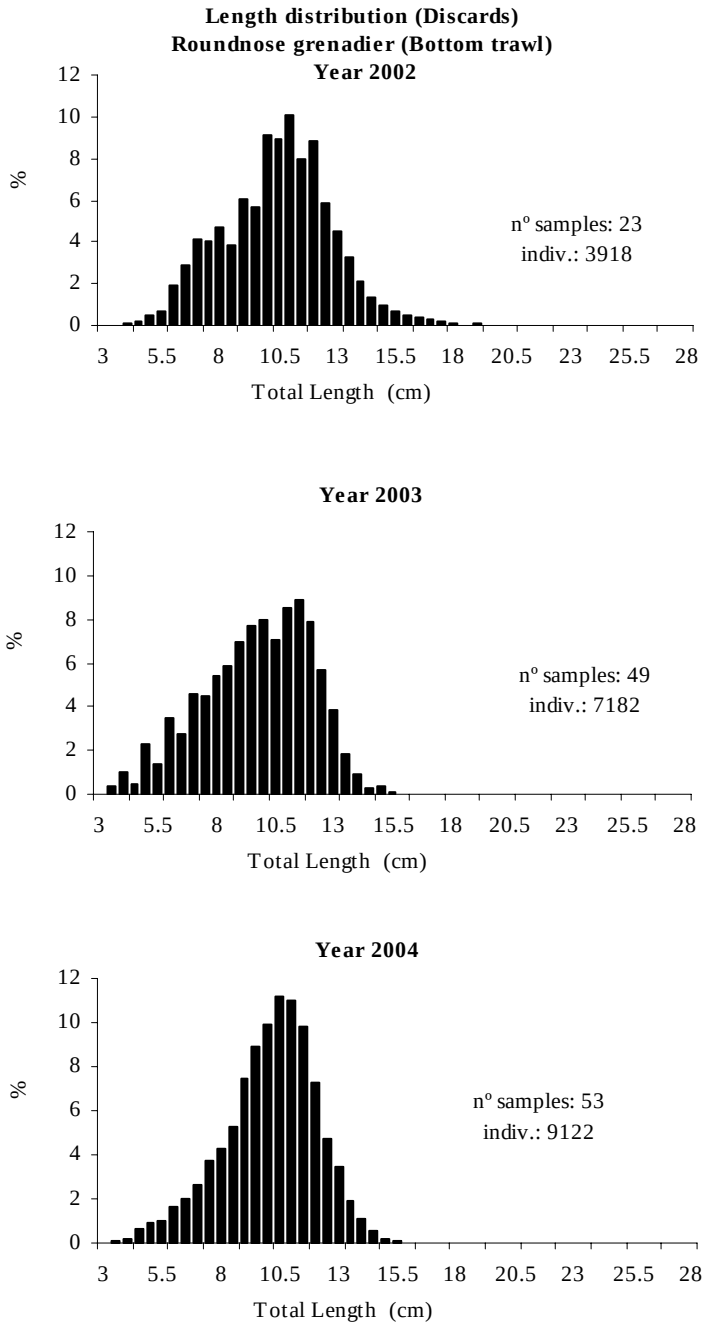


Figure 6-1. Length distributions of roundnose grenadier discarded by Spanish trawlers on the Hatton Bank.

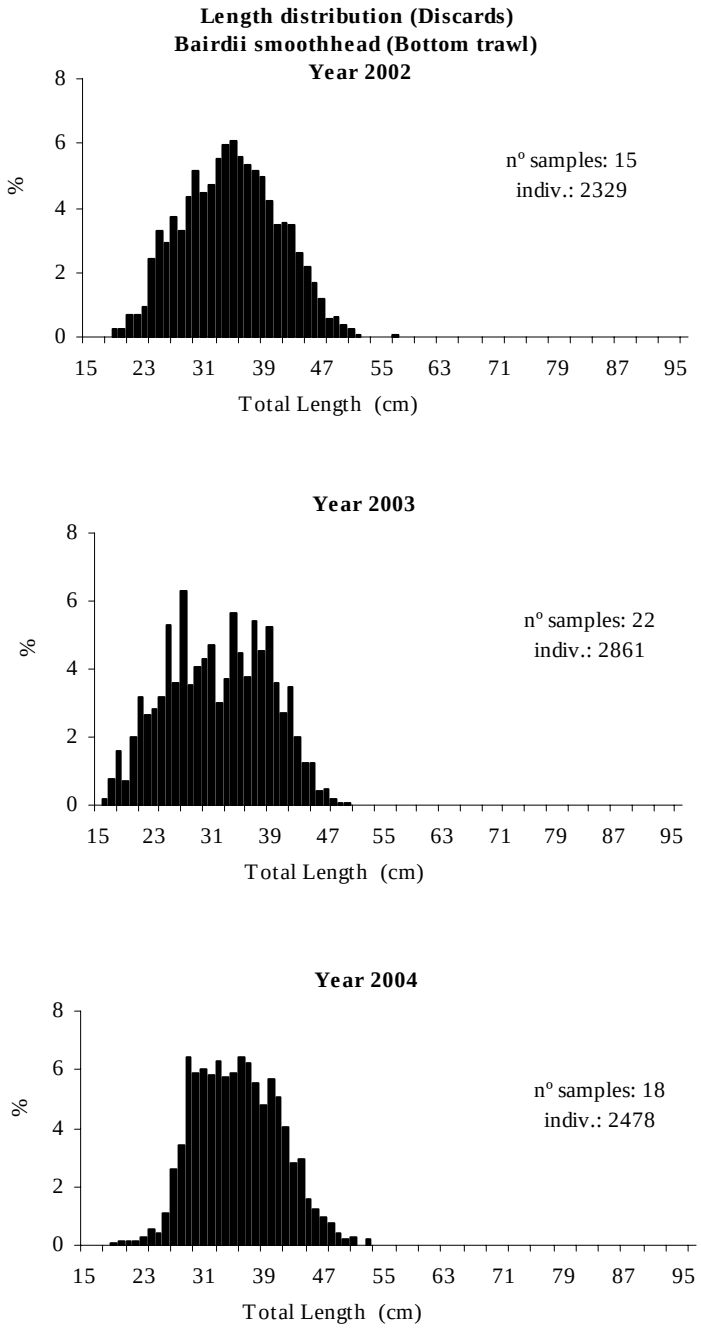


Figure 6-2. Length distributions of Baird's smoothhead discarded by Spanish Trawlers on the Hatton Bank.

6.2 Ireland

There were no deepwater discard trips carried out in 2003. Two discard trips were carried out on the deepwater fleet in 2004. On each trip fishing activity took place both on the slopes, the "Peak" fishery targeting orange roughy, and on the "Flats" fishery, targeting black scabbard, fishing in ICES Divisions VIIk and VIIc

January – June

One observer trip, 12th – 22nd March.

Target Species: Orange Roughy and Black Scabbard.

July – December

One observer trip, 27th June – 9th July.

Target Species: Orange Roughy and Black Scabbard.

This information is stored on the Irish Marine Institute's Discard Database. The main discard species on these trips (and on the acoustic survey) were Baird's Smootheads and various deepwater shark species, particularly *Deania calceus*. This information will be made available to WGDEEP in 2006.

7 NEAFC Request Concerning Areas Closed to Fishing

7.1 Introduction and background

With regards to the proposal for the protection of vulnerable deep-water habitats (Document NEAFC AM2004/28), ICES is requested by NEAFC:

a) To provide information on recent fishing effort in the areas closed to trawling and static gear in the NEAFC Regulatory Area;

b) To evaluate if the boundary lines of the closed areas in the NEAFC Regulatory Area reflect the spatial distribution of vulnerable deep-water habitats in those areas;

c) To provide information on the distribution of cold-water corals on the Hatton Bank;

d) Provide information on the percentage of vulnerable deep-water habitats in the Regulatory Area covered by the proposal;

e) Provide information on the distribution of cold-water corals on the Western slopes of the Rockall Bank to indicate appropriate boundaries of any closure of areas where cold-water corals are affected by fishing activities;

f) Evaluate the destructiveness of different fishing gears with respect to vulnerable deep-water habitats.

The proposal was volunteered by Norway following discussions at previous NEAFC meetings on the further need for protective action in view of the concerns expressed by ICES over the uncertain state of the deep-sea resources and their critical habitats in the Regulatory Area. A need for precautionary action was recognised even if the information on the state of the stocks, fisheries and habitats was unsatisfactory.

The proposal was discussed by the Annual Meeting of NEAFC in November 2004. NEAFC agreed *to close five areas for fisheries with all types of bottom fishing gear for three years* (ref. Press Release issued on 15 November). The five areas include those proposed by Norway on the mid-Atlantic Ridge, but not the Hatton Bank area.

It should be noted that the NEAFC agreement closed the areas to all bottom gears, i.e. both active gears such as bottom trawls, and passive gears such as longlines and gillnets. The selected areas remain open to midwater trawling and presumably floating longlines.

7.2 Response to the request from ICES WGDEC and ACE

The ICES Working Group on Deepwater Ecology (WGDEC) considered the NEAFC request at its meeting in early 2005 (ICES CM 2005/ACE:02), and in the present report it will be assumed that the information and conclusions for that Group will be included in the common basis for the advice given by ACFM. WGDEC has reported to ACE, and the outcome of the ACE deliberations has also been considered by WGDEEP.

WGDEEP was made aware of a similar request from OSPAR, but was not originally requested to respond. There is overlap between the NEAFC and OSPAR requests and the present document contains information of relevance to both.

WGDEC compiled relevant information on habitat characteristics of the areas, and discussed sensitivity of different habitats and relative destructiveness of different fishing gears. The Group recognised that the response to several of the items of the request was unsatisfactory due to lack of information.

WGDEEP has little new information to add to the WGDEC response and endorses its comments and conclusions. The following should be considered additional information and comments to that already provided by WGDEC.

7.3 WGDEEP response to the NEAFC request

7.3.1 General comments

For this report, little new information of relevance to the state of the resources or habitats in the NEAFC Regulatory Area was submitted to the Group. WGDEEP has to rely on published information, working documents provided by national delegates (in 2005 and earlier), and good judgement, to evaluate the situation and respond to the specific requests.

7.3.2 Specific comments

a) Recent fishing effort in the areas closed to trawling and static gear in the NEAFC Regulatory Area;

The data on recent fishing effort *in the closed areas* of the Regulatory Area are at most imprecise, if not inaccurate. Data on the relevant spatial scale has not been made available to WGDEEP, and perhaps the complete information is nonexistent. Indeed, the statistics for the entire Regulatory Area remains uncertain due to incomplete or imprecise reporting, at least to WGDEEP. The available information for the entire Regulatory Area is presented in Table 7-1.

All vessels fishing in the Regulatory Area are obliged to report activity (via VMS and logbooks) and landings to NEAFC and national authorities. But unfortunately there is no mechanism whereby these data are made available to ICES, either directly or through national delegates of e.g. WGDEEP. In order to address future requests requiring analyses of fishing activity at a relevant geographical scale, VMS data should be made routinely available as standard background data to ICES.

NEAFC has made efforts to compile effort and landings data from contracting parties and vessels flying other flags, but with limited success (e.g. reports from NEAFC WG that met in 2003, and pers. comm. NEAFC Gen. Secretary, Nov. 2004). Even for entire ICES Subareas or Divisions the data are incomplete. Prior to the extraordinary WGDEEP meeting 7-9 September, contacts were established between NEAFC and WGDEEP, but updated VMS and logbook data could not be provided in time.

Table 7-1. Information on recent deep-water fishing activity and total catches in international waters (entire NEAFC RA) on the Hatton and Rockall Banks, and on the mid-Atlantic Ridge (relevant sections of Sub-area X, XII and Division VIb)

COUNTRY	2003	2004	SOURCE AND COMMENTS
Norway	12 vessels (longliners), 292 fishing days. Total catch: 901 t, of which 31 t on mid-Atlantic Ridge taken by 4 vessels.	4 vessels (longliners), 172 fishing days. Total catch: 409 t, of which 8 t on mid-Atlantic Ridge taken by 1 vessel.	Norwegian Directorate of Fisheries. Catches also include redfish and Greenland halibut.
Russia	2 trawlers, 55 fishing days. Total catch: 573 t, of which 537 t on Mid-Atlantic Ridge taken by 1 vessel.	2 trawlers and 2 longliners, 116 fishing days. Total catch: 853 t, of which 414 t on Mid-Atlantic Ridge taken by 1 vessel.	VNIRO, PINRO
Spain	Hatton Bank only, 26 trawlers, 1500 fishing days	On mid-Atl. Ridge: 1 Vessel (Bottom longliner). 54 fishing days. Total Catch 80 t. On Hatton Bank: 26 trawlers, 1500 days	Durán Muñoz *et al.* (WD 2005). Catches also include redfish. Hatton Bank landings given in present report.
Faroe Islands	No fishing activity this year	1 trawler, 82 fishing days. Total catch 653 t	Ministry of Fisheries and Foreign Affairs. Catches include deep-sea species only.
France	Fishing activity in international waters resulted in catches of 619 t of roundnose grenadier, 210 tonnes of blue ling 45 tonnes of orange roughy and 24 tonnes of black scabbard fish. These represent 11, 7, 11 and 1 % of the total national catches of these species.	Although preliminary catch data per ICES sub-areas and division where available, detailed catch per rectangles was not updated and did not allow to allocated catches to EEZ and international waters.	Logbook data
Ireland	1 longliner (13 Days at sea), 2 trawlers (65 days at sea) in Area XII . Total Catch: 145t	1 trawler (38 days at sea) in Area X. Total Catch: 34t.	Irish Department of the Marine logbook data.
Iceland	18 tonnes (XIV), 1 vessel, in May. Catch:Redfish, tusk, roundnose grenadier, smoothheads, sharks and greenland halibut.	No fishery for deep water species.	Icelandic Directorate of fisheries
Portugal	2 vessels (both using longlines and bottom gillnet) with deep-water licences are operating in subareas VI, VII, XII and XIV. 330 days of fishing days per vessel. Total landing of the two vessels: 864 tonnes	2 vessels (both using longlines and bottom gillnet) with deep-water licences are operating in subareas VI, VII, XII and XIV. 330 days of fishing days per vessel. Total landing of the two vessels: 912 tonnes	Portuguese Directorate of Fisheries
United Kingdom (E&W)	negligible	negligible	Official statistics (DEFRA)
Others	No data received	No data received	

Norway

Norwegian exploratory fisheries on the MAR started in 1991 with a rather limited longline operation along the Reykjanes Ridge. An account of the Norwegian exploratory fishing between 1993 and 1997 was compiled by Hareide and Garnes (2001). The exploration was carried out by a trawler and several longliners. Some of the effort was directed at two of the closed areas, Faraday Seamounts (1993, trawling), and Hecate Seamounts (longline, 1997) and also in the closed section of the Reykjanes Ridge. The experiments in the two former areas did not lead to development of a lasting commercial operation. No records were given of by-catch of corals a.o. bottom fauna, however a comment in the paper is notable: "…the largest catches [by longlines] were made on and in the vicinity of coral reefs. Catches were extremely low in coral-free areas." This comment refers to the area of the Reykjanes Ridge between approx. 60 and 61 N.

In the years 1996-1997, a longline and partly gillnet fishery for 'giant' redfish developed on the Reykjanes Ridge, but this operation lasted only a couple of seasons (Hareide *et al.* 2001), and effort has been very low in subsequent years. There was also a fishery somewhat deeper for Greenland halibut. These fisheries were conducted along the Reykjanes Ridge from the border of the Icelandic EEZ and almost to the Charlie-Gibbs Fracture zone, i.e. also to some extent in the closed area between approx. 54 and 55 N.

The Norwegian fishing activity on the MAR has been sporadic and very low in 2003 and 2004 (Table 7-1), and only longliners have operated in the area.

Russian Federation

Soviet/Russian fishery on the Mid-Atlantic Ridge started in 1973, when dense concentrations of roundnose grenadier were found here. The greatest catch (29.9 thou. t) in that area was taken in 1975. In the subsequent years the catch of grenadier varied from 2.8 to 22.8 thou. tonnes. Fishery for grenadier considerably reduced after dissolution of the Soviet Union. In recent 15 years, fishery for grenadier was periodically conducted with annual catch 0.2-3.2 thou. tonnes. Most of the fishery takes place in the ICES Sub area XII. Catch in the area XIV makes up 0.4 % of the total catch. There is anecdotal evidence that grenadier fishing has occurred in the northern part of area X. During the whole fishing period from 1973 to 2004 catch of roundnose grenadier made up 192.4 thou. t. Echo records of roundnose grenadier were registered in the area of the Ridge between 46-62° N on 70 seamounts but only 30 of them are of great commercial importance and exploited by fleets. The biomass of roundnose grenadier at the northern MAR was estimated at 500 000 - 700 000 tonnes (Anon., 1990; Pavlov, Shibanov, 1991; Pavlov *et al.*, 1991; Shibanov, 1998). The fishery is conducted by pelagic trawls mainly, on some seamounts it is possible to use bottom trawls. Deepwater redfish, orange roughy, black scabbardfish and deepwater sharks occur in catches along with roundnose grenadier (Kemenov et al., 1979; Anon., 1988).

In 1983-1987, observations by the underwater-vehicle "Sever 2" revealed aggregations of tusk and northern wolffish on the Northern Mid-Atlantic Ridge seamounts (Zaferman, Shestopal, 1991; Zaferman, Shestopal, 1996), and then the possibility of fishery for these species by bottom longlining was discovered (Prozorov et al., 1985). Catches of tusk were taken on 20 seamounts in the area between 51-57° N.

The first commercial catches of alfonsino were taken on North Azores part of the Mid-Atlantic Ridge in 1977 and this area were exploited in 1978 and 1979 mainly by pelagic trawl. No commercial fishing took place during the 1980s but 9 exploratory and research cruises yielded catches of deep-water cardinal fish and orange roughy. About 1000 t of deep-water species, mostly alfonsino was caught by exploratory trawlers (Vinnichenko, 2002). By results from underwater observations, aggregations of deepwater crab were found on seamounts and

it was established that deepwater crab harvesting by traps would be possible here. (Zaferman, Sennikov, 1991). Studies to evaluate the possibility of longline fishing were also carried out in the 1980s (Zaferman and Shestopal, 1991; Zaferman and Shestopal, 1996), catches mainly consisted of deepwater sharks. The 1993 joint Russian-Norwegian survey used a bottom trawl and a catch of 280 t mainly of alfonsino and deep-water cardinal fish was taken. Orange roughy, black scabbard fish and wreckfish were also of commercial importance (Vinnichenko, Gorchinsky and Shibanov, 1994). Commercial fishing yielded 864 t in 1994 and about 200 t in 1995 and 600 t in 1997. In recent years the area was observed several times but no stable aggregations were registered and no commercial fishing was conducted. Since the discovery of the seamounts in the North Azores area Soviet and Russian vessels have taken more then 4000 t, mainly of alfonsino.

Spain

Spanish experimental fishing on the northern mid-Atlantic Ridge started in 1997 and finished in 2000. Five limited trawl experiments using pelagic and bottom trawls were conducted during this period. No major commercial trawl fisheries developed, except sporadic fishing activity, mainly in international waters of the Div. XIVb (WD by Durán Muñoz *et al*. 2005a). The mean duration of those experiences was 45 fishing days and some of the effort was directed at two of the closed areas, Faraday Smt. and Antialtair Smt. The interest in deep-water trawl in the mid-Atlantic Ridge has declined as a result of those experiences, and the trawl experiments ceased in 2000.

In 2004 a two-month experimental fishing with bottom longlines was carried out on the Northern Mid Atlantic Ridge. Some of the fishing effort was directed at the closed section of Reykjanes Ridge and in the vicinities of Antialtair Smt., Faraday Smt. and Hecate Smt. The results of this experience, including information on deep-water coral by-catches, have been reported to in the WD by Durán Muñoz *et al*. (2005b).

Faroe Islands

Following a special exploratory fishing programme initiated in 1992, aimed at orange roughy and involving several commercial vessels and one research vessel, 1-4 trawlers have regularly made fishing trips on the Mid-Atlantic Ridge since 1995. The fishery has been directed towards orange roughy most of the time, but other deep-sea species as black scabbardfish, roundnose grenadier, deepwater cardinalfish (*Epigonus*), alfonsinos and deep-water sharks are also taken. In 2003 no such fishing took place, but from 2004 this fishery has been re-established with 1 trawler; main catches are of orange roughy and black scabbardfish (Table 7-1).

France

The French deepwater trawler fleet has been operating mainly along the slope to the west of Scotland and Ireland and to the south of Division Vb from the late 1980s. Over recent years a move further west seems to have occurred toward Division VIb and Sub area XII, but the fishery is not known to have exploited Mid-Atlantic Ridge areas.

Ireland

There has been no large-scale deepwater fishing by Irish vessels on the Mid-Atlantic ridge. In 1999 one Irish longliner carried out some exploratory fishing in this area, targeting deepwater sharks. This was followed by the introduction of two more longliners to the Irish Fleet. A limited number of Irish vessels, both longliners and trawlers have fished in Subarea X, outside the Azorean EEZ, with the trawlers targeting orange roughy, and the longliners deepwater sharks. No longliners have reported landings from Area X in recent years.

Irish fishing effort in Area XII does not take place every year. In 2003 only one Irish longliner and two Irish deepwater trawlers reported landings from Sub-Area XII. In 2004 there were no reported landings from this area.

Iceland

In the early 1990s Iceland started exploratory fisheries on the mid-Atlantic Ridge with a very limited longline operation along the Reykjanes Ridge. Later in the 1990s, with a peak in 1996-1997, exploratory fishing was conducted with a few longliners and bottom trawlers. In the Icelandic logbook database, there are two records of sets with longline within the closed area on the Reykjanes Ridge. The catches comprised "Giant" redfish (20 kg) and tusk (2000 kg). These experiments on the Reykjanes Ridge did not lead to any development of a lasting commercial fishery.

Portugal

Portuguese exploratory fisheries with longlines and gillnets in Subareas VI, VII, XIV and XII started in the early 1990s. After that, Portuguese vessels continued fishing in those areas, targeting both demersal and deep-water species. In more recent years, only two vessels maintain a regular activity in those areas. In 2005 the Portuguese Fisheries Directorate and under the EC2347/2003 fishing licences were given to these two fishing vessels. It has not been possible to compile information on the exact geographical distribution of the activity, and it is hence not known if there has been fishing in the closed areas.

The Azorean longline vessels (>18m) operate in international waters, particularly on Sub area Xa1, targeting demersal and deep-water species for which they are licensed. Data is not available to quantify the number of vessels and accurate geographical areas.

Others

The Group is aware of fishing activities by other nations, but does not have documented information on the scale of these operations. It is not known if these fisheries are conducted in the closed areas.

b) Evaluation of the boundary lines of the closed areas in the NEAFC Regulatory Area in relation to the spatial distribution of vulnerable deep-water habitats in those areas;

WGDEEP has no information to add to that provided by WGDEC.

c) Information on the distribution of cold-water corals on the Hatton Bank;

WGDEEP has little information to add to that provided by WGDEC.

A preliminary analysis of reports from USSR/Russian research and exploratory expeditions on the Hatton Bank (56°-59°30´ N, 14-22° W) in 1976-2004 (21 expeditions in total) has not revealed records of colonies of cold-water corals in the depth zone 750-2040 m. The majority of the exploratory effort was directed at the depth range 1000-1600m, i.e. rather deeper than where colonies would be expected to occur.

d) Information on the percentage of vulnerable deep-water habitats in the Regulatory Area covered by the proposal;

As WGDEC, WGDEEP does not have information to respond to this request.

e) Information on the distribution of cold-water corals on the Western slopes of the Rockall Bank to indicate appropriate boundaries of any closure of areas where cold-water corals are affected by fishing activities;

WGDEEP has little information to add to that provided by WGDEC.

