

Working Document to the  
Arctic Fisheries Working Group 21-23 April 1998

**Investigations on demersal fish in  
the Barents Sea (reduced area) winter 1998**

Preliminary results for cod

by

Sigbjørn Mehl

Institute of Marine Research

P.O. Box 1870 Nordnes

N-5024 Bergen

NORWAY

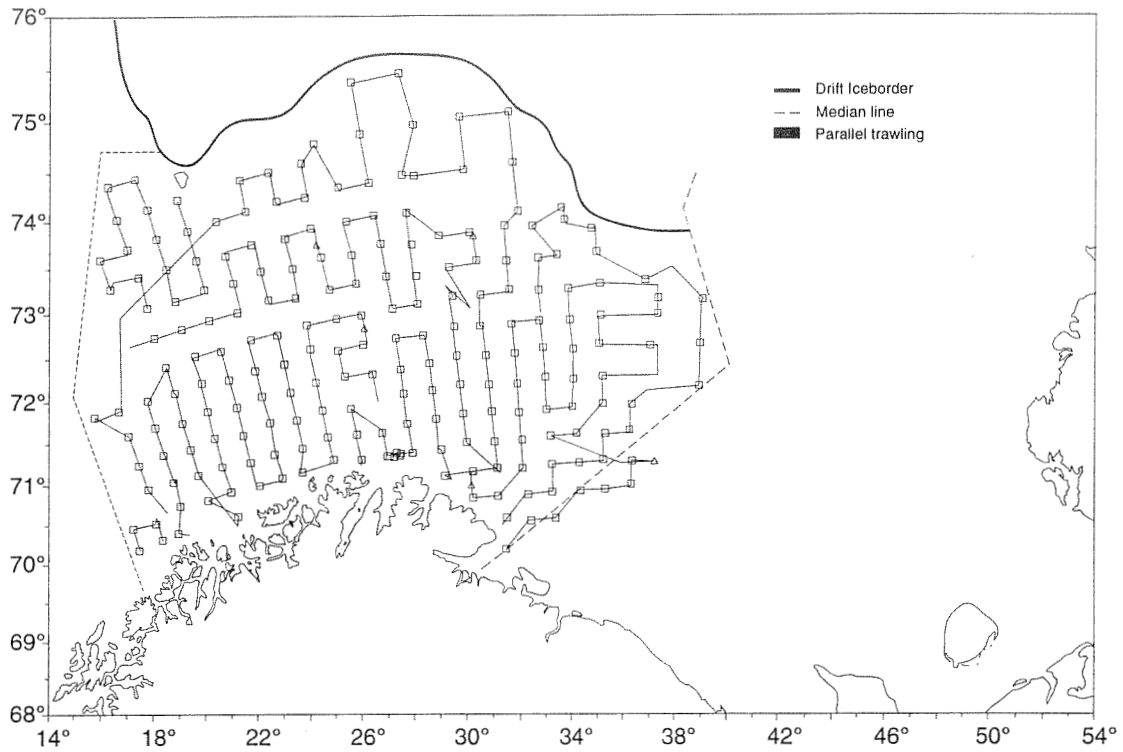
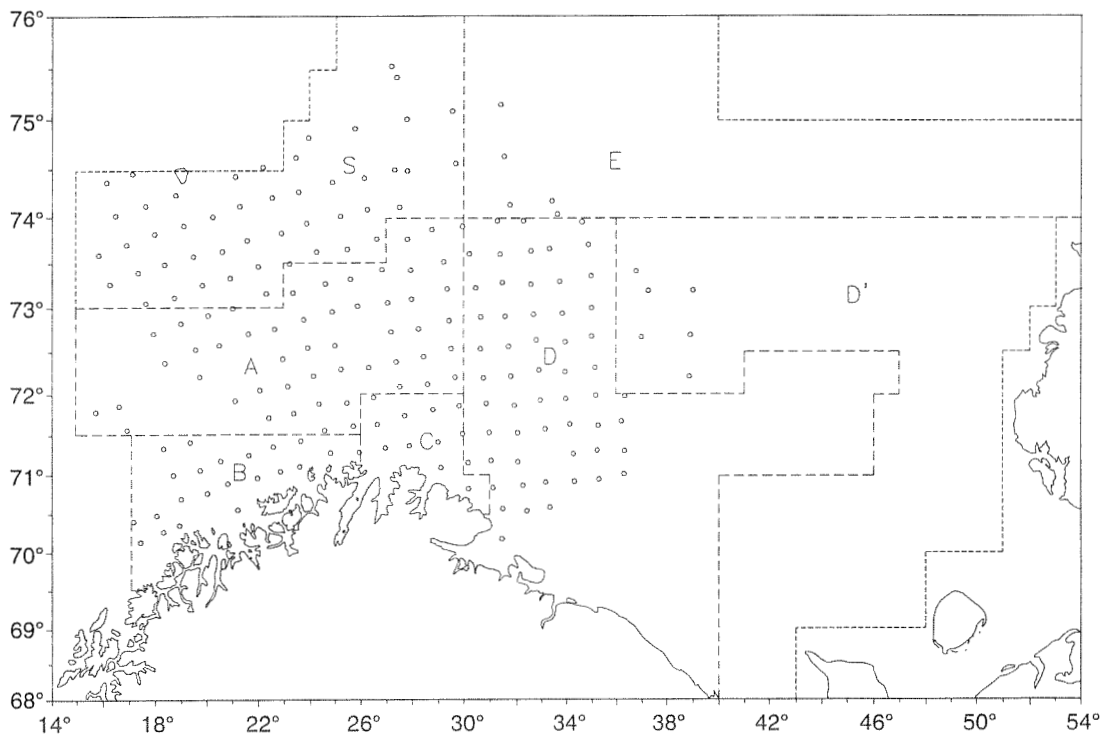


Fig. 3.1. Kurslinjer og trålstasjoner; F/F "G.O. Sars" 3.2-24.2, F/F "Johan Hjort" 3.2-22.2 og F/F "Jan Mayen" 3.2-24.2 1998. Isgrense er markert.  
*Survey tracks and trawl stations; R/V "G.O. Sars" 3.2-24.2, R/V "Johan Hjort" 3.2-22.2 og R/V "Jan Mayen" 3.2-24.2 1998. Iceborder is indicated.*



Figur 3.2. Undersøkningsområdet med hovedområde A, B, C og D, tilleggsområde D', E og S og trålstasjoner teke i botntrålundersøkinga 3.2 - 24.2 1998.  
*The survey area with main areas A, B, C and D, additional areas D', E and S and stations taken in the bottom trawl survey 3.2 - 24.2 1998.*