A preliminary analysis of reports from USSR/Russian research and exploratory expeditions on the Western slopes of the Rockall Bank in 1977-2002 (14 expeditions in total) has not revealed records of colonies of cold-water corals in this area between 53°50´-56°40´ N and 15-19° W at depths 460-1400 m. The majority of the exploratory effort was directed at the depth range 1000-1400m, i.e. rather deeper than where colonies would be expected to occur.

f) Evaluate the destructiveness of different fishing gears with respect to vulnerable deep-water habitats.

WGDEEP has little information to add to that provided by WGDEC.

However, with regards to trawling, it should be emphasised that trawling can be carried out in many ways and that not only the gear type but also operational procedures will determine if the gear causes damage to sensitive habitats or bottom fauna. Attention is drawn to the lack of a clear distinction between traditional bottom trawling (where the net and otter boards touches the bottom during the entire tow), and midwater trawling. In fisheries on rough ground on seamounts and ridges, as on the mid-Atlantic Ridge when the targets are alfonsino, roundnose grenadier, and orange roughy, midwater trawls are often operated close to the bottom. The technique is effective for shoaling species and is preferable on hard bottom where the risk of snagging and gear loss is high. The experience of the Soviet/Russian fleets suggests that it is possible to target deep-water species on the mid-Atlantic Ridge with midwater trawls without bottom contact. It is unclear to the Group if this kind of operation has a significant destructive effect on e.g. corals and other bottom fauna.

Operation of active gears in rugged terrain or newly explored areas requires good navigational skills and instruments for detailed mapping of the areas of operation. The Hatton Bank is probably rather well mapped and skippers will know where to operate their gears most efficiently in order to maximize catch and minimise gear loss or lost time due to snagging and technically unsatisfactory hauls. On the mid-Atlantic Ridge, however, only few areas have been mapped carefully using new instruments such as multibeam echosounders. Under these circumstances, it seems likely that current trawling practices and gears will continue to result in unintentional damage of sensitive habitats that are of high value for the fisheries resources.

Longlining is also carried out in many ways, and while some operations result in by-catch of e.g. corals, other may not have a significant impact on sensitive bottom fauna. In a 2004 Spanish exploratory fishery on the mid-Atlantic Ridge occurrence of corals and other sessile bottom fauna was recorded (Duran Muñoz et al 2005b). Pieces of stony or soft coral were observed in 29% of the stations (36% and 26% of the stations for automatic longline and traditional longline, respectively). These experiments were conducted with bottom-set longline.

Another example is the longlining along the Portuguese slopes (depths around 1000- 1200m) and targeting Black scabbardfish. This fishery is conducted with relatively small (8-22m) open-deck vessels. The configuration of the gear used (schematically represented in Fig. 7.1) indicates that there are only few points of contact with the bottom and that most of the fishing gear is set some distance off the bottom.

No records of by-catch of coral have been reported by the fishermen. Although no detailed mapping of deep-water corals has been made along Portuguese mainland, some records of their occurrence in these areas have been published (Freiwald. and Wilson, 1998; Roberts, 2002). Although the documentation is sparse, it seems quite improbable that the Portuguese longline operation has great impact on the deep-water corals.

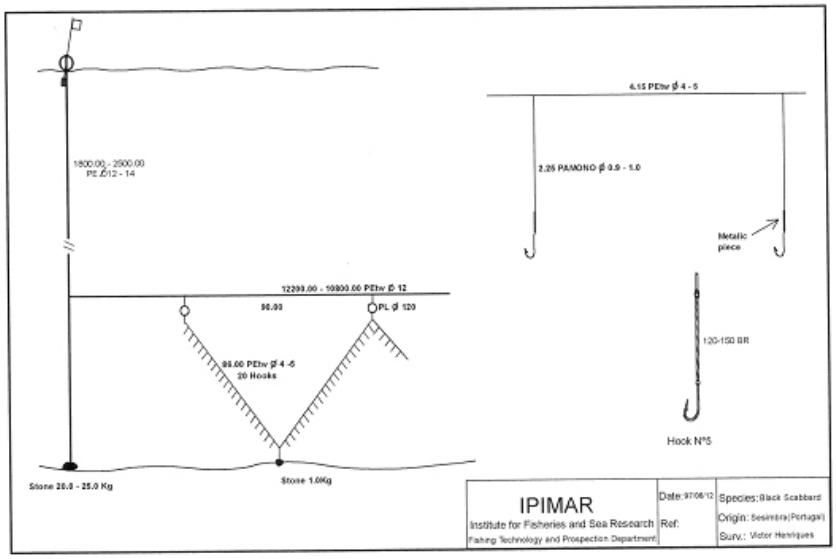


Figure 7.1 Longline gear used in the fishery for black scabbardfish (Henriques, 1998).

7.4 Sources of new information: New habitat surveys of Rockall and Hatton Banks

Several surveys over these banks will occur or are planned in the near future.

- The Spanish Institute of Oceanography (IEO) will carry out two-year multidisciplinary survey in the Hatton Bank with the Spanish R/V Vizconde de Eza. The survey, called ECOVUL/ARPA, will take place during October 2005 and 2006 with the aim, among others, to map the sea bottom using ecosounders (monobeam EA 500, multibeam EM 300 and parametric TOPAS PS 018) supplementing with sampling methods, in order to contribute to providing a true picture of the distribution of cold-water corals in the western slopes of the Hatton Bank. The data collected could be useful in order to contribute to define the benthic communities in the study area and to attempt to obtain estimates of abundance and biomass of main benthic invertebrate megafauna. In addition, the IEO is developing investigations regarding bottom trawl and bottom longline by-catches of benthic invertebrates in the area (WD by Duran Muñoz et al 2005c)
- A survey (at-sea phase completed) funded by the UK Department of Trade and Industry has examined eastern Rockall, George Bligh Bank and a section of the Hatton Bank.
- A survey by FRS Aberdeen supplemented the above with additional camera work.

8 EC Request Concerning Management Areas and Harvest Rules

ICES received the following request from the EC:

a) Advice on the biological basis and practicality of possible subdivisions of the management areas for the following stocks:

i) Deep-sea sharks in Subareas V,VI,VII, and IX.
ii) Black scabbardfish in Subareas I,II,III,and IV
iii) Black scabbardfish in Subareas V,VI,VII, and XII
iv) Alfonsinos in Subareas III,IV,V,VI,VII,VIII, IX, X, and XII
v) Roundnose grenadier in Subareas VII, IX, XII and XIV
vi) Orange roughy in I, II, III, IV, V, VIII, IX, X, XII, and XIV.

b) Recommend harvest rules that would govern either or both TACs and effort levels for deep sea species, taking account of availability of data and knowledge concerning these resources and the need to conform to the precautionary approach and the UN straddling stocks agreement.

In considering options for a) the new divisions and subdivisions of the ICES area was used (new as of 2005).

8.1 Item a) of the request

8.1.1 Deep-sea sharks in Areas V, VI, VII, VIII and IX

Information on deep-sea sharks is compiled by WGEF.

The category “deep-sea sharks” includes several species that all share the characteristics of low fecundity and long life spans. For none of the species is the stock structure known.

There is no information on stock structure or biology that would suggest that sub-dividing of the current management area is justified or practical at the present time. However, it is reiterated that an aim should be to compile species-specific data on areas of distribution, landings and exploitation levels. Sharks are often taken in mixed fisheries along with e.g. roundnose grenadier and black scabbardfish, and the subdivision of current management areas should if possible be consistent for all these species.

8.1.2 Black scabbardfish in Subareas I,II,III,and IV and Black scabbardfish in Subareas V,VI,VII, and XII

8.1.2.1 Stock Structure

Black scabbardfish (*Aphanopus carbo*) has a wide distribution in the NE Atlantic at depths between 200-1600m, but there is very little objective information currently available on the stock structure of this species. The eggs and larvae are unkown and juveniles are rarely caught. Spawning is currently only known to take place off Maderia between November and December (Morales-Nin and Sena-Carvalho, 1996) although it may also occur elsewhere (Zilanov & Shepel, 1975). Spatial differences have been observed in the length range and maturity between northern and southern areas. In subareas Vb, VIb, the length structure of landings from bottom trawl catches is similar, ranging from approximately 80-110cm and dominated by sub-adult stages. For example, on Bill Baileys Bank in the Faroese Fishing Zone (Division Vb) individuals of 74 - 111 cm in length were caught by bottom trawl at a depth of 1020 m. The mean length of males and females was estimated to be 88.8 cm and 89.3 cm, respectively. On the Hatton Bank (Subarea XIIa2 and VIb1a) individual length varied from 76

to 106 cm at 805-815 m (WD Vinnichenko et al., 2005a). Spanish data reported in the WD by Dúran Muñoz *et al.* (2005), also included length distributions from trawlers fishing on the Hatton Bank over three successive years. Individual lengths varied between 73-121cm with bimodal peaks at 89 and 97cm in 2002, 95 and 107cm in 2003 and a single modal class in 2004 at 100cm. A wider length range and larger modal length of 111cm has been estimated in Division IXa with the total length range of sampled specimens from longliners varying between 79 and 135 cm for the period 2000-2004 (WD Figueiredo and Bordalo Machado, 2005).

A lack of biological information exists for black scabbardfish from the Mid Atlantic Ridge. Length frequency distributions based on commercial Spanish bottom trawl landings from ICES Sub-area XII in 2001 ranged from 71 to 115cm with a modal peak of around 93cm (Anon, 2002). Previous studies of otolith microchemistry (elemental composition of the otoliths) found some differences between northern and southern areas and the Mid Atlantic Ridge, but results were still considered inconclusive (Swan, Gordon, and Shimmield, 2001). However, previous reports from the STEFC of Deep Sea Fisheries Report (2001) stressed that fishes on the Mid Atlantic Ridge and the Hatton Bank are distributed over quite distant and different features and may constitute separate populations, although there is currently no firm evidence for it.

Given the lack of conclusive stock discriminatory data, for assessment purposes, previous WG have divided the stock into a northern and southern component. The northern component comprises fish exploited by trawl fisheries in Sub-areas V, VI, VII and XII, the southern component being exploited by a longline fishery in Sub-area IX.

8.1.2.2 Catch Trends

In Sub-areas I, II there are no reported landings of black scabbardfish. In areas III and IV (Fig. 8.1) black scabbard fish is not a target species and landings are low, peaking in the early 1990s (57 tonnes in 1990) with 24 tonnes reported in 2002 (Scottish landings).

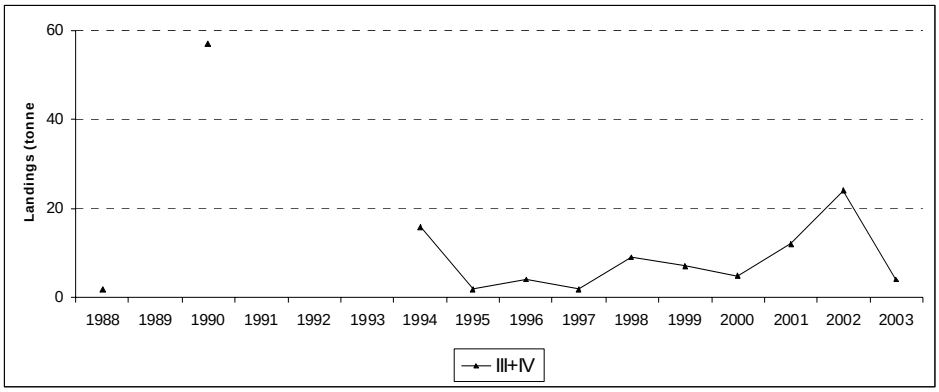


Fig 8.1 Total international landings in ICES sub-areas III and IV for Black scabbard fish

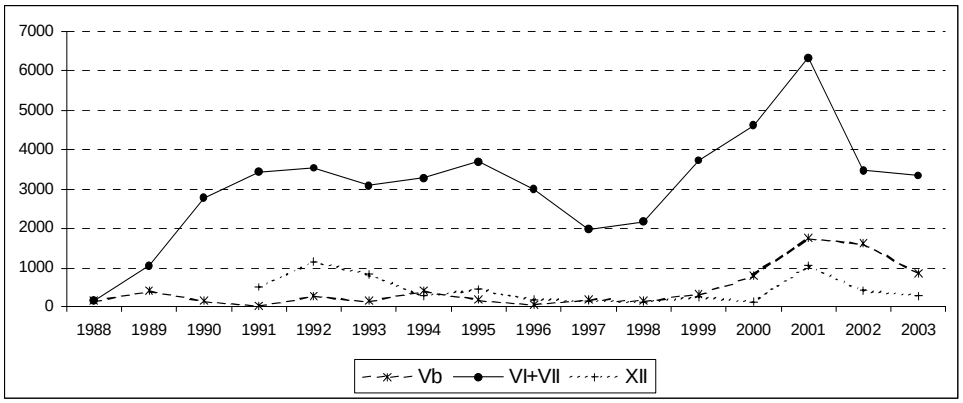


Figure 8.2 Total international landings in ICES sub-areas Vb, VI+VII and XII for Black scabbardfish

Much higher landings are reported from areas V, VI and VII (Fig. 8.2). An increasing trend was particularly noticeable in Subarea Vb. This increase, registered in 2002 and 2003, was derived from landings from Faroese deepwater trawlers (with engines larger than 2000Hp) targeting black scabbard and roundnose grenadier in national waters and further south towards the Hatton Bank in international waters.

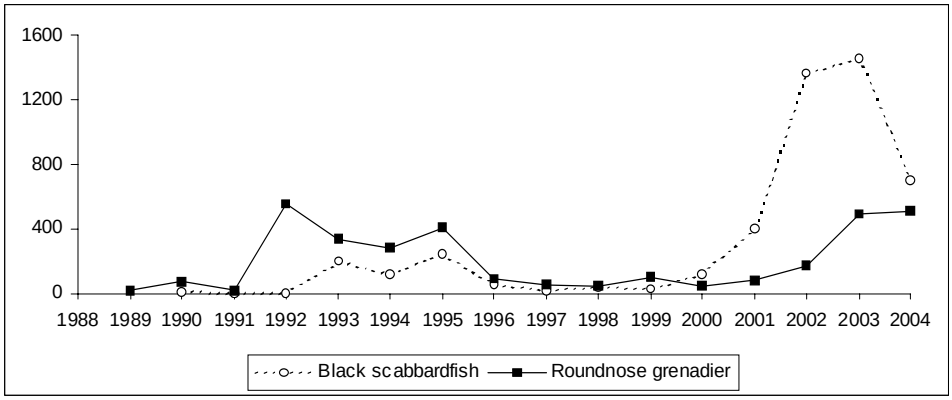


Fig 8.3 Landings of Black scabbardfish and Roundnose grenadier by Faroese trawlers in Vb.

In Subareas VI and VII the general increasing trend was mainly due to the French landings in Subarea VI, although in 2001 and in 2002 there was also a considerable increase in Scottish and Irish landings. The decrease of landings registered in 2003, particularly in Subareas VI and VII, although still preliminary might reflect the implementation of TAC in these Subareas. As in sub-area Vb, the landings of black scabbard fish in Sub-areas VI and VII seem to be correlated with those of roundnose grenadier as the species are caught together (Fig. 8.3).

8.1.2.3 Recommendations

In the mixed bottom trawl fisheries to the west and north of the British Isles, black scabbardfish and roundnose grenadier are caught together. It is therefore justified to sub-divide management areas for these two species in the same way. Assuming that the new management area scheme should not imply an increase in overall TAC, the following management areas are proposed:

-Sub-areas I, II, III and IV.

There have been no significant landings reported in these sub-areas. A nominally low TAC should be set in order to prevent misreporting while allowing for some limited by-catch.

-Sub-areas V, VI, VII and XIIb and XIIa2

This management area includes the new ICES Division XIIb and Sub-division XIIa2. The latter includes only depths greater than 2000m but is present to prevent areas without quota regulation to be used for misreporting.

-Sub-areas XIIa1, XIVb1 and XIIc

These Sub-areas constitute a management zone for the Mid-Atlantic Ridge. There have been no significant landings reported in these sub-areas. A nominally low TAC should be set in order to prevent misreporting while allowing for some limited by-catch.

-Sub-areas VIII and IX.

There have been no significant landings reported in sub-area VIII.

- Sub-area X.

There have been no significant landings reported in sub-area X . A nominally low TAC should be set to prevent misreporting while allowing for some limited by-catch.

8.1.3 Alfonsinos in Subareas III,IV,V,VI,VII,VIII, IX, X, and XII

8.1.3.1 Distribution

The geographic distribution of this species is broader than the ICES areas and only some unknown fraction of their geographic distribution have been sampled.

B. splendens - Circumglobal, excluding the northeast Pacific and Mediterranean Sea. Western Atlantic: Gulf of Maine to the Gulf of Mexico. Eastern Atlantic: off southwestern Europe and the Madeira, Canary Islands to South Africa (Fishbase).

Inhabits the outer shelf (180 m) and slope to at least 1,300 m depth, probably moving further from the bottom at night; often found over seamounts and underwater ridges. Juveniles are pelagic.

B. decadactylus - Worldwide in temperate and tropical latitudes, except the eastern Pacific. Eastern Atlantic: Greenland, Iceland, and Norway to Western Sahara and South Africa, including western Mediterranean. Western Atlantic: south to Brazil (Fishbase). Found in ca. 500 m on mud or sandy mud bottom. Occurs on the continental slope; adults demersal, young pelagic.

Both species are caught in EU fisheries on the continental slope and the mid-Atlantic Ridge but the relative proportion of the two species in catches is unknown.

8.1.3.2 Landings

Landings in the ICES area come mainly from area VI, VII, VIII, IX and X. Very few landings are reported from areas IV, V and XII and no landings are reported for the other areas.

Landings are also reported from Madeira and Canary islands in the CECAF area.

8.1.3.3 Biological information

Reproduction data from the Azores do not provide a description of consistent reproductive cycle and few mature females are found in the Azores EEZ (ICES, 2002), probably related

with technological problems and environmental conditions. However, mature females are found in areas north (areas X) and South of the Azores waters (Vinnichenko, 1998, 2002a).

8.1.3.4 Stock structure

Very little is known about the stock structure of these species (ICES, 2002, 2004).

Russian genetic studies (Titova, 1981) suggest the existence of local groupings of *Beryx splendens* in the Azores area and in the Corner Rising. This is also indicated by a an absence over many years of large aggregations on the seamounts after a period of heavy fishing (Klimenko, 1983; Melnikov *et al.*,1993; Vinnichenko, 2002a,b).

Hoarau and Borsa (2000) found little genetic variation of *Beryx splendens* between populations located in the Atlantic and Pacific. However, Menezes *et al*. (2001) point out that only four samples were obtained from the Atlantic, and consider the Pacific and Atlantic populations to be strongly differentiated. They conclude that there is probably a higher degree of genetic differentiation between oceans than previously thought.

8.1.3.5 Recommendations

In the ICES Subarea X alfonsinos are often caught on aggregations associated to the many seamounts occurring on this area. However, there is limited information about spatial distributions of the species and the overall abundance and the abundance on each individual seamount.

Area X, corresponding to the Mid Atlantic Ridge region, should be considered a management area separate from the other areas because this comprises the core distribution area of the species where the most important fisheries occur or were conducted.

The other areas (VI, VII, VIII and IX), corresponding to the slope areas, should be aggregated in to a single management area.

For areas III, IV, V and XII there are no records of landings and there are no reasons to believe that any fishery will be developed in the near future on those areas.

8.1.4 Roundnose grenadier in Subareas VII, IX, XII and XIV

8.1.4.1 Distribution

Roundnose grenadier is mainly distributed from about 750 m to 2000 m depth over slope areas and deep banks of both sides of the North Atlantic basin as well as on the Reykjanes and Mid-Atlantic Ridges and on isolated oceanic features. It also occurs on the slope of the northern North Sea and in the Norwegian deep and Skagerrak where it forms a dense population. Its abundance decreases at latitude lower than about 50°N although the species occurs at smaller density further south, down the continental slope off Morocco. Limited survey data, in the Bay of Biscay, suggest the density of grenadier to be low there, and the species to be distributed deeper. The same is observed in the Azores. In terms of biogeography, these areas correspond to the southern end of the distribution of a rather boreal species.

8.1.4.2 Catch trends

The main fisheries in ICES areas are located to the west of Bristish Isles (current management area Vb, VI and VII) and further offshore along the western slope of the Hatton Bank and on the Reykjanes and northern Mid-Atlantic Ridge (ICES sub-area XII). Landings reported to ICES in Vb, VI and VII were over 7200 tonnes and close to 7000 respectively in 2003 and 2004, including 952 t unallocated catch in 2003. In the sub-area XII, reported landings were over 10 000 t in 2003 and 2004.

There are currently almost no fisheries for roundnose grenadier in ICES sub-areas VIII, IX and X.

8.1.4.3 Recommendation

8.1.4.3.1 New management areas

The previous proposal for management areas of roundnose grenadier were based upon inferences of possible population structure derived from bathymetric and hydrographical features in the north Atlantic. No new data of population structure were available and the stock assessments and CPUE trends in previous years do not provide evidence for different trends between areas. As a consequence the advice below is still based upon the bottom and water mass structure in the north east Atlantic Basin.

Moreover, in the mixed bottom trawl fishery to the west of British Isles, roundnose grenadier and black scabbard fish are caught together. Therefore, it is justified to set consistent management areas for these two species.

Catches from ICES sub-area XII come mainly from the Mid-Atlantic Ridge and the Western slopes of Hatton Bank. The Northern part of the Western slope of Hatton Bank is include in the new ICES sub-divisionVIb1, while southern part of the western slope is included in the new ICES division XIIb. There is no natural boundary between these two parts of the slope of the Hatton Bank and the distribution of the species is continuous throughout the slopes of these areas. Therefore, the catches in these areas are most likely to be from the same population and they should be managed under a single management area.

The roundnose grenadier on the Mid Atlantic Ridge and the Hatton Bank are separated by a major oceanic basin and may constitute separated populations, although there is no firm evidence for it (see above).

A discussion also took place during the WG as for whether the Hatton Bank should be separate area to the Eastern Rockall and European slope area, in order to prevent effort displacement from slope to international waters. The WG did not reach a consensus on that matter, and it therefore proposed two possible ways to subdivide management areas.

Option 1

- ICES sub-area VIII and IX
- The ICES sub-area X
- Vb, VI, VII, XIIa2, XIIb (addition of the new ICES divisions XIIa2 and XIIb to the former management zone Vb, VI, VII)
- New ICES divisions XIVb1, XIIa1, XIIc (management zone for catch on the Mid-Atlantic Ridge).

Option 2

- ICES sub-area VIII and IX
- The ICES sub-area X
- Vb, VIa, VIb2, VII, XIIa2
- VIb1, XIIb
- New ICES divisions XIVb1, XIIa1, XIIc (management zone for catch on the Mid-Atlantic Ridge).

Sub-division XIIa2, which does not include slope depths but only grounds deeper than 2000m was added to XIIb, Vb, VI and VII in order to prevent areas without quota regulation being used for misreporting.

The new ICES Division XIVb2 and XIIa3, lying within the Greenland EEZ, as well as divisions XIIa4 lying within Iceland's EEZ are under the jurisdiction of these countries.

8.1.4.4 Recommendation on TAC per new management area

The sum of the TACs for the new management areas should not exceed the current overall TAC for the present management area (Subareas VII, IX, XII and XIV).

It is advised that nominally low TACs should be set in Subareas without former permanent fisheries to allow for limited by-catch and prevent misreporting. This advice applies to management areas VIII+IX and X.

8.1.5 Orange roughy in I, II, III, IV, V, VIII, IX, X, XII, and XIV.

8.1.5.1 Distribution

Orange roughy is found in both the northern and southern hemispheres. In the southern hemisphere it is found in Australia, New Zealand, South-west Africa and off the coast of Chile. In the northern hemisphere it is found on the European continental slope, the Mid-Atlantic Ridge and the eastern North American continental slope. Throughout its range it is usually found in association with seamounts, canyons and hydrographic fronts.

8.1.5.2 Landings

From these Sub-Areas, the total international catch of orange roughy in this area in 2002 was 58 tonnes and in 2003 was 199 tonnes. Preliminary international declared landings for 2004 (WGDEEP 2005) were 726 tonnes, including 600t caught by non-EU vessels in Sub-Areas X and XII. An EU TAC was introduced for the first time in 2005. This TAC is for 102 tonnes per year.

Within this large management area there have been no reported landings of orange roughy from Sub-Areas I, II, III or IV, and only 3 tonnes reported from Sub-Area IX.

Orange roughy in Sub-Areas VI and VII are treated as separate management units.

8.1.5.3 Recommendations

Orange roughy are typically associated with seamounts or similar features. Because these features tend to be sequentially depleted, there is potential for the fishery to expand out of Sub-Areas VI and VII as fisheries decline. It is likely that exploratory fisheries will take place in Sub-Areas VIII-XII.

Current management units are completely inadequate for orange roughy. Experience from around the world shows that management units need to be small as topographical features may be inhabited by separate populations. ICES recommended that where the small scale distribution is known, this be used to define smaller and more meaningful management units. Where such information is lacking, such as in international waters, the ICES statistical rectangle is a more meaningful spatial management unit.

Recent information to ICES does not have a sufficient level of spatial resolution to identify individual exploited aggregations outside Sub-Areas VI and VII. Because of this, and the very low quotas involved, it is not currently practical to manage at the level of statistical rectangle and therefore larger management areas have to be recommended.

Because the quota is so low, the smallest practical subdivision of management areas is by ICES Sub-Area. STECF also recommends this approach for existing orange roughy fisheries (STECF 2001). However, it is considered by this group that it is more practical to separate the zone geographically into three management areas. Sub-Areas X and XII should be combined into one mid-Atlantic management area. This is consistent with the approach taken for black scabbardfish and roundnose grenadier. Sub-Areas VIII and IX should be combined into a Southern Shelf management area. Sub-Area V should be treated as a separate management unit. Sub-Areas VI and VII are already managed separately. As there have been no landings from Sub-Areas I, II, III, or IV there is no need to include these in management areas, but nominally low TACs should be put in place in these Sub-Areas.

While it is accepted that a TAC is required for each management area, other management measures are required to prevent sequential depletion of individual features. Small-scale management measures, such as limiting the catch from individual seamounts or features, are used for orange roughy management in other parts of the world, and are recommended.

8.2 Item b) of the request

The Group decided to propose harvest control rules for two generic fishery types:- (1) mixed species fisheries (examples of which include the French bottom trawl fishery to the west of Britain, mixed fisheries for anglerfish, hake and deep-water sharks on the continental slope) and (2) single-species targeted fisheries (e.g. orange roughy in VI, VII, fisheries for blue ling spawning aggregations). The Group recognised that these control rules may have to be modified to suit individual fisheries, but in the absence of a detailed description of fisheries in the ICES area this generic approach seemed the best way forward in the short term.

Proposed management tools, supplementary management measures and monitoring indicators are given in Table 8.1 below:

Table 8.1. Proposed management tools, supplementary management measures, and monitoring indicators.

FISHERY TYPE	MAIN MANAGEMENT TOOLS	SUPPLEMENTARY MEASURES	MONITORING INDICATORS
Mixed	Fishing effort	Spatial and temporal closures. Measures to protect sensitive species and vulnerable habitats (e.g from gear impact).	Overall effective effort ceiling. Stock indicators:- CPUE trends (preferably surveys but usually commercial CPUE), proportion mature in stock, or other species-specific indicators.
Targeted	TAC and/or fishing effort	Effort ceiling Correspondence between Effort and TAC Measures to protect sensitive species and vulnerable habitats (e.g from gear impact).	Stock indicators:- CPUE trends,), proportion mature in stock, or other species-specific indicators.

It must be emphasised that these proposals are not definitive and are likely to evolve with further input from ICES and feedback from the Commission and NEAFC.

8.2.1 Monitoring indicators

The Group had a discussion on possible indicators, which could be used to evaluate the status of deep-water fisheries, and it identified the following:

- Habitat indicators
- Biological indicators: stock abundance and life history
- Fishing activity indicators

Habitat indicators. Possible indicators could be both the state of and pressure on sensitive benthic communities (e.g. deep-water corals).

Biological indicators

Abundance indicators. Survey-based indices would be the most obvious candidates, but long time series are only available for a limited number of stocks (e.g., Blue Ling in Va). For most of the stocks, the only abundance indicator available is commercial CPUE. However, for a number of fisheries, CPUE changes reflect partly stock fluctuations, but importantly also shifts in fishing regimes (changes in target species, sequential fishing, technical creeping).

Life history indicators. Such indicators describe the demographic balance of stocks. Age-based indicators would be most appropriate for stocks where age-reading procedures have been validated. For the other stocks, length-based indicators could be used as a second choice. The definition of life history indicators may differ across species and or areas.

Fishing activity indicators. It is necessary to monitor both shifts in the spatial distribution of fishing effort and fleet developments. Changes in effort distribution may indicate that fishing vessels target different fish aggregations in different areas. In doing so, these vessels may re-allocate their effort towards endangered species, which may require management actions. Fleet developments may occur through increases in the number of fishing vessels, the number of days fishing and technical creeping. A fishing activity indicator, which may encompass both spatial changes in effort and fleet development, could then be calculated by adjusting the nominal fishing effort with spatial and temporal effects and for technological creeping. The reliability of such an indicator is highly dependent on spatial data being available at an appropriate resolution scale (e.g. haul by haul data).

8.2.2 Biological reference points

The WG reviewed the BRP that were initially proposed by ICES SGPA and NAFO in 1997 for data poor situations. For all these stocks, the BRPs were $U_{pa} = 0.5*U_{max}$ and $U_{lim} = 0.2*U_{max}$ (U_{max}: indicator of the virgin biomass). In 2002, SGPA derived a set of potential F reference points. The WG recognized that these results provide a valuable background to estimate the BRPs of deep-water species. However, the WG was also of the opinion that such results cannot be used at the present time because reliable F estimates are not available for these stocks. The WG considered that the definition of BRPs for deep-water species should follow a two-step approach.

In the short term, the thresholds currently used to calculate U_{pa} and U_{lim} - respectively 50% and 20% - should be revisited according to life history characteristics of these species (e.g. growth rate, age at maturity). Table 9.2 provides some background to group species according to these biological characteristics. The WG grouped the different species into 2 categories, one including slow-growing late-maturing species (category 1: orange roughy, roundnose grenadier, deep-water squalids), and another one including quick-growing early-maturing species (category 2: all other species). If the current 50% and 20% thresholds might be reasonable to define the PA BRPs of category 2 species. As for category 1 species, the WG was of the opinion that thresholds should reflect the specific vulnerability of these species to

exploitation and their capacity to recover. To quantify these thresholds, two different options were suggested:

1. The thresholds should be higher than those suggested for category 2 species (respectively 50% and 20% of the virgin biomass for U_{pa} and U_{lim}), and their values should be decided by managers;
2. The thresholds should be set provisionally at 75% and 50% of the virgin biomass for U_{pa} and U_{lim} respectively, to accommodate the PA approach in a data poor context;

In the longer term, the WG considered, in line with other ICES assessment WGs, that ICES should develop an MSY-based positive target strategy, rather than current risk avoidance strategies. Experience from around the world suggest that strategies building in positive targets can control fishing mortality more effectively. In addition, it is desirable that BRPs based on SSB and F levels, instead of CPUE levels, should be introduced as more reliable stock assessments become available. The WG indicated that the current level of information available on deep-water species does not allow the calculation of MSY-based BRPs in the short term. When data become available in the longer term MSY-based BRPs may be calculated, and used as benchmarks in substitution to the current U_{pa} and U_{lim}.

Table 9.2. Deep-water species in the ICES area ranked according to (1) longevity and (2) growth rate (summarized from WGDEEP 2001). Species have been clustered into 2 groups according to their biological characteristics. The numbers given are only indicative as age-reading is poor for most of these species (cf WGDEEP 2001).

SPECIES	LONGEVITY (YEARS)	GROWTH RATE (K (Y^{-1}))	CLUSTER
Orange roughy	125	0.06-0.07	1
Roundnose grenadier	>60	0.06-0.13	1
Deep-water squalid sharks: *Centroscymnus coelolepis* *Centrophorus squamosus*	 Not known 60-70	 Not known Not known	1
Blue ling	30	Not known	2
Argentine	35	0.17-0.20	2
Ling	20	Not known	2
Tusk	20?	Not known	2
Black scabbardfish	8-12 from whole otoliths 25 from sections	0.25	2
Red (blackspot) seabream	16	0.10-0.17	2
Greater forkbeard	15?	Not known	2
Alfonsino: *Beryx decadactylus* *Beryx splendens*	 13 11	 0.11-0.17 0.13-0.14	2

8.2.3 Harvest control rules

In the short term, for both category 1 and 2 species, ICES advice could in principle be provided in a similar way to that given for other stocks for which stock assessments are routinely carried out. For example,

- If $U < U_{lim}$, fishery should cease
- If $U_{lim} < U < U_{pa}$, exploitation should be reduced until $U > U_{pa}$,
- If $U > U_{pa}$, exploitation should be set so that U remains above U_{pa}

The main difference in advice between species belonging to categories 1 and 2 would be the recovery time. For category 2 species, multi-annual HCR may be contemplated, so the recovery time of stocks should be allowed to exceed 1 year. For category 1 species, multi-annual plans for stock recovery should not be contemplated.

HCR should in addition account for mixed-species fisheries (section B.1). From a biological point of view, and more precisely for the sake of biodiversity preservation, the WG suggests that the poorest stock could be a reasonable candidate to set the HCR. However, the WG was of the opinion that the decision weight allocated to each stock should be left to managers.

In the longer term, HCR should be elaborated on the newly calculated BRPs, as described in section B.4. In addition, HCR could accommodate environmental issues in a quantitative way.

8.2.4 Data requirements

Countries should be encouraged to maintain existing fisheries-independent surveys and to instigate new surveys in areas supporting important fisheries or containing vulnerable habitats.

In a data-poor situation the harvest control procedures described above are very likely to rely on landings, discard and effort data from commercial fisheries. These data are required at a high spatial resolution, which for some species, orange roughy for example, will have to be at a higher level than ICES rectangles. These data should be corroborated using VMS data and information from observer schemes. NEAFC has started to compile a database of landings and effective effort in the Regulatory Area and this should be expanded to include discards. Similar databases will be required in the EU management area and in the national zones of Contracting Parties to NEAFC. It is important that a mechanism is place for these data to be made available at ICES.

9 References

Anon., 1990. Fisheries description of the western part of the Reykjanes Ridge. PINRO. 157 pp. (in Russian).

Anon., 1988. Fisheries description of the northern part of the Mid-Atlantic Ridge. PINRO. 179 pp. (in Russian).

Freiwald, A. and J. Wilson, 1998 Taphonomy of modern deep, cold water coral reefs. Historical Biology 13: 37- 52.

Hareide, N,-R. and Garnes, G. 2001. The distribution and catch rates of deep water fish along the mid-Atlantic Ridge from 43°N to 61°N. *Fisheries Research* 51:297-310.

Hareide, N.-R., Garnes, G., and Langedal, G. 2001. The boom and bust of the Norwegian longline fishery for redfish (*Sebastes marinus "giant")* on the Reykjanes Ridge. NAFO SCR Doc. 01/126.

Hareide, Nils-Roar, Maurice Clarke, Paul Connolly, Dominic Rihan, Peter Tyndall, Myles Mulligan, Robert Misund, Dag Furevik, Odd Børre Humborstad, Philip McMullen, Kjartan Høydal, Tom Blasdale,& Andrew Newton, 2004. A preliminary Investigation on Shelf Edge and Deepwater Fixed Net Fisheries to the West and North of Great Britain, Ireland, around Rockall and Hatton Bank.

Henriques, V. (1998) Portuguese deep-water fisheries in the continental slope. ICES CM 1998/O:65.

Hoarau, G & Borsa, P. 2000. Extensive gene flow within sibling species in the deep-sea fish *Beryx splendens*. C.R. Aca. Sci. Paris, Sciences de la vie/Life sciences, 323: 315-325.

ICES 2002. Report of the Working Group on the Biology and Assessment of Deep Sea Fisheries Resources. ICES CM 2002/ACFM:16 Ref.G.

ICES 2004. Report of the Working Group on the Biology and Assessment of Deep Sea Fisheries Resources. ICES CM 2004:15 Ref.G.

Kemenov V.E., Klimenkov A.I., Vinnichenko V.I., Roshupko A.F., GarkushaV.K., 1979. Manual on the search and fishery for deepwater fishes on the underwater eminencies of the Mid-Atlantic Ridge // Sevrybpromrazvedka (Northern Fish Scouting Organization), MVIMU,. Murmansk. - 82 pp.

Klimenko A.P. 1983. Biological aspects of fishery on seamounts in open areas of the Ocean.// Biology, fishery resources and prospects of fishery for fish and invertebrates. M.: VNIRO, p.18.

Melnikov, Yu.S., Ivanin, N.A. and A.S. Piotrovsky. 1993. Current state of fish resources on the elevations of the West-Indian Ridge. Main results from complex investigations of YugNIRO in the Azov-Black Sea Basin and in the World Ocean. Kerch: YugNIRO, p.105-108 (in Russian).

Menezes, G, Rogers, A, Krug, H, Mendonca, A, Stockley, BM, Isidro, E, Pinho, M & Fernandes, A 2001 Seasonal changes in biological and ecological traits of demersal and deep-water fish species in the Azores.Final Report EC DGXIV/C/1 Study Contract 97/081. 162 pp + Figs.

Morales-Nin, B. & DS Carvalho, 1996. Age and growth of black scabbard fish (*Aphanopus carbo*) off Madeira. Fisheries Research. 25 (3-4): 239-251.

Pavlov, A.I. and V.N.Shibanov. 1991. Investigation into biological resources of pelagial and thalassobathyal in the open part of the North Atlantic. Complex fisheries investigations of PINRO in the North Basin: results and prospects: Selected papers/PINRO. Murmansk. P.104-117 (in Russian)

Pavlov, A.I., Shibanov, V.N. and I.A.Oganin. 1991. State and prospects of harvesting biological resources in the open areas of the North Atlantic. Biological resources in thalassobathyal zone of the World Ocean: Selected papers/VNIRO. M., p.6-15 (in Russian)

Roberts, J.M., 2002. The occurrence of the coral *Lophelia pertusa* and other conspicuous epifauna around an oil platform in the North Sea. Journal of the Society for Underwater Technology, 25, 83-91.

STECF 2001. Report of the subgroup Fisheries and Environment. Deep-Sea Fisheries. SEC(2002)133.

Shibanov, V.N. 1998. Biological foundation of fishing roundnose grenadier Abstract of Biology Science Kandidat Dissertation. M: VNIRO, 24p. (in Russian).

Swan, S.C., Gordon, J.D.M., and Shimmield, T. 2001 Preliminary Investigations on the Uses of Otolith Microchemistry for Stock Discrimination of the Deep-water Black Scabbardfish (*Aphanopus carbo*) in the North East Atlantic. *Journal of Northwest Atlantic Fisheries Science*. 31: 221-231.

Titova, 1981. Differentiation of alfonsino *Beryx splendens* Lowe from thalassobathyal of the Atlantic Ocean by the frequency of esterase locus alleles.//Genetics, selection, hybridization of fishes. Proceedings. Rostov-on-Don, RISKM, p.135-137 (in Russian)

Vinnichenko V.I. 1998. Alfonsino (*Beryx splendens*) biology and fishery on the seamounts in the open North Atlantic. ICES C.M. 1998/O:13, 13 p.

Vinnichenko V.I. 2002a. Russian investigations and fishery on seamounts in the Azores area. XVIII e XIX Semana das Pescas dos Acores, Secretaria Regional da Agricultura e Pescas. 115-129.

Vinnichenko V.I. 2002b. Prospects of fisheries on the seamounts. ICES CM 2002/M: 32.

Vinnichenko V.I., Gorchinsky K.V., Shibanov V.N., 1994. Fishery and biological features on some sea mounts of the North Atlantic Ridge by data from September-October 1993 cruise of the trawler "Ramoen". PINRO, Murmansk, pp.181-199 (in Russian).

Zaferman M.L., Sennikov A.M. 1991. Biology and peculiarities of behaviour of deepwater crab Geryon quinquedens. Murmansk: PINRO, p. 43-45 (in Russian)

Zaferman M.L., Shestopal I.P. 1991. Underwater search for fish and deepwater longlining in the areas of underwater mountains of the North Atlantic. Murmansk: PINRO, p. 50-77 (in Russian)

Zaferman M.L., Shestopal I.P. 1996. Estimation of tusk abundance on the sea mounts of the North Atlantic from the underwater observation data and long-lining. Instrumental methods of fishery investigations. Murmansk: PINRO, p.65-79 (in Russian).

Zilanov, V.K. and Shepel, L.J. 1975. Notes on the ecology of the black scabbardfish, *Aphanopus carbo*, of the North Atlantic. *J. Ichthyol.* 15:661-663

Annex 1: List of participants

This list includes contributors to the report, both those working by corrspondence only and those who attended the extraordinary meeting 7-9 September 2005.

Not listed are Stuart Rogers (representing ACE) and Mark Tasker (representing WGDEC) who attended the extraordinary meeting fro the morning session on 9 September.

NAME	ADDRESS	PHONE/FAX	EMAIL
Bergstad, Odd Aksel (Chair)	Institute of Marine Research, Floedevigen, N-4817 His, Norway	Tel: +4737059019, Fax: +4737059010	oddaksel@imr.no
Maurice Clarke	The Marine Institute Galway Technology Park Parkmore, Galway, Ireland		Maurice.clarke@marine.ie
Graham Johnston	The Marine Institute Galway Technology Park Parkmore, Galway, Ireland	Tel.: 353 91 730490 Fax.: +35391730470	Graham.johnstone@marine.ie
Juan Gil	Inst. Español de Oceanografía (IEO)Unidad de Cádizc/ República Saharaui s/n Institutos de Investigación.11510 Puerto Real, Cádiz, Spain	Tel.: +34 956 016290 Fax.: +34 956 016415	juan.gil@cd.ieo.es
Pablo Durán Muñoz	Inst. Español de Oceanografía (IEO)Centro Oceanográfico de VigoApdo 1552E-36280 VigoSpain	Tel.: +34 986 492111	pablo.duran@vi.ieo.es
Guzman Diez	AZTI tecnalia, Txatxarramendi Ugartea z/g 4835 Sukarrieta, Bizkaia Spain	Tel.:+34 946029400 Fax.: +34 946870006	gdiez@suk.azti.es
Paulino Lucio	AZTI tecnalia, Txatxarramendi Ugartea z/g 4835 Sukarrieta, Bizkaia Spain		plucio@suk.azti.es
Jakup Reinert	Faroese Fisheries Laboratory Nóatún 1, P.O. Box 3051 FO-110 Tórshavn, Faroe Islands	Tel.: +298 353900 Fax.: +298 353901	jakupr@frs.fo
Emma Jones	Fisheries Research Services Marina Laboratory P.O.Box 101 375 Victoria Road Aberdeen AB 11 9DB, UK	Tel: +44 1224 295572 Fax: +44 1224295511	jonese@marlab.ac.uk
Tom Blasdale	JNCC, Dunnett House, 7 Thistle Place, Aberedeen, AB10 1UC, UK	Fax.: +44 1224 621488	Tom.blasdale@jncc,gov.uk
Paul Marchal	IFREMER, 150, Quai Gambetta F-62200 Boulogne-sur-Mer France	Tel.: +33 321995616 Fax.: +33 321995601	Paul.marchal@ifremer.fr
Pascal Lorance	IFREMER, BP70, 29280 Plouzane, France	Tel.: +33298224649 Fax.: +33 238224653	Pascal.lorance@ifremer.fr
Thorsteinn Sigurdsson	Marine Research Institute P.O.Box 1390 Skúlagata 4 IS-121 Reykjavik, Iceland	Tel: +354 575 2116 Fax.: +3545752001	Steini@hafro.is
Kristin Helle	Institute of Marine Research, P.O.Box 1870 Nordens, N-5817 Bergen	Tel.: +47 55238601 Fax.; +47 55238531	Kristin.helle@imr.no
Mário Rui Pinho	Departemento de Oceanografia e Pescas, Universidade dos Acores, Azores, Faial-Horta, Portugal	Tel.: +351 292200400 Fax.: +351 292 200411	maiuka@notes.horta.uac.pt
Ivone Figueiredo	IPIMAR, Avenida de Brasilia, P-1449-006 Lisbon, Portugal	Tel.: +351 21 302 7131 Fax.. +3512133319067	ivonfig@ipimar.pt
Philip Large	CEFAS Lowestoft Laboratory Lowestoft Suffolk NR33 0HT, UK	Tel.: +44 1502 562244 Fax.: +44 1502 513865	p.a.large@cefas.co.uk

Sten Munch-Petersen	Danish Institute for Fishery Research Charlottenlund Slot DK-2920 Charlottenlund Denmark	Tel.: +45 33 96 33 90 Fax.: +45 33 96 33 33	smp@dfu.min.dk
Ole Jørgensen	Danish Institute for Fisheries ResearchCharlottenlund SlotDK 2920 CharlottenlundDenmark	Tel.:+45 33963300 Fax.:+45 33963333	olj@dfu.min.dk
Vladimir Vinnichenko	PINRO 6, Knipovitch Street 183763 Murmansk Russia	Tel: +7 8152 472192 Fax: +7 8152 473331	vinn@pinro.ru
Poul Degnbol	Institute for Fisheries Management (IFM), North Sea Centre, P.O.Box 104, 9850 Hirtshals, Denmark	Tel: +45 9887 8282 Fax.: +45 9894 4268	pd@ifm.dk

Annex 2: Working Documents and data reports

Beare, D. 2005. Data report. Scottish landings data.

Duran Muñoz, P., E. Román, and L. Ramilo. 2005a. Data on the Spanish bottom trawl fishery at Hatton Bank: 2002-2004. 10p.

Duran Muñoz, P., M. Armijo, A. Gago, and G. Fernández. 2005b. Brief results of bottom longline exploratory survey at North Atlantic, using traditional semi-artesanal system and Norwegian automatic system. 5p.

Durán Muñoz,, P., V. Díaz del Río, S. Iglesias, J. Acosta. 2005c. ECOVUL/ARPA: A Spanish Multidisciplinary Deep-Sea Survey Project in Hatton Bank.

Figueiredo, I. and P. Bordalo Machado 2005. Information on deep-water species from mainland Portugal. 5p.