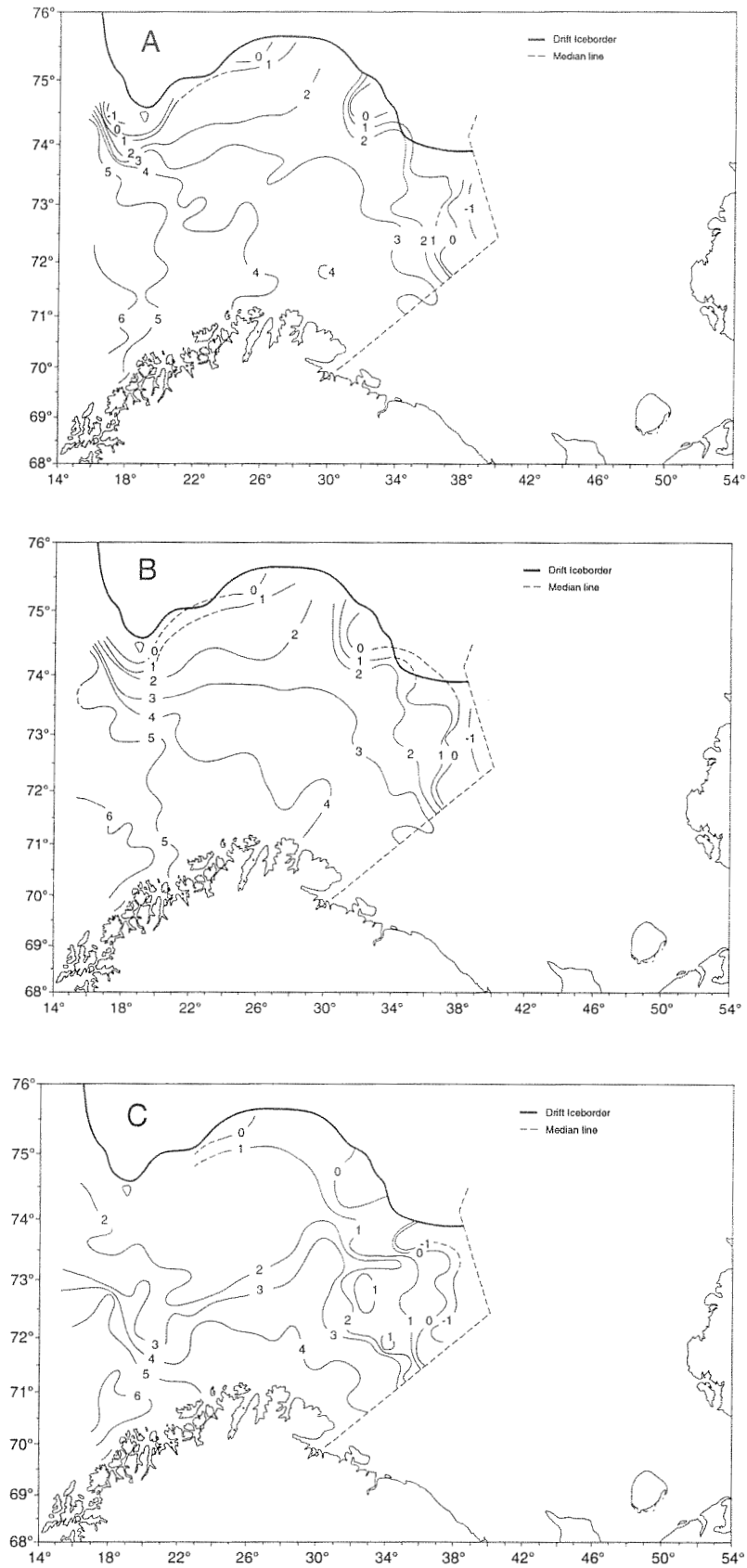
Tabell 3.1. Areal (n.mil<sup>2</sup>) dekket i botntrålundersøkingane i Barentshavet vinteren 1981-1998.  
*Area (n.miles<sup>2</sup>) covered in the bottom trawl surveys in the Barents Sea winter 1981-1998.*

Område (Area)	År (Year)						
	1981-1992	1993	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>1</sup>
A	23299	23929	27131	27131	25935	27581	27581
B	8372	8372	8372	8372	9701	9701	9701
C	5348	5348	5348	5348	5048	5048	5048
D	51116	51186	51186	51186	53932	23592	23592
D'	-	23152	24975	56822	53247	2684	5886
E	-	8965	12576	14859	5818	1954	3819
Svalbard		16690	14252	22836	11600	16989	23587
ABCD	88835	88835	92037	92037	94016	65922	65922
Total	88835	137642	143840	186554	165281	87549	99214

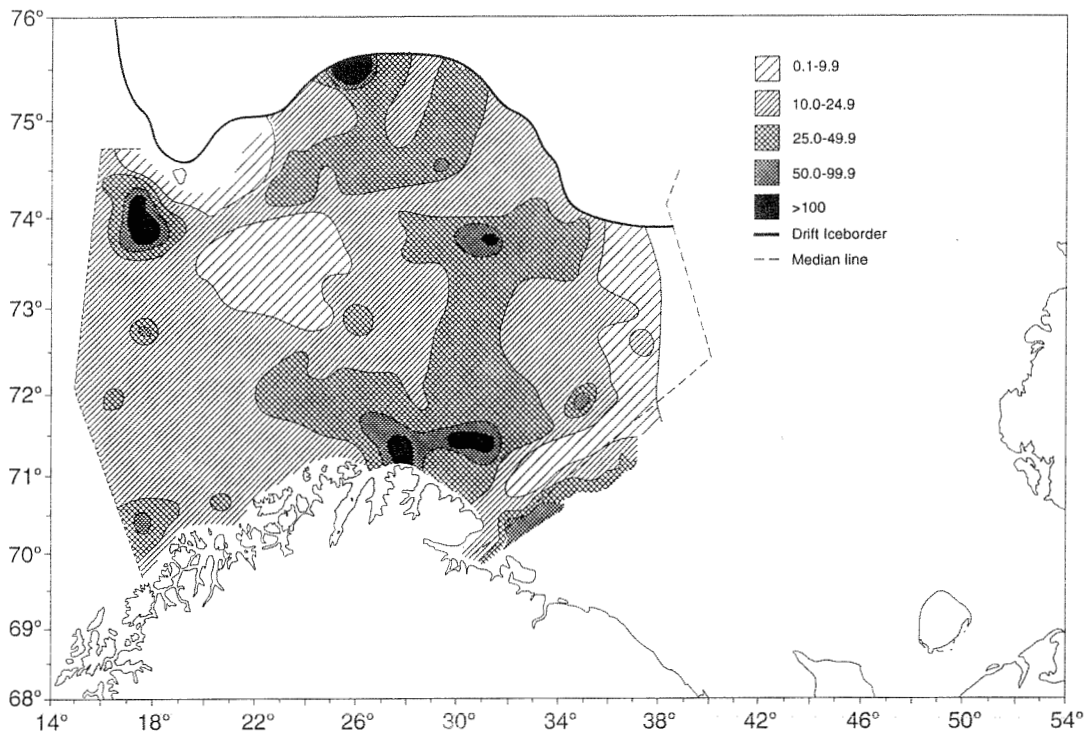
<sup>1)</sup> Norsk sone  
 Norwegian EEZ

Tabell 3.2. Tal for trålstasjonar, lengdemålt (L) og aldersbestemt (A) fisk for kvart hovudområde og stasjonstype i Barentshavet (norsk sone) vinteren 1998. B1=fast botntrål, B2=annan botntrål, P=pelagisk trål.  
*Number of trawl stations, fish measured for length (L) and age (A) for main areas and trawl types in the Barents Sea (Norwegian EEZ) winter 1998. B1=fixed bottom trawl, B2=other bottom trawl, P=pelagic trawl.*