Gil, J. and I. Sobrino. 2005. Information about a recent silver scabbardfish (*Lepidopus americanus*) fishery in the Strait of Gibraltar area (ICES IXa south). 3p.

Gil, J., Canoura, J., Burgos, C. and C. Farias. 2005. Update of the red seabream (*Pagellus bogaraveo*) fishery data in the Strait of Gibraltar (ICES IXa south) including biological information. 5p.

Helle, K. and M. Pennington. 2005. Tracking the changes in the composition of the commercial catch of ling, blue ling and tusk. 15p.

Johnston, G. and Clarke, M. 2005. Irish contribution to ICES WGDEEP in 2005. 2 p.

Jørgensen, O. 2005. Data report. Greenland fisheries and landings. 1 p.

Large, P. 2005. Data report. UK (England and Wales) landings data.

Marchal, P. 2005. Data report. French landings data. 1p.

Munch-Petersen, S. 2005. Data report. Danish fisheries and landings. 2p + excel sheets.

Pinho, M. R. 2005. Information on deep sea species from the Azores. 7p.

Reinert, J. 2005. Information on Faroese deep-sea fisheries. 10p.

Sigurdsson, T. 2005. Information on deep sea species in Icelandic waters. 40p.

Vinnichenko, V.I. 2005. Information of Russian Federation for responses to the request from EC and NEAFC. 6p.

Vinnichenko, V. I., S.P. Bokhanov, Yu.B. Ozerov, A.M. Safronov, V. N. Khlivnoy and Yu.L. Firsov. 2005a. Biology and distribution of deep-sea fishes in the northeast Atlantic (based on data from Russian investigations in 2004). 27p.

Vinnichenko, V. I., V. N. Khlivnoy, and T.A. Akhtarina. 2005b. Russian deep-sea fisheries in the north-east Atlantic in 2004. 4p.

Annex 3: Landings tables for individual species

Annex 3, Table 1. Ling (*Molva molva*). Working Group estimates of landings (tonnes).

LING I

Year	Norway	Iceland	Scotland	Faroes	**Total**
1996	136				**136**
1997	31				**31**
1998	123				**123**
1999	64				**64**
2000	68	1			**69**
2001	65	1			**66**
2002	182		24		**206**
2003	89				**89**
2004*	324			15	**339**

*Preliminary

LING IIa

Year	Faroes	France	Germany	Norway	E & W	Scotland	Russia	**Total**
1988	3	29	10	6,070	4	3		**6,119**
1989	2	19	11	7,326	10	-		**7,368**
1990	14	20	17	7,549	25	3		**7,628**
1991	17	12	5	7,755	4	+		**7,793**
1992	3	9	6	6,495	8	+		**6,521**
1993	-	9	13	7,032	39	-		**7,093**
1994	101	n/a	9	6,169	30	-		**6,309**
1995	14	6	8	5,921	3	2		**5,954**
1996	0	2	17	6,059	2	3		**6,083**
1997	0	15	7	5,343	6	2		**5,373**

Table 1 (Cont'd)

1998		13	6	9,049	3	1		**9,072**															
1999		11	7	7,557	2	4		**7,581**															
2000		9	39	5,836	5	2		**5,891**															
2001	6	9	34	4805	1	3		**4858**															
2002	1	4	21	6886	1	4		**6917**															
2003	7	3	43	6001		8		**6062**															
2004*	13		3	6104		1	5	**6126**															
*Preliminary																							
LING IIb																							
Year	Norway	E & W	**Total**																				
1988		7	**7**																				
1989		-																					
1990		-																					
1991		-																					
1992		-																					
1993		-																					
1994		13	**13**																				
1995		-																					
1996	127	-	**127**																				
1997	5	-	**5**																				
1998	5	+	**5**																				
1999	6		**6**																				
2000	4	**-**	**4**																				
2001	33	0	**33**																				
2002	9	0	**9**																				

Table 1 (Cont'd)

2003	6	0	**6**																				
2004*	78		**78**																				
*Preliminary																							
LING III																							
Year	Belgium	Denmark	Germany	Norway	Sweden	E & W	**Total**																
1988	2	165	-	135	29	-	**331**																
1989	1	246	-	140	35	-	**422**																
1990	4	375	3	131	30	-	**543**																
1991	1	278	-	161	44	-	**484**																
1992	4	325	-	120	100	-	**549**																
1993	3	343	-	150	131	15	**642**																
1994	2	239	+	116	112	-	**469**																
1995	4	212	-	113	83	-	**412**																
1996		212	1	124	65	-	**402**																
1997		159	+	105	47	-	**311**																
1998		103	-	111	-	-	**214**																
1999		101	-	115	-	-	**216**																
2000		101	+	96	31		**228**																
2001		125	+	102	35		**262**																
2002		157	1	68	37		**263**																
2003		156		73	32		**261**																
2004*		130	1	70	31		**232**																
*Preliminary																							

Table 1 (Cont'd)

LING IVa

Year	Belgium	Denmark	Faroes	France	Germany	Neth.	Norway	Sweden[1)]	E&W	N.I.	Scot.	**Total**
1988	3	408	13	1,143	262	4	6,473	5	55	1	2,856	**11,223**
1989	1	578	3	751	217	16	7,239	29	136	14	2,693	**11,677**
1990	1	610	9	655	241	-	6,290	13	213	-	1,995	**10,027**
1991	4	609	6	847	223	-	5,799	24	197	+	2,260	**9,969**
1992	9	623	2	414	200	-	5,945	28	330	4	3,208	**10,763**
1993	9	630	14	395	726	-	6522	13	363	-	4,138	**12,810**
1994	20	530	25	n/a	770	-	5355	3	148	+	4,645	**11,496**
1995	17	407	51	290	425	-	6,148	5	181		5,517	**13,041**
1996	8	514	25	241	448		6,622	4	193		4,650	**12,705**
1997	3	643	6	206	320		4,715	5	242		5,175	**11,315**
1998	8	558	19	175	176		7,069	-	125		5,501	**13,631**
1999	16	596	n.a.	293	141		5,077		240		3,447	**9,810**
2000	20	538	2	146	103		4,780	7	74		3,576	**9,246**
2001		702		125	54		3613	6	61		3290	**7851**
2002	6	578	24	115			4509		59		3779	**9070**
2003	4	779	6	121	62		3122	5	23		2311	**6433**
2004*		575	10	60	34		3753	2	15		1850	**6299**

*Preliminary. [(1)] Includes IVb 1988-1993.

LING IVb,c

Year	Belgium	Denmark	France	Sweden	Norway	E & W	Scotland	Germany	Netherlands	**Total**
1988					100	173	106	-		**379**
1989					43	236	108	-		**387**
1990					59	268	128	-		**455**

Table 1 (Cont'd)

1991					51	274	165	-		**490**
1992		261			56	392	133	-		**842**
1993		263			26	412	96	-		**797**
1994		177			42	40	64	-		**323**
1995		161			39	301	135	23		**659**
1996		986			100	187	106	45		**1424**
1997	33	166	1	9	57	215	170	48		**699**
1998	47	164	5		129	128	136	18		**627**
1999	35	138	-		51	106	106	10		**446**
2000	59	101	0	8	45	77	90	4		**384**
2001	46	81	0	3	23	62	60	6	2	**283**
2002	38	91		4	61	58	43	12	2	**309**
2003	28	0		3	83	40	65	14	1	**234**
2004*	48	71		1	54	23	22	19	1	**239**

LING Va

Year	Belgium	Faroes	Germany	Iceland	Norway	E & W	Scotland	**Total**
1988	134	619	-	5,098	10			**5,861**
1989	95	614	-	4,898	5			**5,612**
1990	42	399	-	5,157	-			**5,598**
1991	69	530	-	5,206	-			**5,805**
1992	34	526	-	4,556	-			**5,116**
1993	20	501	-	4,333				**4,854**
1994	3	548	+	4,053				**4,604**

Table 1 (Cont'd)

1995		463	+	3,729	-			**4,192**	
1996		358		3670	20	12		**4,060**	
1997		299		3,634	0	-		**3,933**	
1998		699		3,603	-	-		**4,302**	
1999		542	+	3,980	120	4	1	**4.647**	
2000		452	+	3,221	67	3	+	**3,743**	
2001		362	2	2864	117	1		**3346**	
2002		1629	0	2844	45	0	0	**4518**	
2003		565	2	3587	108	2	0	**4264**	
2004*		740	1	3726	139			**4606**	
*Preliminary.									

LING Vb1

Year	Denmark	Faroes[4]	France [2]	Germany	Norway	E&W [1]	Scotland [1]	Russia	**Total**
1988	42	1,383	53	4	884	1	5		**2,372**
1989	-	1,498	44	2	1,415	-	3		**2,962**
1990	-	1,575	36	1	1,441	+	9		**3,062**
1991	-	1,828	37	2	1,594	-	4		**3,465**
1992	-	1,218	3	+	1,153	15	11		**2,400**
1993	-	1,242	5	1	921	62	11		**2,242**
1994	-	1,541	6	13	1047	30	20		**2,657**
1995		2,789	4	13	446	2	32		**3,286**
1996		2672			1,284	12	28		**3,996**

Table 1 (Cont'd)

1997		3224	7		1,428	34	40		**4,733**														
1998		2,422	6		1,452	4	145		**4,029**														
1999		2,446	22	3	2,034	0	71		**4,576**														
2000		2008	9	1	1305	2	61		**3386**														
2001		2489	17	3	1496	5	99		**4109**														
2002		1788	9	2	1640	3	239		**3681**														
2003		2203	17	2	1526	3	215		**3966**														
2004*		3791	9	1	1799	3	178	2	**5783**														
*Preliminary. (1) Includes Vb_2. (2) Includes Vb_2 and Va. (3)Reported as Vb.(4) 2000-2003 Vb1 and Vb2 combined																							
LING Vb2																							
Year	Faroes	Norway	**Total**																				
1988	832	1,284	**2,116**																				
1989	362	1,328	**1,690**																				
1990	162	633	**795**																				
1991	492	555	**1,047**																				
1992	577	637	**1,214**																				
1993	282	332	**614**																				
1994	479	486	**965**																				
1995	281	503	**784**																				
1996	102	798	**900**																				
1997	526	398	**924**																				
1998	511	819	**1,330**																				
1999	164	498	**662**																				
2000		399	**399**																				
2001		497	**497**																				

Table 1 (Cont'd)

2002		457	**457**																				
2003		927	**927**																				
2004*		247	**247**																				
*Preliminary. (1) Included in Vb_1.																							
LING VIa																							
Year	Belgium	Denmark	Faroes	France (1)	Germany	Ireland	Norway	Spain(2)	E&W	IOM	N.I.	Scot.	**Total**										
1988	4	+	-	5,381	6	196	3,392	3575	1,075	-	53	874	**14,556**										
1989	6	1	6	3,417	11	138	3,858		307	+	6	881	**8,631**										
1990	-	+	8	2,568	1	41	3,263		111	-	2	736	**6,730**										
1991	3	+	3	1,777	2	57	2,029		260	-	10	654	**4,795**										
1992	-	1	-	1,297	2	38	2,305		259	+	6	680	**4,588**										
1993	+	+	-	1,513	92	171	1937		442	-	13	1,133	**5,301**										
1994	1	1		1713	134	133	2034	1027	551	-	10	1,126	**6,730**										
1995	-	2	0	1970	130	108	3,156	927	560	n/a		1994	**8,847**										
1996			0	1762	370	106	2809	1064	269			2197	**8,577**										
1997			0	1,631	135	113	2229	37	151			2,450	**6,746**										
1998				1,531	9	72	2,910	292	154			2,394	**7,362**										
1999				941	4	73	2,997	468	152			2,264	**6,899**										
2000	+	+		717	3	75	2956	708	143			2287	**6889**										
2001				728	3	70	1869	142	106			2179	**5097**										
2002				351	1	44	973	190	65			2452	**4076**										
2003				284	1	88	1477	75	108			1257	**3290**										
2004*				230	1	96	841	43	8			1547	**2766**										
*Preliminary. (1) Includes VIb until 1996 (2) Includes minor landings from VIb.																							

Table 1 (Cont'd)

LING VIb											
Year	Faroes	France [2]	Germany	Ireland	Norway	Spain [3]	E & W	N.I.	Scotland	Russia	**Total**
1988	196		-	-	1,253		93	-	223		**1,765**
1989	17		-	-	3,616		26	-	84		**3,743**
1990	3		-	26	1,315		10	+	151		**1,505**
1991	-		-	31	2,489		29	2	111		**2,662**
1992	35		+	23	1,713		28	2	90		**1,891**
1993	4		+	60	1179		43	4	232		**1,522**
1994	104		-	44	2116		52	4	220		**2,540**
1995	66		+	57	1,308		84		123		**1,638**
1996	0		124	70	679		150		101		**1,124**
1997	0		46	29	504		103		132		**814**
1998		1	10	44	944		71		324		**1,394**
1999		26	25	41	498		86		499		**1,175**
2000	+	18	31	19	1,172		157		475	7	**1,879**
2001	+	16	3	18	328		116		307		**788**
2002		2	2	2	289		65		173		**533**
2003		2	3	25	485		34		111		**660**
2004*	+	4	3	6	717		6		99	182	**1017**

*Preliminary. [1] Includes XII. [2] Until 1966 included in VIa. [3] Included in Ling VIa.

LING VII		
Year	France	**Total**
1988	5,057	**5,057**
1989	5,261	**5,261**
1990	4,575	**4,575**

Table 1 (Cont'd)

1991	3,977	**3,977**																					
1992	2,552	**2,552**																					
1993	2,294	**2,294**																					
1994	2,185	**2,185**																					
1995	[-1]																						
1996	[-1]																						
1997	[-1]																						
1998	[-1]																						
1999	[-1]																						
LING VIIa																							
Year	Belgium	France	Ireland	E & W	IOM	N.I.	Scotland	**Total**															
1988	14	[-1]	100	49	-	38	10	**211**															
1989	10	[-1]	138	112	1	43	7	**311**															
1990	11	[-1]	8	63	1	59	27	**169**															
1991	4	[-1]	10	31	2	60	18	**125**															
1992	4	[-1]	7	43	1	40	10	**105**															
1993	10	[-1]	51	81	2	60	15	**219**															
1994	8	[-1]	136	46	2	76	16	**284**															
1995	12	9	143	106	1	[-2]	34	**305**															
1996	11	6	147	29	-	[-2]	17	**210**															
1997	8	6	179	59	2	[-2]	10	**264**															
1998	7	7	89	69	1	[-2]	25	**198**															
1999	7	3	32	29		[-2]	13	**84**															
2000	3	2	18	25			25	**73**															
2001	6	3	33	20			31	**87**															

Table 1 (Cont'd)

2002	7	5	91	15			7	**118**	
2003	4	2	75	18			11	**110**	
2004*	3		47	11			34	**95**	

*Preliminary. [1] French catches in VII not split into divisions, see Ling VII. [2] Included with UK (EW)

LING VIIb,c

Year	France (1)	Germany	Ireland	Norway	Spain [3]	E & W	N.I.	Scotland	**Total**
1988	[-1]	-	50	57		750	-	8	**865**
1989	[-1]	+	43	368		161	-	5	**577**
1990	[-1]	-	51	463		133	-	31	**678**
1991	[-1]	-	62	326		294	8	59	**749**
1992	[-1]	-	44	610		485	4	143	**1,286**
1993	[-1]	97	224	145		550	9	409	**1,434**
1994	[-1]	98	225	306		530	2	434	**1,595**
1995	78	161	465	295		630	[-2]	315	**1,944**
1996	57	234	283	168		1117	[-2]	342	**2,201**
1997	65	252	184	418		635	[-2]	226	**1,780**
1998	32	1	190	89		393		329	**1,034**
1999	50	4	377	288		488		159	**1,366**
2000	117	21	401	170		327		140	**1176**
2001	80	2	413	515		94		122	**1226**
2002	123	0	315	207		151		159	**955**
2003	88	0	270			74		52	**484**
2004*		12	255	163		27		31	**488**

*Preliminary. [1] See Ling VII. [2] Included with UK (EW). [3] Included with VIIg-k.

Table 1 (Cont'd)

LING VIId,e								
Year	Belgium	Denmark	France (1)	Ireland	E & W	Scotland	Ch. Islands	**Total**
1988	36	+	[-1]	-	743	-		**779**
1989	52	-	[-1]	-	644	4		**700**
1990	31	-	[-1]	22	743	3		**799**
1991	7	-	[-1]	25	647	1		**680**
1992	10	+	[-1]	16	493	+		**519**
1993	15	-	[-1]	-	421	+		**436**
1994	14	+	[-1]	-	437	0		**451**
1995	10	-	885	2	492	0		**1,389**
1996	15		960		499	3		**1,477**
1997	12		1,049	1	372	1	37	**1,472**
1998	10		953		510	1	26	**1,500**
1999	7		542	-	507	1		**1057**
2000	5		452	1	372		14	**844**
2001	6		399		399			**804**
2002	7		464		386	0		**857**
2003	5		446	1	250	0		**702**
2004*	13			1	214			**228**

LING VIIf						
Year	Belgium	France (1)	Ireland	E & W	Scotland	**Total**
1988	77	[-1]	-	367	-	**444**
1989	42	[-1]	-	265	3	**310**
1990	23	[-1]	3	207	-	**233**

Table 1 (Cont'd)

1991	34	[-1]	5	259	4	**302**																
1992	9	[-1]	1	127	-	**137**																
1993	8	[-1]	-	215	+	**223**																
1994	21	[-1]	-	379	-	**400**																
1995	36	110	-	456	0	**602**																
1996	40	121	-	238	0	**399**																
1997	30	204	-	313		**547**																
1998	29	204	-	328		**561**																
1999	16	108	-	188		**312**																
2000	15	90	1	111		**217**																
2001	14	111	-	92		**217**																
2002	16	131	3	295		**445**																
2003	15	72	1	81		**169**																
2004*	18		5	65		**88**																

*Preliminary. [(1)] See Ling VII.

LING VIIg-k

Year	Belgium	Denmark	France	Germany	Ireland	Norway	Spain [(2)]	E&W	IOM	N.I.	Scot.	**Total**
1988	35	1	[-1]	-	286	-	2,652	1,439	-	-	2	**4,415**
1989	23	-	[-1]	-	301	163		518	-	+	7	**1,012**
1990	20	+	[-1]	-	356	260		434	+	-	7	**1,077**
1991	10	+	[-1]	-	454	-		830	-	-	100	**1,394**
1992	10	-	[-1]	-	323	-		1,130	-	+	130	**1,593**
1993	9	+	[-1]	35	374			1,551	-	1	364	**2,334**
1994	19	-	[-1]	10	620		184	2,143	-	1	277	**3,254**
1995	33	-	1597	40	766	-	195	3046		[-3]	454	**6,131**

Table 1 (Cont'd)

1996	45	-	1626	169	771		583	3209			447	**6,850**
1997	37	-	1,574	156	674		33	2112			459	**5,045**
1998	18	-	1,362	88	877		1669	3,465			335	**7,814**
1999	-	-	1235	49	554		455	1619			292	**4204**
2000	17		1019	12	624		639	921			303	**3535**
2001	16		1103	4	727	24	559	591			285	**3309**
2002	16		950	2	951		568	862			102	**3451**
2003	12		1054	5	808		607	382			38	**2906**
2004*	14		1516		686		530	335				**3081**

*Preliminary. [1] See Ling VII. [2] Includes VIIb,c. [3] Included in UK (EW).

LING VIII

Year	Belgium	France	Germany	Spain	E & W	Scot.	**Total**
1988		1,018			10		**1,028**
1989		1,214			7		**1,221**
1990		1,371			1		**1,372**
1991		1,127			12		**1,139**
1992		801			1		**802**
1993		508			2		**510**
1994		n/a		77	8		**85**
1995		693		106	46		**845**
1996		825	23	170	23		**1,041**
1997	1	705	+	290	38		**1,034**
1998	5	1,220	-	543	29		**1,797**
1999	22	233	-	188	8		**451**
2000	1	219		106	5		**331**

Table 1 (Cont'd)

2001		228		341	6	2	**577**																
2002		288		141	10	0	**439**																
2003		267		147	36		**450**																
2004*		322		112	53		**487**																
*Preliminary																							

LING IX

Year	Spain	**Total**
1997	0	**0**
1998	2	**2**
1999	1	**1**
2000	1	**1**
2001	0	**0**
2002	0	**0**
2003*	0	**0**

*Preliminary

LING XII

Year	Faroes	France	Norway	E & W	Scotland	Germany	Ireland	**Total**
1988				-				**0**
1989				-				**0**
1990				3				**3**
1991				10				**10**
1992				-				**0**
1993				-				**0**
1994				5				**5**

Table 1 (Cont'd)

1995	5			45				**50**
1996	-		2					**2**
1997	-		+	9				**9**
1998	-	1	-	1				**2**
1999	-	0	-	-	+	2		**2**
2000		1	-		6			**7**
2001		0	29	2	24		4	**59**
2002		0	4	4	0			**8**
2003			17	2	0			**19**
2004*								

*Preliminary

LING XIV

Year	Faroes	Germany	Iceland	Norway	E & W	Scotland	**Total**
1988		3	-	-	-	-	**3**
1989		1	-	-	-	-	**1**
1990		1	-	2	6	-	**9**
1991		+	-	+	1	-	**1**
1992		9	-	7	1	-	**17**
1993		-	+	1	8	-	**9**
1994		+	-	4	1	1	**6**
1995	-	-		14	3	0	**17**
1996	-			0			**0**
1997	1			60			**61**
1998	-			6			**6**
1999	-			1			**1**

Table 1 (Cont'd)

2000			26	-			**26**															
2001	1			35			**36**															
2002	3			20			**23**															
2003				83			**83**															
2004*				10			**10**															
*Preliminary.																						

Ling, total landings by Sub-areas or Division

Year	I	IIa	IIb	III	IVa	IVb,c	Va	Vb1	Vb2	VIa	VIb	VII	VIIa	VIIb,c	VIId,e	VIIf	VIIg-k	VIII	IX	XII	XIV	All areas
1988		6119	7	331	11223	379	5861	2372	2116	14556	1765	5057	211	865	779	444	4415	1028		0	3	57531
1989		7368		422	11677	387	5612	2962	1690	8631	3743	5261	311	577	700	310	1012	1221		0	1	51885
1990		7628		543	10027	455	5598	3062	795	6730	1505	4575	169	678	799	233	1077	1372		3	9	45258
1991		7793		484	9969	490	5805	3465	1047	4795	2662	3977	125	749	680	302	1394	1139		10	1	44887
1992		6521		549	10763	842	5116	2400	1214	4588	1891	2552	105	1286	519	137	1593	802		0	17	40895
1993		7093		642	12810	797	4854	2242	614	5301	1522	2294	219	1434	436	223	2334	510		0	9	43334
1994		6309	13	469	11496	323	4604	2657	965	6730	2540	2185	284	1595	451	400	3254	85		5	6	44371
1995		5954		412	13041	659	4192	3286	784	8847	1638		305	1944	1389	602	6131	845		50	17	50096
1996	136	6083	127	402	12705	1424	4060	3996	900	8577	1124		210	2201	1477	399	6850	1041		2	0	51714
1997	31	5373	5	311	11315	699	3933	4733	924	6746	814		264	1780	1472	547	5045	1034	0	9	61	45096
1998	123	9072	5	214	13631	627	4302	4029	1330	7362	1394		198	1034	1500	561	7814	1797	2	2	6	55003
1999	64	7581	6	216	9810	446	4647	4576	662	6899	1175		84	1366	1057	312	4204	451	1	2	1	43560
2000	69	5891	4	228	9246	384	3743	3386	399	6889	1879		73	1176	844	217	3535	331	1	7	26	38328
2001	66	4858	33	262	7851	283	3346	4091	497	5097	788		87	1226	804	217	3309	577	0	59	35	33486
2002	206	6917	9	263	9070	309	4518	3681	457	4076	533		118	955	857	445	3451	439	0	8	20	36332
2003	89	6062	6	261	6433	234	4264	3966	927	3290	660		110	484	702	169	2906	450		19	83	31115
2004*	339	6126	78	232	6299	239	4606	5783	247	2766	1017		95	488	228	88	3081	487			10	32209

Annex 3, Table 2 Blue ling (Molva dypterygia). Working Group estimates of landings (tonnes)

Blue ling I

Year	Iceland	Norway	Germany	**Total**
1988				
1989				
1990				
1991				
1992				
1993				
1994			3	**3**
1995			5	**5**
1996				
1997			1	**1**
1998			1	**1**
1999				
2000			1	**1**
2000			3	**3**
2001			1	**1**
2002			1	**1**
2003				
2004*			1	**1**

*Preliminary.