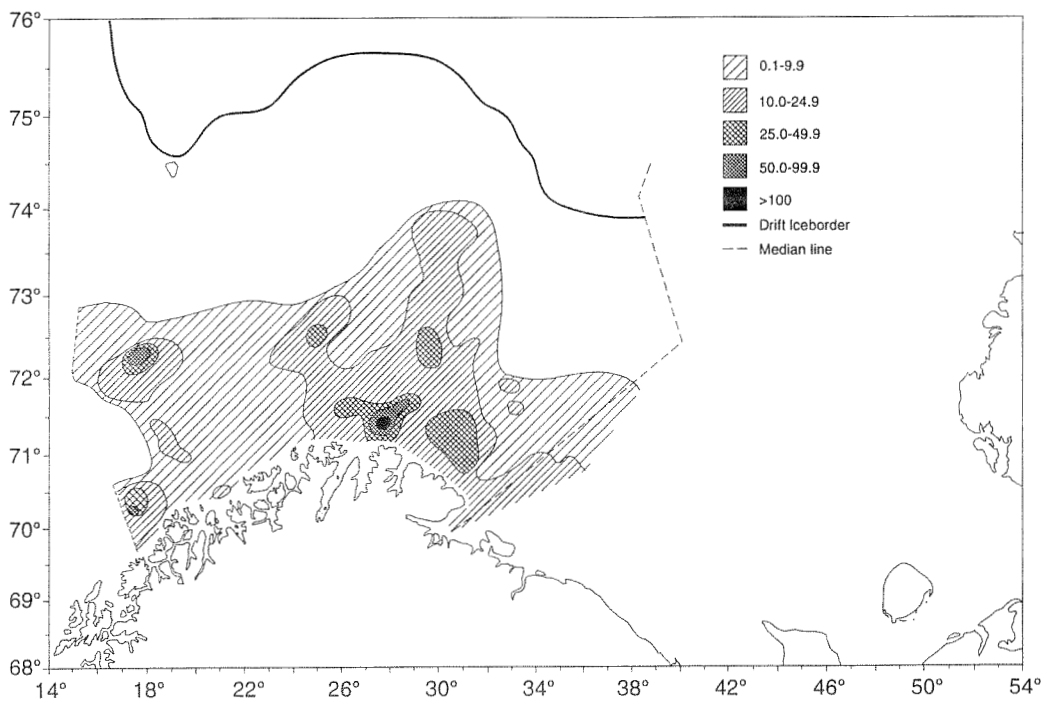
Område (Area)	Trål type (Trawl type)	Tal hal (No. hauls)	Torsk (Cod)		Hyse (Haddock)		Vanleg uer ( <i>S. marinus</i> )	Snabeluer ( <i>S. mentella</i> )	Blåkveite (Greenland halibut)	
			L	A	L	A	L	L	L	A
A	B1		7019	725	3915	312	485	4395	123	
	B2		-	-	-	-	-	-	-	
	P		-	-	1	1	-	-	-	
B	B1		1437	206	1103	157	464	253	1	
	B2		-	-	-	-	-	-	-	
	P		-	-	-	-	-	-	-	
C	B1		1577	167	804	92	47	571	6	
	B2		6214	-	2828	-	273	6	-	
	P		12	-	39	-	-	-	-	
D	B1		12345	812	3706	294	214	1319	86	
	B2		-	-	-	-	-	-	-	
	P		97	8	24	-	-	1	-	
D'	B1		585	23	1	-	-	1	2	
	B2		185	-	-	-	-	2	-	
	P		-	-	-	-	-	-	-	
E	B1		472	20	15	3	-	1	43	
	B2		-	-	-	-	-	-	-	
	P		-	-	-	-	-	-	-	
S	B1		9101	522	76	-	256	3115	388	
	B2		-	-	-	-	-	-	-	
	P		-	-	-	-	-	-	-	
Total	B1	213	32536	2475	9620	858	1466	9655	649	
	B2	28	6399	-	2828	-	273	8	-	
	P	5	109	8	64	1	-	1	-	
Sum		246	39044	2483	12512	859	1739	9664	649	



Figur 4.2. Temperaturfordeling februar 1998. A) ved overflata, B) i 100 m djup, C) ved botnen.  
 Temperature distribution February 1998. A) surface, B) 100 m depth, C) bottom.



Figur 5.1. TORSK. Fordeling av total ekkotettleik vinteren 1998. Eining er integrert reflekterande overflate pr. kvadrat nautisk mil ( $m^2/nm^2$ ).  
*COD. Distribution of total echo abundance winter 1998. Unit is integrated back scattering surface per square nautical mile ( $m^2/nm^2$ ).*



Figur 5.2. HYSE. Fordeling av total ekkotettleik vinteren 1998. Eining er integrert reflekterande overflate pr. kvadrat nautisk mil ( $m^2/nm^2$ ).  
*HADDOCK. Distribution of total echo abundance winter 1998. Unit is integrated back scattering surface per square nautical mile ( $m^2/nm^2$ ).*

Tabell 5.1. Ekkomengde av torsk, hyse og uer i det pelagiske sjiktet (P) og i 10 m sjiktet over botnen (B) i kvart hovudområde av Barentshavet (norsk sone) vinteren 1998 ( $m^2$  reflekterande overflate  $\cdot 10^{-3}$ ).  
*Echo abundance of cod, haddock and redfish in the pelagic layer (P) and in the 10 m layer above the bottom (B) in main areas of the Barents Sea (Norwegian EEZ) winter 1998 ( $m^2$  reflecting surface  $\cdot 10^{-3}$ ).*

Område (Area)	Torsk (Cod)			Hyse (Haddock)			Uer (Redfish)		
	P	B	Total	P	B	Total	P	B	Total
A									
B									
C	190	40	230	98	21	119	54	11	65
D	477	199	676	146	53	199	50	11	61
D'	12	12	24	-	-	-	-	-	-
E	110	25	135	-	-	-	1	-	1
S	500	203	703	+	+	+	185	38	223
Total	1774	632	2406	439	143	581	788	183	971

Tabell 5.2. Torsk og hyse. Total ekkomengde og ekkomengde i 10 m sjiktet over botnen frå akustisk undersøkingar i Barentshavet vinteren 1981-1998 ( $m^2$  reflekterande overflate  $\cdot 10^{-3}$ ). 1981-1992 inkluderer i hovudsak områda A, B, C og D.  
*Cod and haddock. Total echo abundance and echo abundance in the 10 m layer above the bottom from acoustic surveys in the Barents Sea winter 1981-1998 ( $m^2$  reflecting surface  $\cdot 10^{-3}$ ). 1981-1992 includes mainly areas A, B, C and D*

År (Year)	Ekkomengde (Echo abundance)								
	Total			Botn (bottom)			Botn/total (bottom/total)		
	Torsk (Cod)	Hyse (Had.)	Sum	Torsk (Cod)	Hyse (Had.)	Sum	Torsk (Cod)	Hyse (Had.)	Sum
1981			2097			799			0.38
1982			686			311			0.45
1983			597			169			0.28
1984			2284			604			0.26
1985			5187			736			0.14
1986			5990			820			0.14
1987			2676			608			0.23
1988			1696			579			0.34
1989			914			308			0.34
1990			1355			536			0.40
1991			2706			803			0.30
1992			4128			951			0.23
1993	3905	2854	6759	1011	548	1559	0.26	0.19	0.23
1994	5076	3650	8726	1201	609	1810	0.24	0.17	0.21
1995	4125	3051	7176	1525	651	2176	0.37	0.21	0.30
1996	2729	1556	4285	1004	626	1630	0.37	0.40	0.38
1997 <sup>1</sup>	1354	995	2349	530	258	788	0.39	0.26	0.34
1998 <sup>1</sup>	2406	581	2987	632	143	775	0.26	0.29	0.26

<sup>1)</sup> Norsk sone  
 Norwegian EEZ

Tabell 6.1. TORSK. Mengdeindeksar for lengde- og aldersgrupper frå den akustiske undersøkinga i Barentshavet (norsk sone) vinteren 1998 (talet på fisk i millionar).  
*COD. Abundance indices at length and age from the acoustic survey in the Barents Sea (Norwegian EEZ) winter 1998 (numbers in millions).*

Lengde (Length) cm	Alder (Årsklasse) / Age (yearclass)										Sum	
	1 (97)	2 (96)	3 (95)	4 (94)	5 (93)	6 (92)	7 (91)	8 (90)	9 (89)	10+ (88+)		
5-9	446,2											446,2
10-14	1669,6	35,6										1705,1
15-19	11,9	155,0										167,0
20-24		50,2	25,5									75,6
25-29		9,0	55,5	0,1								64,6
30-34		0,2	74,9	8,4								83,5
35-39			40,7	43,2								83,8
40-44			6,0	60,6	1,4							68,0
45-49			0,2	28,1	12,9	0,8						41,9
50-54				4,8	15,0	3,2						23,0
55-59				0,8	7,1	9,5	0,8					18,2
60-64					1,2	10,9	4,8	0,3				17,2
65-69					0,1	4,6	8,9	1,1	+			14,6
70-74						0,9	7,2	2,9	0,0			11,0
75-79						0,2	1,2	3,3	0,2			4,9
80-84						+	0,3	3,0	0,3			3,5
85-89								1,4	0,1			1,6
>90								0,4	0,8	0,3		1,5
Sum	2127,8	250,0	202,6	146,1	37,7	29,9	23,1	12,5	1,4	0,3		2832,0

Tabell 6.2. TORSK. Akustiske mengdeindeksar i det pelagiske sjiktet (P) og i 10 m sjiktet over botnen (B) for kvart hovudområde av Barentshavet (norsk sone) vinteren 1998 (talet på fisk i millionar).  
*COD. Acoustic abundance indices in the pelagic layer (P) and in the 10 m layer above the bottom (B) for the main areas of the Barents Sea (Norwegian EEZ) winter 1998 (numbers in millions).*

Omr. (Area)	Sjikt (Layer)	Alder (Årsklasse) / Age (Yearclass)										Total
		1 (97)	2 (96)	3 (95)	4 (94)	5 (93)	6 (92)	7 (91)	8 (90)	9 (89)	10+ (88+)	
A	P	151.8	18.1	23.9	25.9	7.6	8.2	7.8	3.8	0.3	0.1	247.5
	B	32.4	3.7	5.0	5.6	1.7	2.1	1.9	0.9	0.1	+	53.4
B	P	23.9	1.3	1.1	1.4	0.8	0.7	2.0	1.4	0.2	+	32.7
	B	6.9	0.4	0.4	1.1	0.6	0.8	2.0	1.4	0.2	+	13.8
C	P	193.1	9.9	6.2	6.3	2.1	3.1	2.3	2.3	0.4	0.1	225.7
	B	40.0	2.0	1.4	1.4	0.5	0.7	0.5	0.5	0.1	+	46.9
D	P	267.4	60.1	56.7	37.3	8.6	6.5	3.0	0.9	0.2	+	440.8
	B	118.2	29.8	25.1	16.2	3.2	2.2	1.0	0.3	0.1	+	196.0
D'	P	8.1	4.2	2.1	0.6	0.2	0.1	0.1	+	-	-	15.3
	B	7.8	4.1	2.3	0.6	0.2	0.1	0.1	+	-	-	15.1
E	P	161.1	21.1	14.1	5.4	1.8	1.0	0.1	0.2	-	-	204.9
	B	37.0	5.7	3.5	1.1	0.4	0.2	+	+	-	-	47.9
S	P	705.0	60.8	42.1	32.9	8.3	4.0	1.6	0.8	+	+	855.6
	B	375.1	28.8	17.9	10.9	2.1	1.0	0.4	0.2	+	+	436.3
ABCD	P	636.2	89.5	88.6	70.6	18.8	18.0	15.4	8.3	1.1	0.2	946.7
	B	197.5	35.9	32.0	24.1	5.9	5.5	5.4	3.1	0.4	0.1	310.2
Total	P	1510.4	175.6	146.9	109.5	29.1	23.1	17.2	9.3	1.1	0.2	2022.5
	B	617.4	74.5	55.7	36.7	8.6	6.8	5.9	3.3	0.4	0.1	809.5
	Sum	2127.8	250.0	202.6	146.1	37.7	29.9	23.1	12.5	1.4	0.3	2832.0

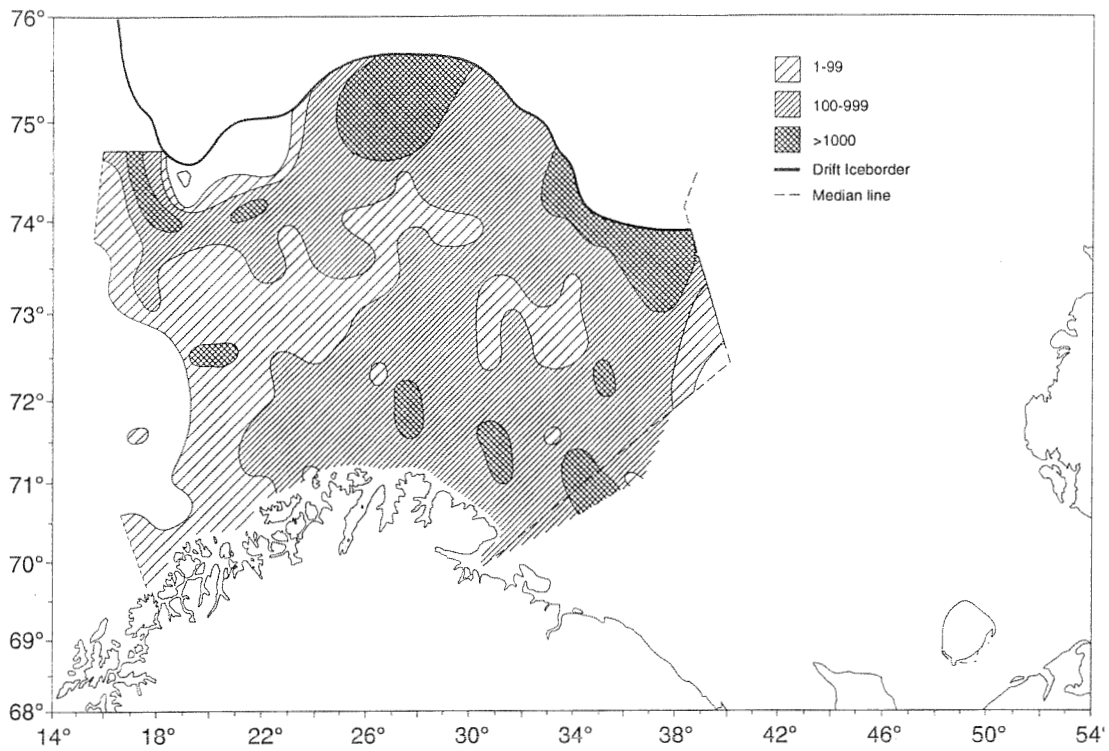
Tabell 6.3. TORSK. Mengdeindeksar frå akustiske undersøkingar i Barentshavet vinteren 1981-1998 (talet på fisk i millionar). 1981-1992 inkluderer i hovudsak område A, B, C og D.  
*COD. Abundance indices from acoustic surveys in the Barents Sea winter 1981-1998 (numbers in millions). 1981-1992 includes mainly areas A, B C and D.*