Blue ling IIa and b

Year	Faroes	France	Germany	Greenland	Norway	E & W	Scotland	Sweden	Russia	**Total**
1988	77	37	5		3416	2				**3537**
1989	126	42	5		1883	2				**2058**
1990	228	48	4		1128	4				**1412**
1991	47	23	1		1408					**1479**
1992	28	19		3	987	2				**1039**
1993		12	2	3	1003					**1020**

Table 2 (Cont'd)

1994		9	2		399	9				**419**
1995	0	12	2	2	342	1				**359**
1996	0	8	1		254	2	2			**267**
1997	0	10	1		280					**291**
1998	0	3			272		3			**278**
1999	0	1	1		287		2			**291**
2000		2	4		240	1	2			**249**
2001	8	7			190	1	2			**208**
2002	1	1			129	1	17			**149**
2003	30				115		1	1		**147**
2004*	28	1			144				1	**174**

*Preliminary.

Blue ling III

Year	Denmark	Norway	Sweden	**Total**
1988	10	11	1	**22**
1989	7	15	1	**23**
1990	8	12	1	**21**
1991	9	9	3	**21**
1992	29	8	1	**38**
1993	16	6	1	**23**
1994	14	4		**18**
1995	16	4		**20**
1996	9	3		**12**
1997	14	5	2	**21**
1998	4	2		**6**
1999	5	1		**6**
2000	13	1		**14**
2001	20	4		**24**
2002	8	1		**9**
2003	18	1		**19**
2004*	18	1		**19**

*Preliminary.

Table 2 (Cont'd)

Blue ling IVa

Year	Denmark	Faroes	France (IV)	Germany	Norway	E & W	Scotland	Ireland	**Total**
1988	1	13	223	6	116	2	2		**363**
1989	1		244	4	196	12			**457**
1990			321	8	162	4			**495**
1991	1	31	369	7	178	2	32		**620**
1992	1		236	9	263	8	36		**553**
1993	2	101	76	2	186	1	44		**412**
1994			144	3	241	14	19		**421**
1995		2	73		201	8	193		**477**
1996		0	52	4	67	4	52		**179**
1997		0	36		61	0	172		**269**
1998		1	31		55	2	191		**280**
1999	2		21		94	25	120	2	**264**
2000	2		15	1	53	10	46	2	**129**
2001	7		9		75	7	145	9	**252**
2002	6		11		58	4	292	5	**376**
2003	8		8		49	2	25		**92**
2004*	7		9		45		14		**75**

*Preliminary

Blue ling IVb

Year	France	E & W	Norway	Faroes	Denmark	Germany	Scotland	**Total**
1988								
1989	2							**2**
1990	6							**6**
1991	7							**7**
1992	1							**1**
1993	0	3						**3**
1994	0							**0**
1995	3	3						**6**

Table 2 (Cont'd)

1996	5	5	1		**11**
1997	1				**1**
1998	5		1		**6**
1999	0	1	0		**1**
2000	1				**1**
2001	0				**0**
2002			1		**1**
2003			1	8	**9**
2004*					**0**

*Preliminary.

Blue ling IVc

Year	E & W	Norway	**Total**
1988			
1989			
1990			
1991			
1992			
1993			
1994	3		**3**
1995			
1996			
1997			
1998			
1999			
2000			
2001			
2002			
2003			
2004*			

*Preliminary.

Table 2 (Cont'd)

Blue ling Va

Year	Faroes	Germany	Iceland	Norway	E & W	Scotland	**Total**
1988	271		1893	7			**2171**
1989	403		2125	5			**2533**
1990	1029		1992				**3021**
1991	241		1582	1			**1824**
1992	321		2584	1			**2906**
1993	40		2193				**2233**
1994	89	1	1542				**1632**
1995	113	3	1519				**1635**
1996	36	3	1284				**1323**
1997	25		1319				**1344**
1998	59	9	1086				**1154**
1999	31	8	1819	8	8	3	**1877**
2000	36	7	1636	25	7		**1711**
2001	95	12	762	49	22	1	**941**
2002	28		1265	74	6	4	**1377**
2003	16	15	1098	6	15	8	**1158**
2004*	36	9	1090	49	20		**1204**

*Preliminary.

Blue ling Vb1

Year	Faroes	France(3)	Germany(2)	Norway	E & W(2)	Scotland (1)	Ireland	Russia	Total
1988	3487	3036	49	94					**6666**
1989	2468	1800	51	228					**4547**
1990	946	3073	71	450					**4540**
1991	1573	1013	36	196	1				**2819**
1992	1918	407	21	390	4				**2740**
1993	2088	192	24	218	19				**2541**
1994	1065	147	3	173					**1388**
1995	1606	588	2	38	4				**2238**

Table 2 (Cont'd)

1996	1100	301	3	82				**1486**
1997	778	1656		65	11			**2510**
1998	1026	1411	0	24	1			**2462**
1999	1730	1068	4	38	4			**2844**
2000	1677	575	1	163	33		1	**2450**
2001	1407	433	4	130	11	2		**1987**
2002	1003	574		274	8			**1859**
2003	2465	1133		12	1			**3611**
2004*	1474	1079		20			13	**2586**

*Preliminary. (1) Included in Vb2. (2) Includes Vb2 (3) Reported as Vb.

Blue ling Vb2

Year	Faroes	Norway	Scotland (1)	E & W	**Total**
1988	2788	72			**2860**
1989	622	95			**717**
1990	68	191			**259**
1991	71	51	21		**143**
1992	1705	256	1		**1962**
1993	182	22	91		**295**
1994	239	16	1		**256**
1995	162	36	4		**202**
1996	42	62	12		**116**
1997	229	48	11		**288**
1998	64	29	29		**122**
1999	15	49	24		**88**
2000	0	37	37		**74**
2001	0	69	63		**132**
2002		21	140		**161**
2003		84	120		**204**
2004*		6	68		**74**

*Preliminary. (1) Includes Vb1.

Table 2 (Cont'd)

Blue ling VIa

Year	Faroes	France	Germany	Ireland	Norway	Spain (1)	E & W	Scotland	**Total**
1988	14	6614	2		29		2	1	**6662**
1989	6	7382	2		143				**7533**
1990		4882	44		54			1	**4981**
1991	8	4261	18		63		1	35	**4386**
1992	4	5483	4		129			24	**5644**
1993		4311	48	3	27		13	42	**4444**
1994		2999	24	73	90	433	1	91	**3711**
1995	0	2835		11	96	392	34	738	**4106**
1996	0	4115	4		50	681	9	1407	**6266**
1997	0	3845		1	29	190	789	1021	**5875**
1998	0	4644	3	1	21	142	11	1416	**6238**
1999	0	3730		10	55	119	5	1105	**5024**
2000		4443	94	9	102	108	24	1300	**6080**
2001		2693	6	52	117	797	116	2136	**5917**
2002		2005		62	61	285	16	2027	**4456**
2003	7	2000		2	106	195	3	428	**2741**
2004*	9	2227		1	26	24	1	482	**2770**

*Preliminary. (1) Includes VIb

Blue ling VIb

Year	Poland	Russia	Faroes	France	Germany	Norway	E & W	Scotland	Iceland	Ireland	Estonia	**Total**
1988			2000	499	37	42	9	14				**2601**
1989			1292	61	22	217		16				**1608**
1990			360	703		127		2				**1192**
1991			111	2482	6	102	5	15				**2721**
1992			231	348	2	50	2	14				**647**
1993			51	373	109	50	66	57				**706**
1994			5	89	104	33	3	25				**259**
1995			1	305	189	12	11	38				**556**
1996			0	87	92	7	37	74				**297**

Table 2 (Cont'd)

1997			138	331		6	65	562	1			**1103**
1998			76	469		13	190	287	122	11		**1168**
1999			204	690		9	168	2411	610	4		**4096**
2000				508		184	500	966		7		**2165**
2001			238	202	1	256	337	1803		4	85	**2926**
2002		3	79	319		273	141	497		1		**1313**
2003	4	2		510		102	14	113			5	**750**
2004*	1	5	4	489		2	10	96			3	**610**

*Preliminary. (1) Included in VIa.Es

Blue ling VIIa

Year	France (1)	UK (Scot)	**Total**
1988			
1989			
1990			
1991		1	**1**
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000			
2001			
2002			
2003*			

*Preliminary. (1) Included in Via

Table 2 (Cont'd)

Blue ling VIIbc

Year	France (VII)	Germany	Ireland	Norway	Spain (1)	E & W	Scotland	**Total**
1988	21		1					**22**
1989	269				2			**271**
1990	177							**177**
1991	157							**157**
1992	126				3		6	**135**
1993	106				2	11	28	**147**
1994	100		1		1	6	22	**130**
1995	95		3			3	11	**112**
1996	118				1	15	57	**191**
1997	113		0		2	36	3	**154**
1998	157				1	60	6	**224**
1999	37		3		1	24	7	**72**
2000	46	1	45		5	9	2	**108**
2001	37		169		5	16	3	**230**
2002	21		152			43	1	**217**
2003	6		12			2		**20**
2004*			9					**9**

*Preliminary. (1) Included in VIIg-k

Blue ling VIIde

Year	France	**Total**
1988		**0**
1989	1	**1**
1990	0	**0**
1991	10	**10**
1992	15	**15**
1993	3	**3**
1994	8	**8**
1995	4	**4**

Table 2 (Cont'd)

1996	4	**4**
1997	1	**1**
1998	3	**3**
1999		
2000		
2001		
2002		
2003		
2004*		

*Preliminary.

Blue ling VIIg-k

Year	France	Germany	Spain (1)	E & W	Scotland	Ireland	**Total**
1988							
1989	21						**21**
1990	46						**46**
1991	44						**44**
1992	256						**256**
1993	164			5	2		**171**
1994	190		4	3	4		**201**
1995	56		13	40	5		**114**
1996	67		21	42	40		**170**
1997	65	8	0	134	12	9	**228**
1998	92		22	223	24	10	**371**
1999	40	2	59	144	11	24	**280**
2000	39	1	65	22	15	30	**172**
2001	43	2	64	13	14	325	**461**
2002	17		42	33	54	120	**266**
2003	13	1	42	6	16	16	**94**
2004*	20	1	15	4		8	**48**

*Preliminary. (1) Reported as VII.

Table 2 (Cont'd)

Blue ling VIII & IX

Year	France	Spain	**Total**
1997		14	**14**
1998		33	**33**
1999	1	3	**4**
2000	2	2	**4**
2001	2	4	**6**
2002	3	26	**29**
2003	2	20	**22**
2004*	4	18	**22**

*Preliminary.

Blue ling XII

Year	Faroes	France	Germany	Spain	E & W	Scotland	Norway	Iceland	Poland	Lithuania	Russia	**Total**
1988		263										**263**
1989		70										**70**
1990		5										**5**
1991		1147										**1147**
1992		971										**971**
1993	654	2591	90									**3335**
1994	382	345	25									**752**
1995	514	47			12							**573**
1996	445	60		264		19						**788**
1997	1	1		411	4							**417**
1998	36	26		375	1							**438**
1999	156	17		943	8	43		186				**1353**
2000	89	23		406	18	23	21	14				**594**
2001	6	26		415	32	91	103	2				**675**
2002	19			1234	8		9					**1270**
2003		7		971		2	40		12	37		**1069**
2004*		27		610							7	**644**

*Preliminary.

Table 2 (Cont'd)

Blue ling XIV

Year	Faroes	France	Germany	Greenland	Iceland	Norway	E & W	Scotland	Spain	**Total**
1988	21		218	3						**242**
1989	13		58							**71**
1990			64	5			10			**79**
1991			105	5			45			**155**
1992			27	2		50	27	4		**110**
1993		390	16		3124	173	21	1		**3725**
1994	1		15		300	11	57			**384**
1995	0		5		117		16	3		**141**
1996	0		12				2			**14**
1997	1		1				2			**4**
1998	48					1	6			**55**
1999						1	7			**8**
2000					4		2		526	**532**
2001	1						6		91	**98**
2002						1			18	**19**
2003						36	4		909	**949**
2004*						1	3	4	177	**185**

*Preliminary

Table 2 (Cont'd)

Blue ling. Total landings by Subarea/division and grand total. (Landings from areas VIII, IX and X given in previous reports are now considered to represent *Molva macrophthalma*).

Year	I	II	III	IV	Va	Vb	VI	VII	VIII&IX	XII	XIV	**Total**
1988	0	3537	22	363	2171	9526	9263	22	0	263	242	**25409**
1989	0	2058	23	459	2533	5264	9141	293	0	70	71	**19912**
1990	0	1412	21	501	3021	4799	6173	223	0	5	79	**16234**
1991	0	1479	21	627	1824	2962	7107	212	0	1147	155	**15534**
1992	0	1039	38	554	2906	4702	6291	406	0	971	110	**17017**
1993	0	1020	23	415	2233	2836	5150	321	0	3335	3725	**19058**
1994	3	419	18	421	1632	1644	3970	339	0	752	384	**9582**
1995	5	359	20	483	1635	2440	4662	230	0	573	141	**10548**
1996	0	267	12	190	1323	1602	6563	365	0	788	14	**11124**
1997	1	291	21	270	1344	2798	6978	383	14	417	4	**12521**
1998	1	278	6	286	1154	2584	7406	598	33	438	55	**12839**
1999	1	291	6	265	1877	2932	9120	352	4	1353	8	**16209**
2000	3	249	14	130	1711	2524	8245	280	4	594	532	**14286**
2001	1	208	24	252	941	2119	8843	691	6	675	98	**13858**
2002	1	149	9	377	1377	2020	5769	483	29	1270	19	**11503**
2003	0	147	19	101	1158	3815	3491	114	22	1069	949	**10885**
2004*	1	174	19	75	1204	2660	3380	57	22	644	185	**8421**

*Preliminary

Annex 3, Table 3. Tusk *(Brosme brosme*). Study Group estimates of landings (tonnes)

TUSK I

Year	Norway	Russia	Faroes	Iceland	Ireland	**Total**
1996	587					**587**
1997	665					**665**
1998	805					**805**
1999	907					**907**
2000	738	43	1	16		**798**
2001	595	6		13		**614**
2002	791	8	n/a	0		**799**
2003	571	5			5	**581**
2004*	620	2			1	**623**

TUSK IIa

Year	Faroes	France	Germany	Greenland	Norway	E & W	Scotland	Russia	Ireland	**Total**
1988	115	32	13	-	14,241	2	-			**14,403**
1989	75	55	10	-	19,206	4	-			**19,350**
1990	153	63	13	-	18,387	12	+			**18,628**
1991	38	32	6	-	18,227	3	+			**18,306**
1992	33	21	2	-	15,908	10	-			**15,974**
1993	-	23	2	11	17,545	3	+			**17,584**
1994	281	14	2	-	12,266	3	-			**12,566**
1995	77	16	3	20	11,271	1				**11,388**
1996	0	12	5		12,029	1				**12,047**
1997	1	21	1		8,642	2	+			**8,667**
1998		9	1		14,463	1	1	-		**14,475**

Table 3 (Cont'd)

1999		7	+	16,213		2	28	**16,250**
2000		8	1	13,120	3	2	58	**13,192**
2001	11	15	+	11200	1	3	66	5 **11290**
2002		3		11303	1	4	39	5 **11355**
2003	6	2		7284		3	21	**7310**
2004*	12	2		6603		1	61	1 **6668**

[(1)]Includes IIb.

TUSK IIb

Year	Norway	E & W	Russia	**Total**
1988		-		**0**
1989		-		**0**
1990		-		**0**
1991		-		**0**
1992		-		**0**
1993		1		**1**
1994		-		**0**
1995	229	-		**229**
1996	161			**161**
1997	92	2		**94**
1998	73	+	-	**73**
1999	26		4	**26**
2000	15	-	3	**18**
2001	141	-	5	**146**
2002	30	-	7	**37**
2003	43			**42**
2004*	115		5	**120**

Table 3 (Cont'd)

TUSK IIIa

Year	Denmark	Norway	Sweden	**Total**
1988	8	51	2	**61**
1989	18	71	4	**93**
1990	9	45	6	**60**
1991	14	43	27	**84**
1992	24	46	15	**85**
1993	19	48	12	**79**
1994	6	33	12	**51**
1995	4	33	5	**42**
1996	6	32	6	**44**
1997	3	25	3	**31**
1998	2	19		**21**
1999	4	25		**29**
2000	8	23	5	**36**
2001	10	41	6	**57**
2002	17	29	4	**50**
2003	15	32	4	**51**
2004*	18	21	6	**45**

*Preliminary

TUSK IVa

Year	Denmark	Faroes	France	Germany	Norway	Sweden[(1)]	E & W	N.I.	Scotland	Ireland	**Total**
1988	83	1	201	62	3,998	-	12	-	72		**4,429**
1989	86	1	148	53	6,050	+	18	+	62		**6,418**
1990	136	1	144	48	3,838	1	29	-	57		**4,254**

Table 3 (Cont'd)

1991	142	12	212	47	4,008	1	26	-	89	**4,537**
1992	169	-	119	42	4,435	2	34	-	131	**4,932**
1993	102	4	82	29	4,768	+	9	-	147	**5,141**
1994	82	4	86	27	3,001	+	24	-	151	**3,375**
1995	81	6	68	24	2,988		10		171	**3,348**
1996	120	8	49	47	2,970		11		164	**3,369**
1997	189	0	47	19	1,763	+	16		238	- **2,272**
1998	114	3	38	12	2,943		11		266	- **3,387**
1999	165	7	44	10	1,983		12		213	1 **2,435**
2000	208	+	32	10	2,651	2	12		343	1 **3,259**
2001	258		26	8	2443	1	11		343	1 **3091**
2002	199		21		2438	1	8		294	**2961**
2003	217		19	6	1560		4		191	**1997**
2004*	137	+	13	3	1370	+	2		140	**1665**

(1) Includes IVb 1988-1993

TUSK IVb

Year	Denmark	France	Norway	Germany	E & W	Scotland	**Total**
1988		n.a.		-	-		
1989		3		-	1		**4**
1990		5		-	-		**5**
1991		2		-	-		**2**
1992	10	1		-	1		**12**
1993	13	1		-	-		**14**
1994	4	1		-	2		**7**
1995	4	-	5	1	3	2	**15**
1996	134(1)	-	21	4	3	1	**163**

Table 3 (Cont'd)

1997	6	1	24	2	2	3	**38**
1998	4	0	55	1	3	3	**66**
1999	8	-	21	1	1	3	**34**
2000	8		106	+	-	2	**116**
2001	6		45[(1)]	1	1	3	**56**
2002	6		61	1	1	2	**71**
2003	2		5	1			**8**
2004*	2		19	1		1	**23**

[(1)] Includes IVc

TUSK Va

Year	Faroes	Germany	Iceland	Norway	Scotland	E&W	**Total**
1988	3,757	-	3,078	20			**6,855**
1989	3,908	-	3,143	10			**7,061**
1990	2,475	-	4,816	-			**7,291**
1991	2,286	-	6,446	-			**8,732**
1992	1,567	-	6,442	-			**8,009**
1993	1,329	-	4,746	-			**6,075**
1994	1,212	-	4,612	-			**5,824**
1995	979	1	5,245	-			**6,225**
1996	872	1	5,226	3			**6,102**
1997	575		4,819				**5,394**
1998	1,052	1	4,118	0			**5,171**
1999	1,075	2	5,795	391	1		**7,264**
2000	1,302	+	4,714	374	+	1	**6,391**
2001	1125	1	3407	285	+	5	**4823**

Table 3 (Cont'd)

2002	1269		3935	372	1	1	**5578**
2003	1163	1	4057	373	1	1	**5596**
2004*	1485	1	3135	214		1	**4836**

*Preliminary

TUSK Vb1

Year	Denmark	Faroes[4]	France	Germany	Norway	E & W	Scotland[1]	**Total**
1988	+	2,827	81	8	1,143	-		**4,059**
1989	-	1,828	64	2	1,828	-		**3,722**
1990	-	3,065	66	26	2,045	-		**5,202**
1991	-	3,829	19	1	1,321	-		**5,170**
1992	-	2,796	11	2	1,590	-		**4,399**
1993	-	1,647	9	2	1,202	2		**2,862**
1994	-	2,649	8	1 [2]	747	2		**3,407**
1995		3,059	16	1 [2]	270	1		**3,347**
1996		1,636	8	1	1,083			**2,728**
1997		1,849	11	+	869		13	**2,742**
1998		1,272	20	-	753	1	27	**2,073**
1999		1956	27	1	1522		11[3]	**3517**
2000		1150	13	1	1191	1	11[3]	**2367**
2001		1916	14	1	1572	1	20	**3524**
2002		1033	10		1642	1	36	**2722**
2003		1200	11		1504	1	17	**2733**
2004*		1705	11		1798	1	19	**3534**

[1]Included in Vb_2 until 1996. [2])Includes Vb_2. [3]Reported as Vb.(4) 2000-2003 Vb1 ans Vb2 combined

Table 3 (Cont'd)

TUSK Vb2

Year	Faroe	Norway	E & W	Scotland [1]	**Total**
1988	545	1,061	-	+	**1,606**
1989	163	1,237	-	+	**1,400**
1990	128	851	-	+	**979**
1991	375	721	-	+	**1,096**
1992	541	450	-	1	**992**
1993	292	285	-	+	**577**
1994	445	462	+	2	**909**
1995	225	404	[2]	2	**631**
1996	46	536			**582**
1997	157	420			**577**
1998	107	530			**637**
1999	132	315			**447**
2000		333			**333**
2001		469			**469**
2002		281			**281**
2003		559			**559**
2004*		107			**107**

[1]Includes Vb1. [2]See Vb_1. [3]Included in Vb_1.

Table 3 (Cont'd)

TUSK VIa

Year	Denmark	Faroes	France [(1)]	Germany	Ireland	Norway	E & W	N.I.	Scot.	Spain	**Total**
1988	-	-	766	1	-	1,310	30	-	13		**2,120**
1989	+	6	694	3	2	1,583	3	-	6		**2,297**
1990	-	9	723	+	-	1,506	7	+	11		**2,256**
1991	-	5	514	+	-	998	9	+	17		**1,543**
1992	-	-	532	+	-	1,124	5	-	21		**1,682**
1993	-	-	400	4	3	783	2	+	31		**1,223**
1994	+		345	6	1	865	5	-	40		**1,262**
1995		0	332	+	33	990	1		79		**1,435**
1996		0	368	1	5	890	1		126		**1,391**
1997		0	359	+	3	750	1		137	11	**1,261**
1998			395	+		715	-		163	8	**1,281**
1999			193	+	3	113	1		182	47	**539**
2000			238	+	20	1327	8		231	158	**1982**
2001			173	+	31	1201	8		279	37	**1729**
2002			113		8	636	5		274	64	**1100**
2003			105		4	905	3		104	13	**1134**
2004*		1	128		22	510			92	17	**769**

[(1)] Not allocated by divisions before 1993.