År (Year)	Alder (Age)										Total
	1	2	3	4	5	6	7	8	9	10+	
1981	8	82	40	63	106	103	16	3	1	1	423
1982	4	5	49	43	40	26	28	2	+	0	197
1983	0	19	13	23	27	14	7	4	1	+	108
1984	1807	150	31	11	7	5	2	+	+	0	2013
1985	108	768	179	127	21	9	6	+	+	+	1218
1986	1302	590	595	124	56	7	2	+	+	0	2676
1987	3	72	96	256	46	12	1	1	+	0	487
1988	2	29	64	42	75	9	2	+	+	0	224
1989	9	9	20	43	27	57	8	1	+	0	174
1990	350	45	16	24	27	22	40	3	1	0	526
1991	187	234	55	31	27	25	14	16	1	0	591
1992	348	579	182	48	18	11	8	4	2	0	1201
1993	1686	432	300	163	80	14	7	3	1	3	2688
1994	1083	686	358	343	159	43	9	2	1	1	2685
1995	2644	280	181	161	214	69	18	2	1	1	3570
1996	2404	335	96	70	86	75	21	3	+	+	3090
1997 <sup>1</sup>	1520	470	182	54	51	37	22	4	1	+	2341
1998 <sup>1</sup>	3082	554	379	187	45	33	25	14	2	0	4321

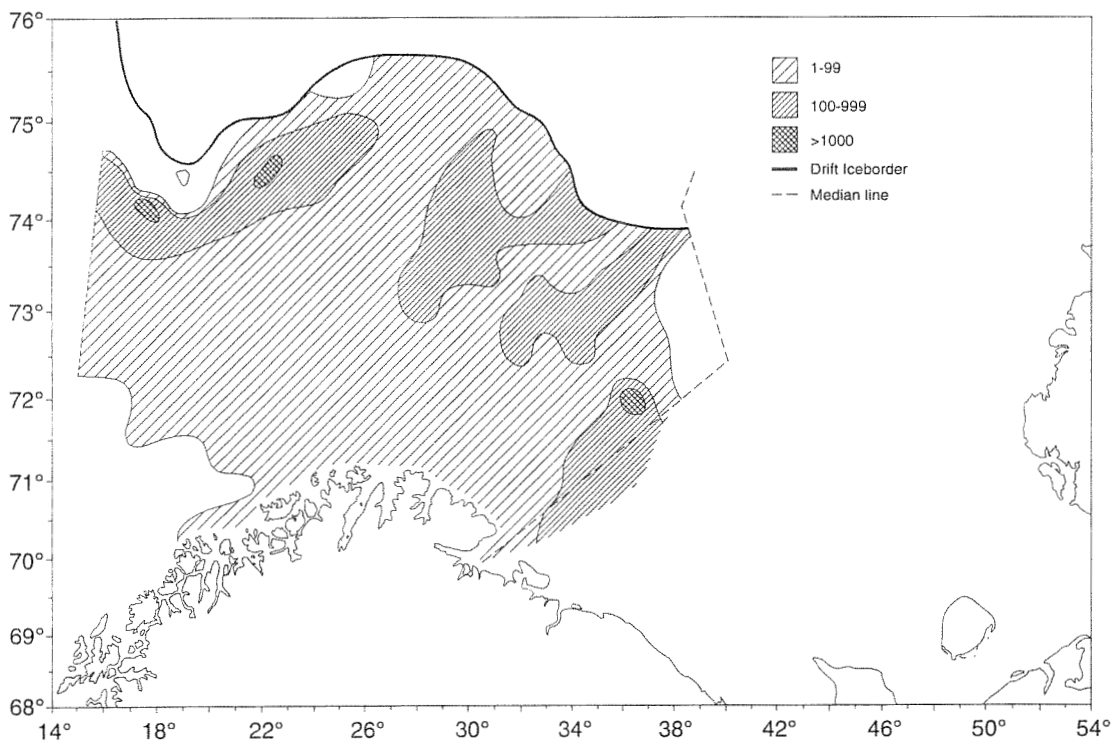
<sup>1)</sup> Indeksar oppjusterte til også å omfatta området dekket i russisk sone i 1996.  
*Indices raised to also represent the area covered in the Russian EEZ in 1996.*