*Preliminary

TUSK VIb

Year	Faroes	France	Germany	Ireland	Iceland	Norway	E & W	N.I.	Scot.	Russia	**Total**
1988	217		-	-		601	8	-	34		**860**
1989	41	1	-	-		1,537	2	-	12		**1,593**
1990	6	3	-	-		738	2	+	19		**768**

Table 3 (Cont'd)

1991	-	7	+	5		1,068	3	-	25		**1,108**
1992	63	2	+	5		763	3	1	30		**867**
1993	12	3	+	32		899	3	+	54		**1,003**
1994	70	1	+	30		1,673	6	-	66		**1,846**
1995	79	1	+	33		1,415	1		35		**1,564**
1996	0	1		30		836	3		69		**939**
1997	1	1		23		359	2		90		**476**
1998		1		24	18	630	9		233		**915**
1999				26	-	591	5		331		**953**
2000		2		22		1933	14		372	1	**2,344**
2001	1	1		31		476	10		157	6	**681**
2002		9		3		515	8		88		**623**
2003		7		18		452	11		72	1	**561**
2004*		9		1		508	4		39	60	**621**

TUSK VIIa

Year	France	E & W	Scotland	**Total**
1988	n.a.	-	+	+
1989	2	-	+	**2**
1990	4	+	+	**4**
1991	1	-	1	**2**
1992	1	+	2	**3**
1993	-	+	+	+
1994	-	-	+	+
1995	-	-	1	**1**
1996	-	-		

Table 3 (Cont'd)

1997	-	-	1	**1**
1998	-	-	1	**1**
1999	-	-	+	+
2000		-	+	+
2001		-	1	1
2002	n/a	-	-	-
2003		-	-	-
2004*				

TUSK VIIb,c

Year	France	Ireland	Norway	E & W	N.I.	Scotland	**Total**
1988	n.a.	-	12	5	-	+	**17**
1989	17	-	91	-	-	-	**108**
1990	11	3	138	1	-	2	**155**
1991	11	7	30	2	1	1	**52**
1992	6	8	167	33	1	3	**218**
1993	6	15	70	17	+	12	**120**
1994	5	9	63	9	-	8	**94**
1995	3	20	18	6		1	**48**
1996	4	11	38	4		1	**58**
1997	4	8	61	1		1	**75**
1998	3		28	-		2	**33**
1999	-	16	130	-		1	**147**
2000	3	58	88	12		3	**164**
2001	3	54	177	4		25	**263**
2002	1	31	30	1		3	**66**
2003	1	19		1			**21**

Table 3 (Cont'd)

2004*	1	19						**20**

*Preliminary

TUSK VIIg-k

Year	France	Germany	Ireland	Norway	E & W	Scotland	Spain	**Total**
1988	n.a.		-	-	5	-		**5**
1989	3		-	82	1	-		**86**
1990	6		-	27	0	+		**33**
1991	4		-	-	8	2		**14**
1992	9		-	-	38	-		**47**
1993	5		17	-	7	3		**32**
1994	4		12	-	12	3		**31**
1995	3		8	-	18	8		**37**
1996	3		20	-	3	3		**29**
1997	4	4	11	-		+	0	**19**
1998	2	3	4	-		1	0	**10**
1999	1	1	-	-		+	6	**8**
2000	3		5	-	-	+	6	**14**
2001	3		-	9	-	+	2	**14**
2002	1				1		3	**5**
2003	1		1				1	**3**
2004*	1							**1**

TUSK VIIIa

Year	E & W	France	**Total**
1988	1	n.a.	**1**
1989	-	-	**-**

Table 3 (Cont'd)

1990	-	-	**-**
1991	-	-	**-**
1992	-	-	**-**
1993	-	-	**-**
1994	-	-	**-**
1995	-	-	**-**
1996	-	-	**-**
1997	+	+	**+**
1998	-	1	**1**
1999	-	-	**0**
2000	-		**-**
2001	-		**-**
2002	-	+	+
2003	-	-	-
2004*			

TUSK XII

Year	Faroes	France	Iceland	Norway	Scotland	Russia	**Total**
1988		1					**1**
1989		1					**1**
1990		0					**0**
1991		1					**1**
1992		1					**1**
1993		12	+				**12**
1994		1	+				**1**
1995	8	-	10				**18**

1996	7	-	9	142				**158**
1997	11	-	+	19				**30**
1998		1		-				**1**
1999		1		+	1			**1**
2000				5	+			**5**
2001		1		51	+			**52**
2002				27				**27**
2003				83				**83**
2004*	2	2		7			5	**16**

*Preliminary

TUSK XIVa

Year	Germany	Norway	**Total**
1988	2		**2**
1989	1		**1**
1990	2		**2**
1991	2		**2**
1992	+		+
1993	+		+
1994	-		+
1995	-		+
1996			+
1997		-	+
1998		-	+
1999		+	+
2000		-	**-**
2001		0	**0**
2002	-	-	-

Table 3 (Cont'd)

2003	-	-	-		
2004*					

TUSK XIVb

Year	Faroes	Iceland	Norway	E & W	**Total**
1988			-	-	
1989	19	3	-	-	**22**
1990	13	10	7	-	**30**
1991	-	64	68	1	**133**
1992	-	82	120	+	**202**
1993	-	27	53	+	**80**
1994	-	9	16	+	**25**
1995	-	57	30	+	**87**
1996	-	139	142		**281**
1997	-	10	108		**118**
1998	1	-	14		**15**
1999	-	n.a.	9		**9**
2000			11		**11**
2001	3		69		**72**
2002	4	28	30		**62**
2003			88		**88**
2004*			40		**40**

*Preliminary

Table 3 (Cont'd)
Tusk, total landings by Sub-areas or Division

Year	I	IIa	IIb	III	IVa	IVb	Va	Vb1	Vb2	VIa	VIb	VIIa	VIIb,c	VIIg-k	VIIIa	XII	XIVa	XIVb	All areas
1988		14403	0	61	4429	0	6855	4059	1606	2120	860		17	5	1	1	2	0	34419
1989		19350	0	93	6418	4	7061	3722	1400	2297	1593	2	108	86		1	1	22	42158
1990		18628	0	60	4254	5	7291	5202	979	2256	768	4	155	33		0	2	30	39667
1991		18306	0	84	4537	2	8732	5170	1096	1543	1108	2	52	14		1	2	133	40782
1992		15974	0	85	4932	12	8009	4399	992	1682	867	3	218	47		1		202	37423
1993		17584	1	79	5141	14	6075	2862	577	1223	1003		120	32		12		80	34803
1994		12566	0	51	3375	7	5824	3407	909	1262	1846		94	31		1		25	29398
1995		11388	229	42	3348	15	6225	3347	631	1435	1564	1	48	37		18		87	28415
1996	587	12047	161	44	3369	163	6102	2728	582	1391	939		58	29		158		281	28639
1997	665	8667	94	31	2272	38	5394	2742	577	1261	476	1	75	19		30		118	22460
1998	805	14475	73	21	3387	66	5171	2073	637	1281	915	1	33	10	1	1		15	28965
1999	907	16250	26	29	2435	34	7264	3517	447	539	953		147	8	0	1		9	32566
2000	798	13192	18	36	3259	116	6391	2367	333	1982	2344		164	14		5		11	31030
2001	614	11290	146	57	3091	56	4823	3524	469	1729	681	1	263	14		52		72	26882
2002	799	11355	37	50	2961	71	5578	2722	281	1100	623		66	5		27		62	25737
2003	581	7310	42	51	1997	8	5596	2733	559	1134	561		21	3		83		88	20767
2004*	623	6668	120	45	1665	23	4836	3534	107	769	621		20	1		16		40	19088

ANNEX 3, TABLE 4. ROUNDNOSE GRENADIER (*CORYPHAENOIDES RUPESTRIS*). WORKING GROUP ESTIMATES OF LANDINGS (TONNES).

ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) I and II																
Year	Faroe	Denmark	France	Germany	Norway	Russia/USSR	GDR	UK(E+W)	UK(Scot)	**TOTAL**						
1988										**0**						
1989			1	2		16	3			**22**						
1990			32	2		12	3			**49**						
1991			41	3	28					**72**						
1992		1	22	0	29					**52**						
1993			13	0	2					**15**						
1994			3	12						**15**						
1995			7							**7**						
1996			2							**2**						
1997	1		5		100					**106**						
1998			0		87	13				**100**						
1999			0		44	2				**46**						
2000			0						0	**0**						
2001			0					2	0	**2**						
2002			0		11	1				**12**						
2003			0		4	0				**4**						
2004*					27					**27**						
* Preliminary data																
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) III																
Year	Denmark	Norway	Sweden	**TOTAL**												
1988	612		5	**617**												
1989	884		1	**885**												
1990	785	280	2	**1067**												
1991	1214	304	10	**1528**												
1992	1362	211	755	**2328**												

Table 4 (Cont'd)

1993	1103	55		**1158**												
1994	517		42	**559**												
1995	0		1	**1**												
1996	2213			**2213**												
1997	0	124	42	**166**												
1998	1490	329		**1819**												
1999	3113	13		**3126**												
2000	2400	4		**2404**												
2001	3067	35		**3102**												
2002	4196	24		**4220**												
2003	4302	0		**4302**												
2004*	9503	16		**9519**												
* Preliminary data																
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) IV																
Year	France	Germany	Norway	Scotland	Denmark	**TOTAL**										
1988		1				**1**										
1989	167	1		2		**170**										
1990	370	2				**372**										
1991	521	4				**525**										
1992	421			4	1	**426**										
1993	279	4			0	**283**										
1994	185	2			25	**212**										
1995	68	1		15	0	**84**										
1996	59			5	7	**71**										
1997	1			10	0	**11**										
1998	35		0		0	**35**										
1999	56		5		0	**61**										

Table 4 (Cont'd)															
2000	2				0	**2**									
2001	2				17	**19**									
2002	11		1	26	0	**38**									
2003	5		1	11		**17**									
2004*	5			1	371	**377**									
* Preliminary data															
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) Va															
Year	Faroes	Iceland**	Germany	UK(E+W)	**TOTAL**										
1988		2			**2**										
1989	2	2			**4**										
1990		7			**7**										
1991		48			**48**										
1992		210			**210**										
1993		276			**276**										
1994		210			**210**										
1995	0	398			**398**										
1996	1	139			**140**										
1997	0	198			**198**										
1998		120	0		**120**										
1999		129	0		**129**										
2000		67			**67**										
2001		57		0	**57**										
2002		60			**60**										
2003					**0**										
2004*					**0**										
* Preliminary data															
** includes other grenadiers from 1988 to 1996															

Table 4 (Cont'd)

ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) Vb

Year	Faroes	France	Norway	Germany	Russia/USSR	UK	UK (Scot)	**TOTAL**
1988				1				**1**
1989	20	181		5	52			**258**
1990	75	1470		4				**1549**
1991	22	2281	7	1				**2311**
1992	551	3259	1	6				**3817**
1993	339	1328		14				**1681**
1994	286	381		1				**668**
1995	405	818						**1223**
1996	93	983		2				**1078**
1997	53	1059						**1112**
1998	50	1617						**1667**
1999	104	1861	2	0		29		**1996**
2000	48	1699		1		43		**1791**
2001	84	1932						**2016**
2002	176	768				81		**1025**
2003	490	1032				10		**1532**
2004*	508	891			6		76	**1481**

* Preliminary data

ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) VI

Year	Faroes	France	Germany	Ireland	Norway	Spain	E & W	UK (Scot)	Russia	**TOTAL**
1988	27		4				1			**32**
1989	2	2211	3					2		**2218**
1990	29	5484	2							**5515**
1991		7297	7							**7304**
1992	99	6422	142		5		2	112		**6782**

Table 4 (Cont'd)															
1993	263	7940	1					1		**8205**					
1994		5898	15	14				11		**5938**					
1995	0	6329	2	59				82		**6472**					
1996	0	5888						156		**6044**					
1997	15	5795		4	-			218		**6032**					
1998	13	5170			21	3				**5207**					
1999		5637	3	1	-	1				**5642**					
2000	0	7478		41	1	1002	1	433		**8956**					
2001	11	5897	6	31	32	6942	21	955	3	**13898**					
2002	0	7209		12			6	741		**7968**					
2003	32	4924		11			0	185	3	**5155**					
2004*	9	4448		8		252		72	72	**4861**					
* Preliminary data															
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) VII															
Year	Faroes	France	Ireland	Spain	UK(Scotland)	**TOTAL**									
1988						**0**									
1989		222				**222**									
1990		215				**215**									
1991		489				**489**									
1992		1556				**1556**									
1993		1916				**1916**									
1994		1922				**1922**									
1995		1295				**1295**									
1996		1051				**1051**									
1997		1033		5		**1038**									
1998		1146		11		**1157**									
1999		892		4		**896**									

Table 4 (Cont'd)															
2000		889		0		**889**									
2001		947	416	0		**1363**									
2002	1	451	605	0	3	**1060**									
2003		374	213	0	1	**588**									
2004*		247	320			**567**									
* Preliminary data															
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) VIII and IX															
Year	France	Spain	**TOTAL**												
1988			**0**												
1989	0		**0**												
1990	5		**5**												
1991	1		**1**												
1992	12		**12**												
1993	18		**18**												
1994	5		**5**												
1995	0		**0**												
1996	1		**1**												
1997	0	0	**0**												
1998	1	19	**20**												
1999	9	7	**16**												
2000	5	0	**5**												
2001	7	0	**7**												
2002	3	0	**3**												
2003	2	0	**2**												
2004*	2		**2**												
* Preliminary data															

Table 4 (Cont'd)

ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) X

Year	Faroes	France	UK (E+W)	**Total**
1988				**0**
1989				**0**
1990				**0**
1991				**0**
1992				**0**
1993				**0**
1994				**0**
1995	0			**0**
1996	3			**3**
1997	1			**1**
1998	1			**1**
1999	3	3		**6**
2000	0	0	74	**74**
2001	0			**0**
2002	0			**0**
2003	0	1		**1**
2004*	1			**1**
* Preliminary data				

ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) XII

Year	Faroese	France	Germany	Iceland	Ireland	Latvia	Russia/ USSR	Poland	Spain	UK (E&W)	UK (Scotl.)	Norway	
1988							10600					**10600**	
1989		0					9500					**9500**	

Table 4 (Cont'd)															
1990		0					2800						**2800**		
1991		14				4296	3200						**7510**		
1992		13				1684	300						**1997**		
1993		26	39			2176	500						**2741**		
1994	457	20	9			675							**1161**		
1995	359	285											**644**		
1996	136	179		77			200		1136				**1728**		
1997	138	111					700	5867	1800				**8616**		
1998	19	116					800	6769	4262				**11966**		
1999		287				-1	576	546	8251				**9659**		
2000	6	391	9				2325		5791		6		**8528**		
2001	2	156			3		1714		5922		7	1	**7805**		
2002	0	14					737		10696	1	1		**11449**		
2003	0	543			1		585		9684		3		**10816**		
2004*	8	1707					386		8423		4		**10528**		
* Preliminary data															
** Spanish landings include VI															
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) XIV															
Year	Faroes	Germany	Greenland	Iceland**	Norway	E & W	Scotland	Russia	Spain	**TOTAL**					
1988		45	7							**52**					
1989	3	42								**45**					
1990		45	1			1				**47**					
1991		23	4			2				**29**					
1992		19	1	4	6		1			**31**					
1993		4	18	4						**26**					
1994		10	5							**15**					
1995	0	13	14							**27**					

Table 4 (Cont'd)															
1996	0	6	19							**25**					
1997	6	34	12		7					**59**					
1998	1	116	3		6					**126**					
1999		105	0		19					**124**					
2000	0	41	11		5					**57**					
2001	0	11	5		7	2	72			**97**					
2002	0	25	5		15	1	1		235	**282**					
2003	0		15		5	1			272	**293**					
2004*								20		**20**					
* Preliminary data															
** includes other grenadiers from 1988 to 1996															
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*) unallocated landings in Vb, VI and VII															
Year	Unallocated	**TOTAL**													
1988		**0**													
1989		**0**													
1990		**0**													
1991		**0**													
1992		**0**													
1993		**0**													
1994		**0**													
1995		**0**													
1996		**0**													
1997		**0**													
1998		**0**													
1999		**0**													
2000		**0**													
2001	208	**208**													

Table 4 (Cont'd)															
2002	504	**504**													
2003	952	**952**													
2004*															
ROUNDNOSE GRENADIER (*Coryphaenoides rupestris*)															
all sea areas															
Year	I+II	III	IV	Va	Vb	VI	VII	VIII	X	XII	XIV	Unallocated	**Total**		
								+IX							
1988	0	617	1	2	1	32	0	0	0	10600	52	0	**11,305**		
1989	22	885	170	4	258	2218	222	0	0	9500	45	0	**13,324**		
1990	49	1067	372	7	1549	5515	215	5	0	2800	47	0	**11,626**		
1991	72	1528	525	48	2311	7304	489	1	0	7510	29	0	**19,817**		
1992	52	2328	426	210	3817	6782	1556	12	0	1997	31	0	**17,211**		
1993	15	1158	283	276	1681	8205	1916	18	0	2741	26	0	**16,319**		
1994	15	559	212	210	668	5938	1922	5	0	1161	15	0	**10,705**		
1995	7	1	84	398	1223	6472	1295	0	0	644	27	0	**10,151**		
1996	2	2213	71	140	1078	6044	1051	1	3	1728	25	0	**12,356**		
1997	106	166	11	198	1112	6032	1038	0	1	8616	59	0	**17,339**		
1998	100	1819	35	120	1667	5207	1157	20	1	11966	126	0	**22,218**		
1999	46	3126	61	129	1996	5642	896	16	6	9659	124	0	**21,701**		
2000	0	2404	2	67	1791	8956	889	5	74	8528	57	0	**22,773**		
2001	2	3102	19	57	2016	13898	1363	7	0	7805	97	208	**28,574**		
2002	12	4220	38	60	1025	7968	1060	3	0	11449	282	504	**26,621**		
2003	4	4302	17	0	1532	5155	588	2	1	10816	293	952	**23,662**		
2004*	27	9519	377	0	1481	4861	567	2	1	10528	20		**27,383**		
* Preliminary data															
** Spanish landings in VI included in XII															

Annex 3, Table 5. Working Group estimates of landings of orange roughy, *Hoplostethus atlanticus*.

Orange roughy in Division Va

Year	Iceland	**Total**
1988	-	**0**
1989	-	**0**
1990	-	**0**
1991	65	**65**
1992	382	**382**
1993	717	**717**
1994	158	**158**
1995	64	**64**
1996	40	**40**
1997	79	**79**
1998	28	**28**
1999	14	**14**
2000	68	**68**
2001	19	**19**
2002	10	**10**
2003	+	**+**
2004*		

*Preliminary.

Orange roughy in Division Vb

Year	Faroes	France	**Total**
1988	-	-	**0**
1989	-	-	**0**
1990	-	22	**22**
1991	-	48	**48**
1992	1	12	**13**
1993	36	1	**37**
1994	170	+	**170**
1995	419	1	**420**
1996	77	2	**79**
1997	17	1	**18**
1998	-	3	**3**
1999	4	1	**5**
2000	155	0	**155**
2001	1	4	**5**
2002	1	+	**1**
2003	2	3	**5**
2004*		7	**7**

*Preliminary.

Orange roughy in Sub-area VI

Year	Faroes	France	E & W	Scotland	Ireland	Spain	**Total**
1988	-	-	-	-	-	-	**0**
1989	-	5	-	-	-	-	**5**
1990	-	15	-	-	-	-	**15**
1991	-	3,502	-	-	-	-	**3502**
1992	-	1,422	-	-	-	-	**1422**
1993	-	429	-	-	-	-	**429**
1994	-	179	-	-	-	-	**179**
1995	40	74	-	2	-	-	**116**
1996	0	116	-	0	-	-	**116**
1997	29	116	1	-	-	-	**146**
1998	-	100	-	-	-	2	**102**

Table 5 (Cont'd)

1999	-	175	-	-	0	1	**176**
2000	-	136	-	-	2	-	**138**
2001	-	159	-	11	110	-	**280**
2002	n/a	152		41	130	-	**323**
2003		79			2	-	**81**
2004*		54			2		**56**

* Preliminary.

Orange roughy in Sub-area VII

Year	France	Spain	E & W	Ireland	Scotland	Faroes	**Total**
1988	-	-	-	-	-	-	**0**
1989	3	-	-	-	-	-	**3**
1990	2	-	-	-	-	-	**2**
1991	1,406	-	-	-	-	-	**1406**
1992	3,101	-	-	-	-	-	**3101**
1993	1,668	-	-	-	-	-	**1668**
1994	1,722	-	-	-	-	-	**1722**
1995	831	-	-	-	-	-	**831**
1996	879	-	-	-	-	-	**879**
1997	893	-	-	-	-	-	**893**
1998	963	6	-	-	-	-	**969**
1999	1,157	4	-	-	-	-	**1161**
2000	1,019	-	-	1		-	**1020**
2001	1022	-	1	2367	22	-	**3412**
2002	300		14	5114	33	4	**5465**
2003	369			172			**541**
2004*	246			188			**434**

*Preliminary.

Orange roughy in Sub-area VIII

Year	France	Spain VIII&IX	E & W	**Total**
1988	-	-	-	**0**
1989	0	-	-	**0**
1990	0	-	-	**0**
1991	0	-	-	**0**
1992	83	-	-	**83**
1993	68	-	-	**68**
1994	31	-	-	**31**
1995	7	-	-	**7**
1996	22	-	-	**22**
1997	1	22	-	**23**
1998	4	10	-	**14**
1999	33	6	-	**39**
2000	47	-	5	**52**
2001	20	-	-	**20**
2002	20	-	-	**20**
2003	31			**31**
2004*	18			**18**

Orange roughy in Sub-area IX

Year	Spain	Total
1988	-	0
1989	-	0
1990	-	0
1991	-	0
1992	-	0
1993	-	0

Table 5 (Cont'd)

1994	-	0
1995	-	0
1996	-	0
1997	1	1
1998	1	1
1999	1	1
2000	0	0
2001	0	0
2002	0	0
2003		
2004*		

*Preliminary. Continued …

Orange roughy in Sub-area X

Year	Faroes	France	Norway	E & W	Portugal	Ireland	**Total**
1988	-		-	-	-		**0**
1989	-	-	-	-	-		**0**
1990	-	-	-	-	-		**0**
1991	-	-	-	-	-		**0**
1992	-	-	-	-	-		**0**
1993	-	-		1	-	-	**1**
1994	-	-	-	-	-		**0**
1995	-	-	-	-	-		**0**
1996	470	1	-	-	-		**471**
1997	6	-	-	-	-		**6**
1998	177	-	-	-	-		**177**
1999	-	10	-	-	-		**10**
2000	-	3	-		28	157	**188**
2001	84	-	-		28	343	**28**
2002	30	-	-	-	-		**22**
2003		1					**1**
2004*	384					19	**403**

*Preliminary.