→ 115 97  
 115 95

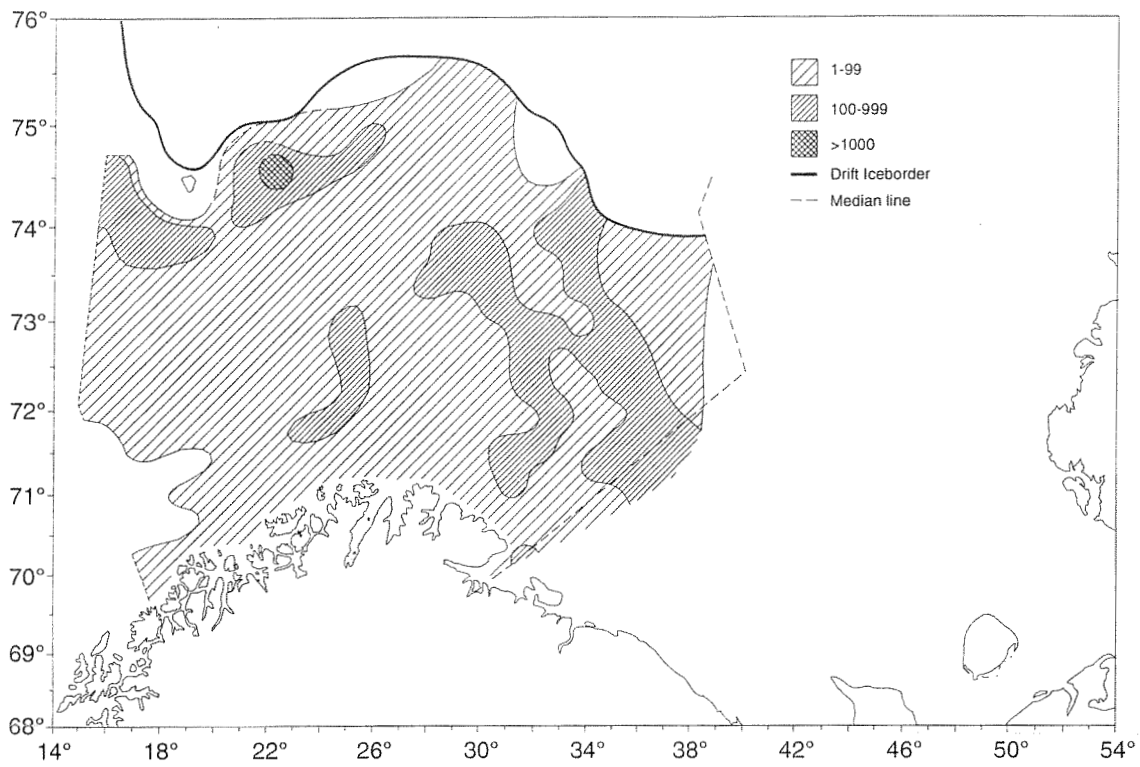




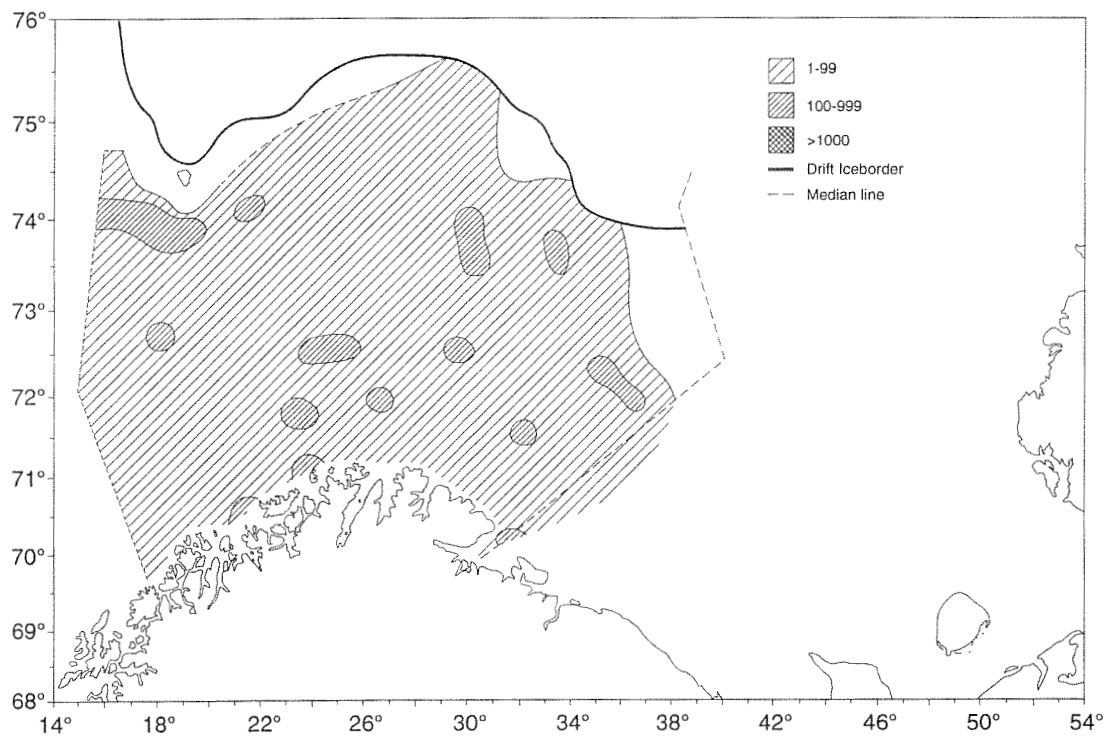
Figur 6.7. TORSK < 20 cm. Fordeling i trålfangstane vinteren 1998 (talet på fisk pr. tråltime).  
*COD < 20 cm. Distribution in the trawl catches winter 1998 (number per hour trawling).*



Figur 6.8. TORSK 20-34 cm. Fordeling i trålfangstane vinteren 1998 (talet på fisk pr. tråltime).  
*COD 20-34 cm. Distribution in the trawl catches winter 1998 (number per hour trawling).*



Figur 6.9. TORSK 35-49 cm. Fordeling i trålfangstane vinteren 1998 (talet på fisk pr. tråltime).  
*COD 35-49 cm. Distribution in the trawl catches winter 1998 (number per hour trawling).*



Figur 6.10. TORSK > 50 cm. Fordeling i trålfangstane vinteren 1998 (talet på fisk pr. tråltime).  
*COD > 50 cm. Distribution in the trawl catches winter 1998 (number per hour trawling).*

Tabell 6.4. TORSK. Mengdeindeksar (I) for lengdegrupper med standard feil (S) frå botnrålhal for kvart hovudområde av Barentshavet (norsk sone) vinteren 1998 (talet på fisk i millionar)

COD. Abundance indices (I) at length with standard error of mean (S) from bottom trawl hauls for main areas of the Barents Sea (Norwegian EEZ) winter 1998 (numbers in millions).

Lengde (Length) cm	Område (Area)																			
	A		B		C		D		D'		E		S		Total					
	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	CV (%)			
5-9	31.0	6.4	5.0	1.5	7.6	1.8	59.7	8.7	11.6	4.8	22.5	12.1	50.1	11.9	187.5	20.8	11.1			
10-14	25.5	18.3	19.3	6.1	60.1	14.4	238.4	31.5	90.8	47.4	64.0	35.7	265.8	46.0	863.8	84.9	9.8			
15-19	19.2	3.4	0.9	0.4	3.6	1.1	30.9	10.9	23.8	14.8	5.7	2.1	43.7	10.4	127.9	21.5	16.8			
20-24	7.7	1.4	0.3	0.1	1.2	0.4	17.8	3.6	7.3	6.4	4.1	1.6	25.5	5.7	63.9	9.6	14.9			
25-29	7.6	1.4	0.4	0.1	0.7	0.2	26.1	5.9	2.2	1.6	4.5	3.9	30.6	8.4	72.1	11.2	15.5			
30-34	13.3	1.8	0.3	0.1	0.9	0.2	39.8	7.6	0.3	0.2	4.7	4.5	42.5	12.3	101.8	15.3	15.0			
35-39	14.0	1.8	0.5	0.2	1.0	0.3	39.3	6.6	0.6	0.4	3.0	3.0	38.9	12.5	97.3	14.5	14.9			
40-44	12.8	1.6	0.6	0.2	1.5	0.4	27.1	4.0	0.5	0.3	2.2	2.2	25.4	6.4	70.0	8.0	11.4			
45-49	8.0	1.0	1.0	0.3	1.0	0.2	14.5	2.2	0.4	0.4	0.7	0.7	11.1	2.6	36.6	3.6	9.9			
50-54	4.6	0.6	0.7	0.2	0.5	0.1	7.5	1.2	0.4	0.4	1.0	1.0	5.7	1.5	20.5	2.3	11.1			
55-59	4.9	0.8	0.7	0.2	0.8	0.2	5.3	0.8	0.1	0.1	0.2	0.2	3.2	0.9	15.2	1.5	9.8			
60-64	5.9	1.0	1.1	0.3	0.6	0.2	3.8	0.6	+	+	0.3	0.2	1.5	0.3	13.2	1.3	10.0			
65-69	4.6	0.6	1.3	0.3	0.4	0.1	2.4	0.5	-	-	-	-	0.8	0.2	9.5	0.8	8.8			
70-74	3.8	0.7	0.9	0.2	0.4	0.1	1.2	0.3	-	-	0.1	0.1	0.5	0.1	6.9	0.8	12.2			
75-79	1.5	0.2	0.6	0.2	0.2	0.1	0.7	0.2	-	-	0.1	0.1	0.1	0.1	3.3	0.4	10.9			
80-84	0.9	0.2	0.5	0.1	0.3	0.1	0.3	0.1	-	-	-	-	0.1	+	2.0	0.3	13.1			
85-89	0.3	0.1	0.2	0.1	0.1	+	0.1	+	-	-	-	-	+	+	0.6	0.1	18.1			
>90	0.4	0.1	0.2	0.1	0.1	+	0.2	0.1	-	-	-	-	+	+	0.9	0.2	22.2			
Sum	266.0	20.1	34.5	6.3	81.3	14.6	514.9	36.9	137.7	50.3	113.0	38.4	545.6	53.1	1693.0	94.1	5.6			