Orange roughy in Sub-area XII

Year	Faroes	France	Iceland	Spain	E & W	Ireland	New Zealand	Russia	**Total**
1988	-	-	-	-	-			-	**0**
1989	-		0	-	-			-	**0**
1990	-		0	-	-			-	**0**
1991	-		0	-	-			-	**0**
1992	-		8	-	-			-	**8**
1993	24		8	-	-			-	**32**
1994	89		4	-	-			-	**93**
1995	580		96	-	-			-	**676**
1996	779		36	3	-			-	**818**
1997	802		6	-	-			-	**808**
1998	570		59	-	-			-	**629**
1999	345		43	-	43	-		-	**431**
2000	224		21	-	-	2		12	**259**
2001	345		14	-	-	2		450 -	**811**
2002	+		6	-	-	-	na	-	**6**
2003			64			136	na	-	**200**
2004*	176		132						**308**

*Preliminary.

Table 5 (Cont'd)

Orange roughy, All areas

Year	Va	Vb	VI	VII	VIII	IX	X	XII	All areas
1988	0	0	0	0	0	0	0	0	0
1989	0	0	5	3	0	0	0	0	8
1990	0	22	15	2	0	0	0	0	39
1991	65	48	3502	1406	0	0	0	0	5021
1992	382	13	1422	3101	83	0	0	8	5009
1993	717	37	429	1668	68	0	1	32	2952
1994	158	170	179	1722	31	0	0	93	2353
1995	64	420	116	831	7	0	0	676	2114
1996	40	79	116	879	22	0	471	818	2425
1997	79	18	146	893	23	1	6	808	1974
1998	28	3	102	969	14	1	177	629	1923
1999	14	5	176	1161	39	1	10	431	1837
2000	68	155	138	1020	52	0	188	259	1880
2001	19	5	280	3412	20	0	28	811	4575
2002	10	1	323	5465	20	0	22	6	5847
2003 +		5	81	541	31	0	1	200	859
2004*		7	56	434	18		403	308	1226

Annex 3, Table 6. Working Group estimates of landings of RED (=BLACKSPOT) SEABREAM (*Pagellus bogaraveo*).

RED (=BLACKSPOT) SEABREAM (***Pagellus bogaraveo*) VI and VII**

Year	France	Ireland	Spain	E & W	Ch. Islands	**TOTAL**
1988	52	0	47	153	0	**252**
1989	44	0	69	76	0	**189**
1990	22	3	73	36	0	**134**
1991	13	10	30	56	14	**123**
1992	6	16	18	0	0	**40**
1993	5	7	10	0	0	**22**
1994	0	0	9	0	1	**10**
1995	0	6	5	0	0	**11**
1996	0	4	24	1	0	**29**
1997	0	20	0	36		**56**
1998	0	4	7	6		**17**
1999	0	8	0	15		**23**
2000	4	n/a	3	13		**20**
2001	1	11	2	37		**51**
2002	3	0	9	13		**25**
2003	11	0	7	20		**38**
2004*	19		4	8		**31**

* Preliminary

RED (=BLACKSPOT) SEABREAM (*Pagellus bogaraveo*)
VIII

Year	France	Spain	England	**TOTAL**
1988	37	91	9	**137**
1989	31	234	7	**272**
1990	15	280	17	**312**
1991	10	124	0	**134**
1992	5	119	0	**124**
1993	3	172	0	**175**
1994	0	131	0	**131**
1995	0	110	0	**110**
1996	0	23	0	**23**
1997	18	7	0	**25**
1998	18	86	0	**104**
1999	20	84	0	**104**
2000	81	189	0	**270**
2001	11	168	0	**179**
2002	19	111	0	**130**
2003	6	83	0	**89**
2004*	3	84	8	**95**

* Preliminary

RED (=BLACKSPOT) SEABREAM (*Pagellus bogaraveo*)
IX

Year	Portugal	Spain	**TOTAL**
1988	370	319	**689**
1989	260	416	**676**
1990	166	428	**594**
1991	109	423	**532**
1992	166	631	**797**
1993	235	765	**1000**
1994	150	854	**1004**
1995	204	625	**829**
1996	209	769	**978**

Table 6 (Cont'd)

1997	203	808	**1011**
1998	357	520	**877**
1999	265	278	**543**
2000	83	338	**421**
2001	97	277	**374**
2002	111	248	**359**
2003	142	329	**471**
2004*	170	251	**421**

* Only until November 2003 (Portugal)

RED (=BLACKSPOT) SEABREAM (*Pagellus bogaraveo*) X

Year	Portugal	**TOTAL**
1988	637	**637**
1989	924	**924**
1990	889	**889**
1991	874	**874**
1992	1100	**1100**
1993	830	**830**
1994	983	**983**
1995	1115	**1115**
1996	1052	**1052**
1997	1012	**1012**
1998	1119	**1119**
1999	1222	**1222**
2000	947	**947**
2001	1034	**1034**
2002	1193	**1193**
2003	1068	**1068**
2004*	1075	**1075**

*Preliminary

RED (=BLACKSPOT) SEABREAM (*Pagellus bogaraveo*) XII

Year	Latvia	**TOTAL**
1988		**0**
1989		**0**
1990		**0**
1991		**0**
1992		**0**
1993		**0**
1994	75	**75**
1995		**0**
1996		**0**
1997		**0**
1998		**0**
1999		**0**
2000		**0**
2001		**0**
2002		**0**
2003		**0**
2004*		**0**

* Preliminary

RED (=BLACKSPOT) SEABREAM (***Pagellus bogaraveo*) in Madeira (Portugal) (CECAF area)**

Year	Portugal	TOTAL
1988		0
1989		0
1990	6	6
1991	8	8

Table 6 (Cont'd)

1992	7	7
1993	8	8
1994	7	7
1995	8	8
1996	4	4
1997	5	5
1998	14	14
1999	13	13
2000		0
2001		0
2002		0
2003		0
2004*		

*Preliminary

RED (=BLACKSPOT) SEABREAM (***Pagellus bogaraveo***) **All ICES sea areas**

Year	VI+VII	VIII	IX	X	XII	TOTAL
1988	252	137	689	637	0	1715
1989	189	272	676	924	0	2061
1990	134	312	594	889	0	1929
1991	123	134	532	874	0	1663
1992	40	124	797	1100	0	2061
1993	22	175	1000	830	0	2027
1994	10	131	1004	983	75	2203
1995	11	110	829	1115	0	2065
1996	29	23	978	1052	0	2082
1997	56	25	1011	1012	0	2104
1998	17	104	877	1119	0	2117
1999	23	104	543	1222	0	1892
2000	20	270	421	947	0	1658
2001	51	179	374	1034	0	1638
2002	25	130	359	1193	0	1707
2003	38	89	471	1068	0	1666
2004*	31	95	421	1075	0	1622

Annex 3, Table 7. Working Group estimates of landings of Black scabbardfish (*Aphanopus carbo*).

Black scabbardfish in Sub-areas III and IV

Year	France	Germany	Scotland	E&W& NI	**Total**
1988	2	-	-	-	**2**
1989	0	-	-	-	**0**
1990	57	-	-	-	**57**
1991	0	-	-	-	**0**
1992	0	-	-	-	**0**
1993	0	-	-	-	**0**
1994	13	3	-	-	**16**
1995	-	-	2	-	**2**
1996	3	-	1	-	**4**
1997	0	-	2	-	**2**
1998	-	-	9	-	**9**
1999	4	-	3	-	**7**
2000	2	0	3	-	**5**
2001	1	0	10	1	**12**
2002	0		24		**24**
2003	0		4		**4**
2004*					**0**

* Preliminary.

Black scabbardfish in Division Va

Year	Iceland	**Total**
1988	-	**0**
1989	-	**0**
1990	-	**0**
1991	-	**0**
1992	-	**0**
1993	0	**0**

Table7 (Cont'd)

1994	1	**1**									
1995	+	**+**									
1996	0	**0**									
1997	1	**1**									
1998	0	**0**									
1999	9	**9**									
2000	18	**18**									
2001	8	**8**									
2002	13	**13**									
2003											
2004*											
* Preliminary.											
Black scabbardfish in Division Vb											
Year	Faroes	France	Germany	Scotland	E&W&NI	**Total**					
1988	-	-	-	-	-						
1989	-	166	-	-	-	**166**					
1990	12	407	-	-	-	**419**					
1991	1	151	-	-	-	**152**					
1992	4	29	-	-	-	**33**					
1993	202	76	9	-	-	**287**					
1994	114	45	1	-	-	**160**					
1995	249	175	-	-	-	**424**					
1996	57	129	-	-	-	**186**					
1997	18	50	-	-	-	**68**					
1998	36	144	-	-	-	**180**					
1999	31	135	-	6	-	**172**					
2000	116	186	0	9	-	**311**					
2001	404	371	0	20	0	**795**					
2002	1360	311		80		**1751**					
2003	1451	171		11		**1633**					

Table7 (Cont'd)

2004*	699	81		70		**850**					
* Preliminary.											
Black scabbardfish in Sub-areas VI and VII											
Year	Faroes	France	Germany	Ireland	Spain	Scotland	E&W&NI	**Total**			
1988											
1989	46	108						**154**			
1990		1060						**1060**			
1991		2759						**2759**			
1992	3	3433						**3436**			
1993	62	3411	48	8				**3529**			
1994		3050	46	3		2		**3101**			
1995		3257	3			18		**3278**			
1996		3650	2			36	1	**3689**			
1997	3	2754		0	1	235	2	**2995**			
1998		1815		0	3	148	1	**1967**			
1999		1973		1	0	191	1	**2166**			
2000		3235	0	59	1	377	40	**3712**			
2001	3	3692	0	68	150	673	37	**4623**			
2002	2	3912		1050	0	1320	43	**6327**			
2003	45	3130		159	0	119	5	**3458**			
2004*	59	2861		293	17	123	2	**3355**			
* Preliminary.											
Black scabbardfish in Sub-areas VIII and IX											
Year	France	Portugal	Spain	**Total**							
1988	-	2602	-	**2602**							
1989	-	3473	-	**3473**							
1990	0	3274	-	**3274**							
1991	1	3978	-	**3979**							
1992	0	4389	-	**4389**							

Table7 (Cont'd)

1993	0	4513	-	**4513**							
1994	0	3429	-	**3429**							
1995	-	4272	-	**4272**							
1996	126	3686	3	**3815**							
1997	2	3553	1	**3556**							
1998	2	3147	3	**3152**							
1999	11	2741	0	**2752**							
2000	32	2371	1	**2404**							
2001	22	2744	1	**2767**							
2002	32	2692	1	**2725**							
2003	33	2630	1	**2664**							
2004*	35	2274	1	**2310**							
* Preliminary.			**	January to November							
Black scabbardfish in Sub-area X											
Year	Faroes	Portugal	France	**Total**							
1988	-	-	-	**0**							
1989	-	-	-	**0**							
1990	-	-	-	**0**							
1991	-	166	-	**166**							
1992	370	-	-	**370**							
1993	-	2	-	**2**							
1994	-	-	-	**0**							
1995	-	3	-	**3**							
1996	11	0	-	**11**							
1997	3	0	-	**3**							
1998	31	68	-	**99**							
1999	-	46	66	**112**							
2000	-	112	1	**113**							
2001	-	16	0	**16**							
2002	2	0	0	**2**							

Table7 (Cont'd)

2003		91		**91**							
2004*	111	2		**113**							
* Preliminary.											
Black scabbardfish in Sub-area XII											
Year	Faroes	France	Germany	Spain	Scotland	Ireland	E&W&NI	**Total**			
1988	-	-	-	-	-			**0**			
1989	-	-	-	-	-			**0**			
1990	-	-	-	-	-			**0**			
1991	-	-	-	-	-			**0**			
1992	-	512	-	-	-			**512**			
1993	1051	-	93	-	-			**1144**			
1994	779	-	45	-	-			**824**			
1995	301[(1)]	-	-	-	-			**301**			
1996	187	4	-	253	-			**444**			
1997	102	-	-	98	-			**200**			
1998	20	-	-	134	-			**154**			
1999	-	3	-	109	0			**112**			
2000	1	6	0	237	-			**244**			
2001		3	0	115	-			**118**			
2002		0	0	1059	1		0	**1060**			
2003		7		403		1		**411**			
2004*	95	10		165	1			**271**			
* Preliminary [(1)] Includes VIb.											
Black scabbardfish in Sub-area XIV											
Year	Faroes	Spain	**Total**								
1988	-	-	**0**								
1989	-	-	**0**								
1990	-	-	**0**								
1991	-	-	**0**								

Table7 (Cont'd)

1992	-	-	**0**								
1993	-	-	**0**								
1994	-	-	**0**								
1995	-	-	**0**								
1996	-	-	**0**								
1997	-	-	**0**								
1998	2	-	**2**								
1999	-	-	**0**								
2000	-	90	**90**								
2001	-	0	**0**								
2002		8	**8**								
2003		2	**2**								
2004*			**0**								
* Preliminary.											
Black Scabbardfish (*Aphanopus carbo*) unallocated landings from Subareas V, VI,VII and XII											
1998	2092										
1999	547										
2000	742										
2001	650										
2002	826										
2003	952										
2004*											
Black Scabbardfish (*Aphanopus carbo*) All ICES areas											
	III+IV	Va	Vb	VI+VII	VIII+IX	X	XII	XIV	Unallocated	**Total**	
1988	2	0	0	0	2602	0	0	0		**2604**	
1989	0	0	166	154	3473	0	0	0		**3793**	
1990	57	0	419	1060	3274	0	0	0		**4810**	
1991	0	0	152	2759	3979	166	0	0		**7056**	
1992	0	0	33	3436	4389	370	512	0		**8740**	

Table7 (Cont'd)

1993	0	0	287	3529	4513	2	1144	0		**9475**	
1994	16	1	160	3101	3429	0	824	0		**7531**	
1995	2	+	424	3278	4272	3	301	0		**8280**	
1996	4	0	186	3689	3815	11	444	0		**8149**	
1997	2	1	68	2995	3556	3	200	0		**6825**	
1998	9	0	180	1967	3152	99	154	2	2092	**7655**	
1999	7	9	172	2166	2752	112	112	0	547	**5877**	
2000	5	18	311	3712	2404	113	244	90	742	**7639**	
2001	12	8	795	4623	2767	16	118	0	650	**8989**	
2002	24	13	1751	6327	2725	2	1060	8	826	**12735**	
2003	4	0	1633	3458	2664	91	411	2	952	**9216**	
2004*	4		850	3355	2310	113	271	0		**6903**	

Annex 3, Table 8. Landings (tonnes) of *Beryx* spp.

ALFONSINOS (Beryx spp.) IV

Year	France	**TOTAL**
1988	0	**0**
1989	0	**0**
1990	1	**1**
1991	0	**0**
1992	2	**2**
1993	0	**0**
1994	0	**0**
1995	0	**0**
1996	0	**0**
1997	0	**0**
1998	0	**0**
1999	0	**0**
2000	0	**0**
2001	0	**0**
2002	0	**0**
2003	0	**0**
2004*	0	**0**

*Preliminary

ALFONSINOS (Beryx spp.) Vb

Year	Faroes	France	**TOTAL**
1988			**0**
1989			**0**
1990		5	**5**
1991		0	**0**
1992		4	**4**
1993		0	**0**
1994		0	**0**
1995	1	0	**1**
1996	0	0	**0**
1997	0	0	**0**
1998	0	0	**0**
1999	0	0	**0**
2000	0	0	**0**
2001	0	0	**0**
2002	0	0	**0**
2003	0	0	**0**
2004*	0	0	**0**

*Preliminary

ALFONSINOS (Beryx spp.) VI and VII

	France	E & W	Spain	Ireland	**TOTAL**
1988					
1989	12				**12**
1990	8				**8**
1991					**0**
1992	3				**3**
1993	0			1	**1**
1994	0			5	**5**
1995	0			3	**3**
1996	0			178	**178**
1997	17		4	4	**25**
1998	10		0	71	**81**
1999	55		0	20	**75**

Table 8 (Cont'd)

2000	31	2	100		**133**
2001	58	13	115		**186**
2002	34	15	45		**94**
2003	18	5	55	4	**82**
2004*	13	3	46		**62**

*Preliminary

ALFONSINOS (Beryx spp.) VIII and IX

Year	France	Portugal	Spain	E & W	**TOTAL**
1988					**0**
1989					**0**
1990	1				**1**
1991					**0**
1992	1				**1**
1993	0				**0**
1994	0		2		**2**
1995	0	75	7		**82**
1996	0	43	45		**88**
1997	69	35	31		**135**
1998	1	9	259		**269**
1999	11	29	161		**201**
2000	6	40	117	4	**167**
2001	7	43	179	0	**229**
2002	12	60	151	14	**237**
2003	9	0	100	0	**109**
2004*	4	49	213	0	**266**

*Preliminary

ALFONSINOS (Beryx spp.) X

Year	Faroes	Norway	Portugal	Russia	E & W	TOTAL
1988			225			**225**
1989			260			**260**
1990			339			**339**
1991			371			**371**
1992			450			**450**
1993		195	533			**728**
1994		0	636	864		**1500**
1995	0	0	529	100		**629**
1996	0	0	550	0		**550**
1997	5	0	378	600		**983**
1998	0	0	229	0		**229**
1999	0	0	175	0		**175**
2000	0	0	209	5	15	**229**
2001	0	0	199	0	0	**199**
2002	0	0	242	0	0	**242**
2003	0	0	172	0	0	**172**
2004*	0	0	139	0	0	**139**

*Preliminary

ALFONSINOS (Beryx spp.) XII

Year	Faroes	**TOTAL**
1988		**0**
1989		**0**
1990		**0**
1991		**0**
1992		**0**
1993		**0**
1994		**0**

Table 8 (Cont'd)

1995	2	**2**
1996	0	**0**
1997	0	**0**
1998	0	**0**
1999	0	**0**
2000	0	**0**
2001	0	**0**
2002	n/a	**n/a**
2003	0	**0**
2004*	0	**0**

*Preliminary

ALFONSINOS (Beryx spp.) in Madeira (Portugal)

Year	Portugal	**TOTAL**
1988		**0**
1989		**0**
1990		**0**
1991		**0**
1992		**0**
1993		**0**
1994		**0**
1995	1	**1**
1996	11	**11**
1997	4	**4**
1998	3	**3**
1999	2	**2**
2000	n/a	**n/a**
2001	n/a	**n/a**
2002	n/a	**n/a**
2003	n/a	**n/a**
2004*		

ALFONSINOS (Beryx spp.). All areas.

Year	IV	Vb	VI+VII	VIII+IX	X	XII	**TOTAL**
1988					225		**225**
1989			12		260		**272**
1990	1	5	8	1	339		**354**
1991					371		**371**
1992	2	4	3	1	450		**460**
1993			1		728		**729**
1994			5	2	1500		**1507**
1995		1	3	82	629	2	**717**
1996			178	88	550		**816**
1997			25	135	983		**1143**
1998			81	269	229		**579**
1999			75	201	175		**451**
2000			133	167	229		**529**
2001			186	229	199		**614**
2002			94	237	242	n/a	**573**
2003			82	109	172		**363**
2004*			62	266	139		**467**

*Preliminary

Table 8 (Cont'd)
Landings (tonnes) of Beryx spp. (split by species) in Azorean waters (Portuguese EEZ in Subarea X)

Year	B. splendens	B. decadactylus	**Total**
1988	122	103	**225**
1989	113	147	**260**
1990	137	201	**339**
1991	203	168	**371**
1992	274	176	**450**
1993	317	217	**533**
1994	404	231	**636**
1995	335	194	**529**
1996	379	171	**550**
1997	268	111	**378**
1998	161	68	**229**
1999	119	56	**175**
2000	172	37	**209**
2001	182	17	**199**
2002	223	20	**242**
2003	150	22	**172**
2004*	110	29	**139**

*Preliminary

Annex 3, Table 9. Working Group estimates of greater forkbeard (*Phycis blennoides)* landings (tonnes)

GREATER FORKBEARD (*Phycis blennoides*) I and II

Year	Norway	France	Russia	UK (Scot)	Germany	**TOTAL**
1988	0					**0**
1989	0					**0**
1990	23					**23**
1991	39					**39**
1992	33					**33**
1993	1					**1**
1994	0					**0**
1995	0					**0**
1996	0					**0**
1997	0					**0**
1998	0					**0**
1999	0	0				**0**
2000	0	0				**0**
2001	0	1	7			**8**
2002	315	0		1	2	**318**
2003	153	0			2	**155**
2004*	72		3			**75**

* Preliminary data

GREATER FORKBEARD (*Phycis blennoides*) III and IV

Year	France	Norway	UK (EWNI)	UK (Scot)[(1)]	Germany	**TOTAL**
1988	12	0	3	0		**15**
1989	12	0	0	0		**12**
1990	18	92	5	0		**115**
1991	20	161	0	0		**181**
1992	13	130	0	2		**145**

Table 9 (Cont'd)

1993	6	28	0	0		**34**
1994	11			1		**12**
1995	2			1		**3**
1996	2	10		6		**18**
1997	2			5		**7**
1998	1		0	11		**12**
1999	3		5	23		**31**
2000	3		0	7		**11**
2001	5		1	19	2	**26**
2002	2	561	1	21	0	**585**
2003	1	225	0	7		**233**
2004*	1	138		3		**142**

* Preliminary data
(1) Includes Moridae

GREATER FORKBEARD (*Phycis blennoides*) Vb

Year	France	Norway	UK (Scot)(1)	UK (EWNI)	**TOTAL**
1988	2	0			**2**
1989	1	0			**1**
1990	10	28			**38**
1991	9	44			**53**
1992	16	33			**49**
1993	5	22			**27**
1994	4				**4**
1995	9				**9**
1996	7				**7**
1997	7	0			**7**
1998	4	4			**8**
1999	6	28	0		**34**

Table 9 (Cont'd)

2000	4	26	1	0	**32**
2001	7	92	1	0	**100**
2002	10	133	5	0	**148**
2003	11	55	7	0	**73**
2004*	8	36	2	2	**48**

* Preliminary data
(1) Includes Moridae

GREATER FORKBEARD (*Phycis blennoides*) VI and VII

Year	France	Ireland	Norway	Spain	UK (EWNI)	UK (Scot)(1)	Germany	Russia	**TOTAL**
1988	252	0	0	1584	62	0			**1898**
1989	342	14	0	1446	13	0			**1815**
1990	454	0	88	1372	6	1			**1921**
1991	476	1	126	953	13	5			**1574**
1992	646	4	244	745	0	1			**1640**
1993	582	0	53	824	0	3			**1462**
1994	451	111		1002	0	7			**1571**
1995	430	163		722	808	15			**2138**
1996	519	154		1428	1434	55			**3590**
1997	512	131	5	46	1460	181			**2335**
1998	357	530	162	530	1364	97			**3040**
1999	317	686	183	824	929	518	1		**3458**
2000	623	743	380	1613	731	820	8	2	**4919**
2001	626	663	536	1332	538	640	10	4	**4349**
2002	548	481	300	1049	421	545	9	0	**3352**
2003	439	319	492	1100	245	661	1	1	**3257**
2004*	348	183	165	1129	288	286		1	**2400**

* Preliminary data
(1) Includes Moridae

Table 9 (Cont'd)

GREATER FORKBEARD (*Phycis blennoides*) VIII and IX

Year	France	Portugal	Spain	**TOTAL**
1988	7	0	74	**81**
1989	7	0	138	**145**
1990	16	0	218	**234**
1991	18	4	108	**130**
1992	9	8	162	**179**
1993	0	8	387	**395**
1994		0	320	**320**
1995	54	0	330	**384**
1996	25	2	429	**456**
1997	4	1	356	**361**
1998	3	6	655	**664**
1999	7	10	361	**378**
2000	31	6	374	**411**
2001	33	8	454	**494**
2002	63	8	418	**489**
2003	23	11	388	**422**
2004*	30	9	443	**482**

* Preliminary data

GREATER FORKBEARD (*Phycis blennoides*) X

Year	Portugal[(1)]	**TOTAL**
1988	29	**29**
1989	42	**42**
1990	50	**50**
1991	68	**68**
1992	81	**81**
1993	115	**115**

Table 9 (Cont'd)

1994	135	**135**
1995	71	**71**
1996	45	**45**
1997	30	**30**
1998	38	**38**
1999	41	**41**
2000	94	**94**
2001	83	**83**
2002	57	**57**
2003	45	**45**
2004*	37	**37**

* Preliminary data
(1) Includes Moridae

GREATER FORKBEARD (*Phycis blennoides*) XII

Year	France	UK (Scot)(1)	Norway	UK (EWNI)	**TOTAL**
1988					**0**
1989					**0**
1990					**0**
1991					**0**
1992	1				**1**
1993	1				**1**
1994	3				**3**
1995	4				**4**
1996	2				**2**
1997	2				**2**
1998	1				**1**
1999	0	0			**0**
2000	2	4			**6**

Table 9 (Cont'd)

2001	0	1	6	1	**8**
2002	0		2	4	**6**
2003	3		8	0	**11**
2004*	3		6		**9**

* Preliminary data
(1) Includes Moridae

GREATER FORKBEARD (*Phycis blennoides*) All ICES Sub-areas

Year	I+II	III+IV	Vb	VI+VII	VIII+IX	X	XII	**TOTAL**
1988	0	15	2	1898	81	29	0	**2025**
1989	0	12	1	1815	145	42	0	**2015**
1990	23	115	38	1921	234	50	0	**2381**
1991	39	181	53	1574	130	68	0	**2045**
1992	33	145	49	1640	179	81	1	**2128**
1993	1	34	27	1462	395	115	1	**2035**
1994	0	12	4	1571	320	135	3	**2045**
1995	0	3	9	2138	384	71	4	**2609**
1996	0	18	7	3590	456	45	2	**4118**
1997	0	7	7	2335	361	30	2	**2742**
1998	0	12	8	3040	664	38	1	**3763**
1999	0	31	34	3458	378	41	0	**3941**
2000	0	11	32	4919	411	94	6	**5472**
2001	8	26	100	4349	494	83	8	**5068**
2002	318	585	148	3352	489	57	6	**4955**
2003	155	233	73	3257	422	45	11	**4196**
2004*	75	142	48	2400	482	37	9	**3193**

Annex 3, Table 10. Working Group estimates of landings (tonnes) of selected deep-sea species not listed in Tables 1-9.

ROUGHHEAD GRENADIER (Macrourus berglax) I and II

Year	Germany	Norway	Russia	**TOTAL**
1988				
1989				
1990	9	580		**589**
1991		829		**829**
1992		424		**424**
1993		136		**136**
1994				
1995				
1996				
1997		17		**17**
1998		55		**55**
1999				
2000		35	13	**48**
2001		74	20	**94**
2002		28	1	**29**
2003		47	30	**77**
2004		80	1	**81**

ROUGHHEAD GRENADIER (Macrourus berglax) III and IV

Year	France	Ireland	Norway	Scotland	**TOTAL**
1991					
1992				7	**7**
1993					
1994					
1995					
1996					
1997	36				**36**
1998					
1999					
2000		1		3 +	**4**
2001	1	1		9	**11**
2002				3 +	**3**
2003				2	**2**
2004					

ROUGHHEAD GRENADIER (Macrourus berglax) Va

Year	Iceland	**TOTAL**
1995		
1996	15	**15**
1997	4	**4**
1998	1	**1**
1999		
2000	5	**5**
2001	3	**3**
2002	11	**11**
2003		
2004		

Table 10 cont'd.

ROUGHHEAD GRENADIER (Macrourus berglax) Vb

Year	France	Norway	Scotland	**TOTAL**
1997				
1998	9			**9**
1999	58			**58**
2000	1			**1**
2001	2	2		**4**
2002	3	+		**3**
2003	12			**12**
2004	7		8	**15**

ROUGHHEAD GRENADIER (Macrourus berglax) VI and VII

Year	UK (EW)	France	Norway	Scotland	Spain	**TOTAL**
1988						
1989						
1990						
1991						
1992						
1993		18				**18**
1994		5				**5**
1995		2				**2**
1996						
1997						
1998						
1999		34				**34**
2000	+	1		8		**9**
2001		1	27	16		**44**
2002		4	2	6		**12**
2003		9	2		1	**12**
2004		5		11	3	**19**

ROUGHHEAD GRENADIER (Macrourus berglax) X

Country	France	**TOTAL**
1998		
1999	3	**3**
2000		
2001		
2002		

ROUGHHEAD GRENADIER (Macrourus berglax) XII

Country	Norway	France	**TOTAL**
1999			
2000	7		**7**
2001	10		**10**
2002	7		**7**
2003	2		**2**
2004	27	1	**28**

ROUGHHEAD GRENADIER (Macrourus berglax) XIV

Country	Greenland	Norway	Russia	**TOTAL**
1992				
1993	18	34		**52**
1994	5			**5**
1995	2			**2**
1996				
1997				
1998		6		**6**

Table 10 cont'd.

1999		14		**14**
2000				
2001		26		**26**
2002		49	4	**53**
2003		33		**33**
2004		46	9	**55**

ROUGHHEAD GRENADIER (Macrourus berglax). All areas

Year	I and II	III and IV	Va	Vb	VI and VII	X	XII	XIV	**TOTAL**
1988									
1989									
1990	589								**589**
1991	829								**829**
1992	424	7							**431**
1993	136				18			52	**206**
1994					5			5	**10**
1995					2			2	**4**
1996				15					**15**
1997	17	36	4						**57**
1998	55		1	9				6	**71**
1999				58	34	3		14	**109**
2000	48	4	5	1	9		7		**74**
2001	94	11	3	4	44		10	26	**192**
2002	29	3	11	3	12		7	53	**118**
2003	77	2		12	12		2	33	**138**
2004	81			15	19		28	55	**198**

***Moro mora* and Moridae. Working Group estimates of landings (tonnes). Data from 2004 are preliminary.**

MORIDAE II

Year	Norway	**TOTAL**
2000		
2001	1	**1**
2002	1	**1**
2003		
2004		

MORIDAE Vb

Year	**Norway**	**France**	**TOTAL**
1988			
1989			
1990			
1991	5		**5**
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999		1	**1**
2000	+		
2001	100		**100**
2002	19		**19**
2003	2		**2**
2004			

Table 10 cont'd.

MORIDAE VI and VII

Year	UK (E+W)	France	Ireland	UK (Scot) (1)	Norway	**TOTAL**
1988						
1989						
1990						
1991					1	**1**
1992					25	**25**
1993						
1994						
1995						
1996						
1997						
1998						
1999		12			8	**20**
2000	3	59	39		48	**146**
2001		72	32		86	**190**
2002		50	44		64	**158**
2003		N/A	72		193	**265**
2004						

(1) Included with Phycis blennoides

MORIDAE VIII and IX

Year	France	Spain	**TOTAL**
1995		83	**83**
1996		52	**52**
1997		88	**88**
1998			
1999			
2000	5	21	**26**
2001	2	18	**20**
2002	1	7	**8**
2003	N/A	10	**10**
2004		9	**9**

MORIDAE X

Year	Portugal*	**TOTAL**
1988	18	**18**
1989	17	**17**
1990	23	**23**
1991	36	**36**
1992	31	**31**
1993	33	**33**
1994	42	**42**
1995		
1996		
1997		
1998		
1999		
2000		
2001	1	**1**
2002	100	**100**
2003	125	**125**
2004	87	**87**

* source of data 1988 to 1994 unknown, may be unreliable

Table 10 cont'd.

MORIDAE XII

Year	France	Spain	Norway	TOTAL
2000	+	1		**1**
2001	+		87	**87**
2002			13	**13**
2003			15	**15**
2004			4	**4**

MORIDAE XIVb

Year	Norway	**TOTAL**
2003	6	**6**
2004	0	

MORIDAE (all areas)

Year	Vb	VI and VII	VIII and IX	X*	XII	XIVb	**TOTAL**
1988				18			**18**
1989				17			**17**
1990				23			**23**
1991	5	1		36			**42**
1992		25		31			**56**
1993				33			**33**
1994				42			**42**
1995			83				**83**
1996			52				**52**
1997			88				**88**
1998							**0**
1999	1	20					**21**
2000		146	26		1		**173**
2001	100	190	20	1	87		**398**
2002	19	158	8	100	13		**298**
2003	2	265	10	125	15	6	**423**
2004			9	87	4		**100**

* source of data 1988 to 1994 unknown, may be unreliable

RABBIT FISH (Chimaera monstrosa and Hydrolagus spp) I & II

Year	France	Norway	Denmark	**TOTAL**
1997				
1998				
1999	1			**1**
2000	6			**6**
2001	5		+	**5**
2002	2	13		**15**
2003	1	56		**57**
2004		21		**21**

RABBIT FISH (Chimaera monstrosa and Hydrolagus spp) III/IV

Year	Denmark	France	Scotland	Norway	**TOTAL**
1991					
1992	122				**122**
1993	8				**8**
1994	167				**167**
1995					
1996	14				**14**
1997	38				**38**
1998	56				**56**
1999	45		+		**45**

Table 10 cont'd.

2000	17	15	1		**33**
2001	10	10			**20**
2002	21	3			**24**
2003	15	3		7	**25**
2004	19	4		17	**40**

RABBIT FISH (Chimaera monstrosa) Va

Year	Iceland	**TOTAL**
1988		
1989		
1990		
1991	499	**499**
1992	106	**106**
1993	3	**3**
1994	60	**60**
1995	106	**106**
1996	21	**21**
1997	15	**15**
1998	29	**29**
1999	2	**2**
2000	5	**5**

RABBIT FISH (*Chimaera monstrosa*) Vb

Year	Faroes	France	Scotand	Norway	Iceland	Russia	**TOTAL**
1988							
1989							
1990							
1991							
1992							
1993							
1994							
1995	1						**1**
1996	+						
1997	+						
1998							
1999		3	+				**3**
2000		54					**54**
2001		82		1	1		**84**
2002		47	+	17			**64**
2003		53	1	7			**61**
2004		49		3		36	**88**

RABBIT FISH (Chimaera monstrosa) VI and VII

Year	UK(EW)	France	Ireland	Scotland	Spain	Norway	**TOTAL**
1988							
1989							
1990							
1991							
1992							
1993							
1994			2				**2**
1995							
1996							
1997							
1998							
1999		235		1			**236**
2000	3	347	3	+	2		**355**
2001	1	622	14	32	6	47	**722**
2002		543	16	7		7	**573**

Table 10 cont'd.

2003	392	33	47	**472**	
2004	409	1	15	**425**	

RABBIT FISH (Chimaera monstrosa) VIII

Year	France	**TOTAL**
1997		
1998		
1999	2	**2**
2000	2	**2**
2001	7	**7**
2002	6	**6**
2003	2	**2**
2004	6	**6**

RABBIT FISH (Chimaera monstrosa) XII

Year	Spain	France	Ireland	Norway	**TOTAL**
1995					
1996					
1997	32				**32**
1998	42				**42**
1999	114	1			**115**
2000	46	2			**48**
2001	61	1	1	16	**79**
2002	N/A			9	**9**
2003	N/A	12		10	**22**
2004		12		68	**80**

RABBIT FISH (Chimaera monstrosa) XIV

Year	Norway	**Total**
2001		
2002		
2003	3	**3**
2004	5	**5**

RABBIT FISH (Chimaera monstrosa). All areas.

Year	I/II	III/IV	Va	Vb	VI/VII	VIII	XII	XIV	**TOTAL**
1988									
1989									
1990									
1991			499						**499**
1992		122	106						**228**
1993		8	3						**11**
1994		167	60		2				**229**
1995			106	1					**107**
1996		14	21						**35**
1997		38	15				32		**85**
1998		56	29				42		**127**
1999	1	45	2	3	236	2	115		**404**
2000	6	33	5	54	355	2	48		**503**
2001	5	20		84	722	7	79		**917**
2002	15	24		64	573	6	9		**691**
2003	57	25		61	472	2	22	3	**642**
2004	21	40		88	425	6	80	5	**665**

Table 10 cont'd.

SMOOTHHEAD (Alepocephalus spp.) Va

Year	Iceland	TOTAL
1988		
1989		
1990		
1991		
1992	10	10
1993	3	3
1994	1	1
1995	1	1
1996		
1997	+	
1998		

SMOOTHHEAD (Alepocephalus spp.) Vb

Year	Russia	**TOTAL**
2004	6	**6**

SMOOTHHEAD (Alepocephalus spp.) VI and VII

Year	Spain	Scotland	Russia	Ireland	Estonia	Germany	**TOTAL**
2000	978						**978**
2001	4689				154	1	**4844**
2002	N/A	1			259		**260**
2003	0		6	2	N/A		**8**
2004	1203		15				**1218**

SMOOTHHEAD (Alepocephalus spp.) XII

Year	Spain	Luthuania	Russia	**TOTAL**
1988				
1989				
1990				
1991				
1992				
1993				
1994				
1995				
1996	230			**230**
1997	3692			**3692**
1999	4643			**4643**
1999	6549			**6549**
2000	4146			**4146**
2001	3132	460		**3592**
2002	12538			**12538**
2003	6834			**6834**
2004	1203		3	**1206**

SMOOTHHEAD (Alepocephalus spp.) XIV

Year	Germany	Spain	**TOTAL**
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			

Table 10 cont'd.

1997						
1999						
1999						
2000	12		**12**			
2001						
2002		661	**661**			
2003		392	**392**			
2004						

SMOOTHHEAD (*Alepocephalus* spp.). All areas.

Year	Va	Vb	VI	XII	XIV	**TOTAL**
1988						
1989						
1990						
1991						
1992	10					**10**
1993	3					**3**
1994	1					**1**
1995	1					**1**
1996				230		**230**
1997				3692		**3692**
1999				4643		**4643**
1999				6549		**6549**
2000			978	4146	12	**5136**
2001			4844	3592		**8436**
2002			260	12538	661	**13459**
2003			8	6834	392	**7234**
2004		6	1218	1206		**2430**

Wreckfish (*Polyprion americanus*). Working Group estimates of landings (tonnes). Data from 2004 are preliminary.

WRECKFISH (*Polyprion americanus)* VI and VII

Year	France	Ireland	Spain	E & W	TOTAL
1988	7				7
1989					
1990	2				2
1991	10				10
1992	15				15
1993	0				
1994					
1995					
1996	4		79		83
1997					
1998			12		12
1999	9		5		14
2000	13		1		14
2001	15	1 +		1	17
2002	9	+	+		9
2003	N/A		1		1
2004					

WRECKFISH (Polyprion americanus) VIII and IX

Year	France	Portugal	Spain	UK (EW)	**TOTAL**
1988	1	188	9		**198**
1989	1	283			**284**
1990	2	161			**163**
1991	3	191			**194**
1992	1	268			**269**

Table 10 cont'd.

1993			338		**338**
1994			406	3	**409**
1995			372	19	2 **393**
1996		3	214	69	8 **294**
1997			170	44	**214**
1998			164	63	**227**
1999		7	137	7	**151**
2000		12	72	37	**121**
2001		6	77	84	**167**
2002		6	88	62	**156**
2003	N/A		209	33	**242**
2004			103	25	**128**

WRECKFISH (Polyprion americanus) X

Year	France	Portugal	Norway	**TOTAL**
1988		191		**191**
1989		235		**235**
1990		224		**224**
1991		170		**170**
1992	3	234		**237**
1993		308	3	**311**
1994		428		**428**
1995		240		**240**
1996		240		**240**
1997		177		**177**
1998		139		**139**
1999		133		**133**
2000		268		**268**
2001		229		**229**
2002		283		**283**
2003		270		**270**
2004		189		**189**

WRECKFISH (Polyprion americanus) All areas

Year	VI and VII	VIII and IX	X	**TOTAL**
1988	7	198	191	**396**
1989		284	235	**519**
1990	2	163	224	**389**
1991	10	194	170	**374**
1992	15	269	237	**521**
1993		338	311	**649**
1994		409	428	**837**
1995		393	240	**633**
1996	83	294	240	**617**
1997		214	177	**391**
1998	12	227	139	**378**
1999	14	151	133	**298**
2000	14	121	268	**403**
2001	17	167	229	**413**
2002	9	156	283	**448**
2003	1	242	270	**513**
2004		128	189	**317**

Table 10 cont'd.
Bluemouth (Helicolenus dactylopterus). Working Group estimates of landings (tonnes). Data from 2004 are preliminary.

BLUEMOUTH (Helicolenus dactylopterus) III/IV

Year	UK (EW)	UK (SCO)	**TOTAL**
1999	5	+	**5**
2000		+	
2001			
2002			

BLUEMOUTH (Helicolenus dactylopterus) Vb

Year	UK (EW)	UK (SCO)	France	Russia	**TOTAL**
1999	58	+			**58**
2000	16				**16**
2001					
2002					
2003			+		
2004				1	**1**

BLUEMOUTH (Helicolenus dactylopterus) VI

Year	France	Spain	UK (EW)	UK (SCO)	Ireland	**TOTAL**
1999	57	91		58		**206**
2000	37	64	28	85		**214**
2001	44	9	33	103		**79**
2002	32		14	45		**91**
2003	N/A	106	13	41	+	**160**
2004		85	13			**98**

BLUEMOUTH (Helicolenus dactylopterus) VII

Year	France	UK (EW)	UK (SCO)	Spain	Ireland	**TOTAL**
1999	66	112	19	+		**197**
2000	61	49	18	+		**128**
2001	61	21	28	+		**110**
2002	16	25	24			**65**
2003	N/A	16	26	85	57	**184**
2004		15		202		**217**

BLUEMOUTH (Helicolenus dactylopterus) VIII and IX

Year	France	Portugal	Spain	**TOTAL**
1999	7	15	9	**31**
2000	17	12	7	**36**
2001	14	22	7	**43**
2002	1	17		**17**
2003	N/A	16	107	**123**
2004		17	110	**127**

BLUEMOUTH (Helicolenus dactylopterus) X

Year	Portugal	**TOTAL**
1999	340	**340**
2000	452	**452**
2001	301	**301**
2002	280	**280**

Table 10 cont'd.

2003	338	**338**
2004	282	**282**

BLUEMOUTH (Helicolenus dactylopterus). All areas

Year	III and IV	Vb	VI	VII	VIII and IX	X	**TOTAL**
1999	5	58	206	197	31	320	**817**
2000		16	214	128	36	452	**846**
2001			79	110	43	301	**533**
2002			91	65	17	280	**453**
2003			160	184	123	338	**805**
2004		1	98	217	127	282	**725**

Silver scabbardfish (Lepidopus caudatus). Working Group estimates of landings (tonnes).

SILVER SCABBARDFISH (Lepidopus caudatus) VI and VII

Year	France	Germany	UK (SCO)	UK (EW)	TOTAL
1993		2			2
1999	18				18
2000		3	12	1	15
2001	1		5		
2002	1			+	1
2003					
2004					

SILVER SCABBARDFISH (Lepidopus caudatus) VIII and IX

Year	France	Portugal	Spain	Russia/ USSR	**TOTAL**
1988		2666			**2666**
1989		1385			**1385**
1990		547		37	**584**
1991		808			**808**
1992		1264		110	**1374**
1993		2397			**2397**
1994		1054			**1054**
1995		5672			**5672**
1996		1237			**1237**
1997		1725			**1725**
1998		966			**966**
1999	2	3067			**3069**
2000	1	15			**16**
2001	15	37	654		**706**
2002	23	72	1737		**1832**
2003	N/A	22	1659		**1681**
2004		64	786		**850**

SILVER SCABBARDFISH (Lepidopus caudatus) X

Year	Latvia	Portugal	**TOTAL**
1988		70	**70**
1989		91	**91**
1990		120	**120**
1991		166	**166**
1992	1905	255	**2160**
1993	1458	264	**1722**
1994		373	**373**
1995	8	781	**789**
1996		815	**815**

Table 10 cont'd.

1997	1115	**1115**
1998	1186	**1186**
1999	86	**86**
2000	28	**28**
2001	14	**14**
2002	10	**10**
2003	25	**25**
2004	29	**29**

SILVER SCABBARDFISH (Lepidopus caudatus) XII

Country	Russia/USSR	**TOTAL**
1988		
1989	102	**102**
1990	20	**20**
1991		
1992		
1993	19	**19**
1994		

SILVER SCABBARDFISH (Lepidopus caudatus). ALL AREAS

	VI and VII	VIII and IX	X	XII	**TOTAL**
1988		2666	70		**2736**
1989		1385	91	102	**1578**
1990		584	120	20	**724**
1991		808	166		**974**
1992		1374	2160		**3534**
1993	2	2397	1722	19	**4140**
1994		1054	373		**1427**
1995		5672	789		**6461**
1996		1237	815		**2052**
1997		1725	1115		**2840**
1998		966	1186		**2152**
1999	18	3069	86		**3173**
2000	15	16	28		**59**
2001		706	14		**720**
2002	1	1832	10		**1843**
2003		1681	25		**1706**
2004		850	29		**879**

Deep-water cardinal fish (*Epigonus telescopus*) . Working Group estimates of landings (tonnes).

DEEP_WATER CARDINAL FISH (Epigonus telescopus) Vb

Year	France	**TOTAL**
1999	8	**8**
2000	2	**2**
2001	7	**7**
2002		
2003		
2004		

Table 10 cont'd.

DEEP_WATER CARDINAL FISH (Epigonus telescopus) VI

Year	France	Ireland	UK (SCO)	E & W	Spain	**TOTAL**
1999	54					**54**
2000	60	1	+			**61**
2001	66	10	1	21		**98**
2002	34	3	+		48	**85**
2003	N/A	15				**15**
2004		11				**11**

DEEP_WATER CARDINAL FISH (Epigonus telescopus) VII

Year	France	Faroes	Ireland	Spain	**TOTAL**
1999	221	4			**225**
2000	178		2		**180**
2001	78		207		**285**
2002	29		845	17	**891**
2003	N/A		971	5	**976**
2004			800		**800**

DEEP_WATER CARDINAL FISH (Epigonus telescopus) VIII and IX

Year	France	Portugal	Spain	**TOTAL**
1999		3		**3**
2000	2	3		**5**
2001	+	4		**4**
2002		3	5	**8**
2003		3	2	**5**
2004		4	5	**9**

DEEP_WATER CARDINAL FISH (Epigonus telescopus) X

Year	France	Portugal	Ireland	**TOTAL**
1999				
2000	3			**3**
2001				
2002		14		**14**
2003		15		**15**
2004		6	15	**21**

DEEP_WATER CARDINAL FISH (Epigonus telescopus) XII

Year	Ireland	Faroes	**TOTAL**
2001			
2002			
2003	1	+	**1**

DEEP_WATER CARDINAL FISH (Epigonus telescopus). All areas.

Year	Vb	VI	VII	VIII and IX	X	XI	**TOTAL**
1999	8	54	225	3			**290**
2000	2	61	180	5	3		**251**
2001	7	98	285	4			**394**
2002		85	891	8	14		**998**
2003		15	976	5	15	1	**1012**
2004		11	800	9	21		**841**