Tabell 6.5. TORSK. Mengdeindeksar for lengde- og aldersgrupper frå botntrålundersøkinga i Barentshavet (norsk sone) vinteren 1998 (talet på fisk i millionar).  
 COD. Abundance indices at length and age from the bottom trawl survey in the Barents Sea (Norwegian EEZ) winter 1998 (numbers in millions).

Lengde (Length) (cm)	Alder (Årsklasse) / Age (yearclass)										Sum
	1 (97)	2 (96)	3 (95)	4 (94)	5 (93)	6 (92)	7 (91)	8 (90)	9 (89)	10+ (88+)	
5-9	187.5										187.5
10-14	822.2	41.6									863.8
15-19	7.2	120.7									127.9
20-24		39.2	24.7								63.9
25-29		10.1	61.9	0.1							72.1
30-34		0.1	91.0	10.7							101.8
35-39			45.5	51.8							97.3
40-44			4.7	64.0	1.3						70.0
45-49			0.2	23.8	11.7	0.9					36.6
50-54				3.8	13.4	3.3					20.5
55-59				0.5	5.5	8.7	0.6				15.2
60-64					0.9	8.5	3.4	0.3			13.2
65-69					0.1	2.0	6.5	0.9	+		9.5
70-74						0.2	4.8	1.9			6.9
75-79						0.2	0.9	2.1	0.2		3.3
80-84							0.2	1.6	0.2		2.0
85-89								0.5	0.1		0.6
>90								0.3	0.3	0.3	0.9
Sum	1016.9	211.6	228.0	154.8	32.8	23.8	16.3	7.7	0.9	0.3	1693.0

Tabell 6.6. TORSK. Mengdeindeksar frå botntrålhølar for kvart hovudområde av Barentshavet (norsk sone) vinteren 1998 (talet på fisk i millionar).  
 COD. Abundance indices from bottom trawl hauls for main areas of the Barents Sea (Norwegian EEZ) winter 1998 (numbers in millions.)

Omr. (Area)	Alder (Årsklasse) / Age (Yearclass)										Total
	1 (97)	2 (96)	3 (95)	4 (94)	5 (93)	6 (92)	7 (91)	8 (90)	9 (89)	10+ (88+)	
A	158.5	23.2	27.8	28.4	7.7	8.3	7.8	3.8	0.4	0.2	266.0
B	24.5	1.2	1.1	1.9	1.0	1.0	2.3	1.4	0.2	+	34.5
C	69.0	3.9	2.6	2.4	0.7	1.1	0.8	0.7	0.1	+	81.3
D	283.4	60.8	87.0	57.9	12.0	8.7	3.8	1.1	0.2	0.1	514.9
D'	79.6	46.5	10.4	0.8	0.4	0.1	+	-	-	-	137.7
E	86.5	7.8	11.2	5.2	1.7	0.5	-	0.2	-	-	113.0
S	315.4	68.3	87.8	58.2	9.5	4.2	1.6	0.6	+	+	545.6
ABCD	535.4	89.1	118.5	90.6	21.4	19.1	14.7	7.0	0.9	0.3	896.7
Total	1016.9	211.6	228.0	154.8	32.8	23.8	16.3	7.7	0.9	0.3	1693.0

1534 295 116 51 56 44 25 46 0.9 0.2 2127

5 = 82  
 5 = 131

295  
 27  
 54  
 1380  
 192  
 170

Tabell 6.7. TORSK. Mengdeindeksar frå botntrålundersøkingar i Barentshavet vinteren 1981-1998 (talet på fisk i millionar). 1981-1992 inkluderer berre hovudområda A, B, C og D.  
*COD. Abundance indices from bottom trawl surveys in the Barents Sea winter 1981-1998 (numbers in millions). 1981-1992 includes only main areas A, B, C and D).*

År (Year)	Alder (Age)										Total
	1	2	3	4	5	6	7	8	9	10+	
1981	4.6	34.3	16.4	23.3	40.0	38.4	4.8	1.0	0.3	0.0	163.1
1982	0.8	2.9	28.3	27.7	23.6	15.5	16.0	1.4	0.2	0.0	116.5
1983	341.9	19.0	22.3	37.1	33.3	13.5	4.6	3.0	0.6	0.2	474.4
1984	2864.4	393.2	115.9	26.2	18.9	10.6	3.2	0.5	0.2	0.1	3433.1
1985	51.5	727.6	144.4	99.5	15.7	6.4	2.5	0.2	0.1	0.1	1047.8
1986	741.8	461.5	657.1	137.1	75.0	23.3	5.5	0.6	0.2	0.1	2102.2
1987	33.4	457.4	233.4	365.5	46.1	11.3	1.4	0.4	+	0.0	1148.9
1988	5.0	72.9	185.2	95.3	189.5	19.1	3.6	0.6	0.1	0.0	571.3
1989	9.4	13.6	36.5	64.9	35.2	77.9	8.7	0.8	0.2	0.2	247.4
1990	161.0	50.8	23.3	30.1	33.6	19.7	23.9	1.3	0.4	0.1	344.1
1991	470.8	224.7	32.3	19.1	17.5	16.1	9.3	9.7	0.5	0.1	800.1
1992	131.6	528.9	149.6	49.5	18.4	11.8	7.5	4.0	2.7	0.2	904.3
1993	534.1	331.0	311.8	152.6	69.0	14.2	6.9	4.2	2.2	2.1	1430.2
1994	861.8	496.8	276.3	297.6	145.9	46.9	8.8	2.3	1.2	1.2	2138.8
1995	4892.4	503.8	288.2	231.2	249.2	70.4	18.0	2.2	0.7	1.0	6256.8
1996	5778.8	715.5	177.6	116.0	136.9	107.5	24.5	2.9	0.4	0.5	7060.5
1997 <sup>1</sup>	5244.5	1096.4	258.6	68.6	79.4	57.0	30.2	6.7	1.2	0.3	6842.9
1998 <sup>1</sup>	2814.5	686.3	424.1	194.1	44.3	30.4	20.0	11.1	1.3	0.3	4226.2

<sup>1)</sup> Indeksar oppjusterte til også å omfatta området dekket i russisk sone i 1996.  
*Indices raised to also represent the area covered in the Russian EEZ in 1996.*

5+ 178  
5+ 107

Tabell 6.8. TORSK. Lengde (cm) ved alder i kvart hovudområde av Barentshavet (norsk sone) frå undersøkinga vinteren 1998.

*COD. Length (cm) at age in main areas of the Barents Sea (Norwegian EEZ) from the investigation winter 1998.*

Omåde (Area)	Alder (årsklasse / Age (yearclass))							
	1 (97)	2 (96)	3 (95)	4 (94)	5 (93)	6 (92)	7 (91)	8 (90)
A	11.2	18.7	31.8	41.9	52.3	60.6	68.0	74.9
B	11.0	19.4	32.6	47.1	53.8	61.0	68.1	78.7
C	11.1	18.9	35.2	43.8	53.9	60.1	66.9	78.4
D	11.2	17.7	31.7	40.6	50.1	58.4	66.8	77.7
D'	11.6	15.4	25.4	44.9	54.9	58.0	62.0	-
E	10.8	17.7	28.5	37.7	49.6	59.1	-	75.5
S	11.2	19.0	30.7	40.1	50.2	55.9	66.2	73.2
Total	11.2	17.8	30.9	40.7	50.9	58.9	67.5	76.2

Tabell 6.9. TORSK. Lengde (cm) ved alder i Barentshavet frå undersøkingane vinteren 1978 - 1998.

*COD. Length (cm) at age in the Barents Sea from the investigations winter 1978 - 1998.*

År (Year)	Alder (Age)							
	1	2	3	4	5	6	7	8
1978	14.2	23.1	32.1	45.9	54.2	64.6	67.6	76.9
1979	12.8	22.9	33.1	40.0	52.3	64.4	74.7	83.0
1980	17.6	24.8	34.2	40.5	52.5	63.5	73.6	83.6
1981	17.0	26.1	35.5	44.7	52.0	61.3	69.6	77.9
1982	14.8	25.8	37.6	46.3	54.7	63.1	70.8	82.9
1983	-	26.1	34.8	46.8	56.0	64.5	73.3	80.4
1984	13.8	26.2	35.8	49.2	57.9	67.4	79.6	82.2
1985	14.5	23.5	40.3	50.8	62.2	71.1	81.8	88.7
1986	13.3	22.6	34.4	50.4	60.0	70.2	82.3	95.2
1987	14.5	21.0	31.8	41.1	55.7	67.2	81.8	94.5
1988	14.7	22.5	29.7	37.0	46.4	58.0	70.1	81.1
1989	12.7	25.7	34.7	40.6	47.5	57.1	68.5	84.0
1990	14.3	29.0	39.4	47.4	53.9	60.9	70.9	87.5
1991	13.8	27.6	41.6	52.6	60.2	68.2	73.8	79.0
1992	13.4	24.7	41.3	50.7	59.9	69.2	77.0	82.7
1993	11.4	20.7	35.9	50.9	59.2	68.8	76.2	84.5
1994	12.0	18.5	30.5	44.8	55.0	64.6	73.5	84.0
1995	12.7	18.8	29.9	42.5	54.2	63.9	76.0	82.0
1996	12.6	19.6	28.1	40.9	49.3	61.4	72.3	85.3
1997 <sup>1</sup>	11.4	18.9	28.0	40.1	49.6	59.2	69.1	80.5
1998 <sup>1</sup>	10.9	17.5	28.7	39.6	49.7	58.6	67.3	76.5

<sup>1)</sup> Justerte lengder  
*Adjusted lengths*

Tabell 6.10. TORSK. Vekt (g) ved alder i kvart hovudområde av Barentshavet (norsk sone) frå undersøkinga vinteren 1998.

*COD. Weight (g) at age in main areas of the Barents Sea (Norwegian EEZ) from the investigation winter 1998.*

Område (Area)	Alder (årsklasse) / Age (yearclass)							
	1 (97)	2 (96)	3 (95)	4 (94)	5 (93)	6 (92)	7 (91)	8 (90)
A	12	52	294	669	1233	1829	2613	3687
B	10	61	317	925	1341	1864	2655	4397
C	10	60	402	746	1367	1836	2512	4086
D	13	52	281	597	1125	1717	2519	4129
D'	12	36	158	814	1300	1475	2285	-
E	11	45	216	516	1066	1762	-	3915
S	11	61	266	570	1146	1511	2560	3424
Total	12	52	270	605	1167	1731	2586	3900

Tabell 6.11. TORSK. Vekt (g) ved alder i Barentshavet frå undersøkingane vinteren 1985 - 1998.

*COD. Weight (g) at age in the Barents Sea from the investigations winter 1985 - 1998.*

År (Year)	Alder (Age)							
	1	2	3	4	5	6	7	8
1985	-	-	670	1070	2230	3650	4920	5060
1986	-	-	390	1090	1850	3110	4320	5509
1987	21	65	230	490	1380	2300	3970	-
1988	20	80	203	410	793	1473	2706	4613
1989	10	150	380	590	930	1570	2640	4940
1990	28	229	570	1030	1460	1930	2890	4370
1991	20	190	720	1370	2040	2850	3660	4630
1992	20	130	640	1120	1850	2830	3980	4990
1993	11	76	430	1196	1766	2779	3894	5519
1994	12	59	261	797	1452	2273	3369	5062
1995	16	56	250	675	1347	2192	3606	4974
1996	15	61	206	633	1059	1995	3352	5512
1997 <sup>1)</sup>	13	54	197	593	1090	1788	2856	4650
1998 <sup>1)</sup>	12	49	214	562	1096	1721	2581	3969

<sup>1)</sup> Justerte vektorer  
*Adjusted weights*

Tabell 6.12. TORSK. Årleg tilvekst (g) frå undersøkingane i Barentshavet vinteren 1985 - 1998.

*COD. Yearly weight increment (g) from the investigations in the Barents Sea winter 1985 - 1998.*

År (Year)	Alder (Age)						
	1-2	2-3	3-4	4-5	5-6	6-7	7-8
1985-86	92	280	420	780	880	670	589
1986-87	48	120	100	290	450	860	741
1987-88	59	138	180	303	93	406	643
1988-89	130	300	387	520	777	1167	2234
1989-90	219	420	650	870	1000	1320	1730
1990-91	162	491	800	1010	1390	1730	1740
1991-92	110	450	400	480	790	1130	1330
1992-93	56	300	556	646	929	1064	1539
1993-94	48	185	367	256	507	590	1168
1994-95	44	191	414	550	740	1333	1605
1995-96	45	150	383	384	648	1160	1906
1996-97	39	136	387	457	729	861	1298
1997-98	36	160	365	503	631	793	1113

Tabell 6.13. Delen (%) av botntrålindeksar for torsk i Barentshavet funne norsk sone vinteren 1993-1996.  
*Proportion (%) of the bottom trawl indices for cod in the Barents Sea found in the Norwegian EEZ winter 1993-1996.*

År (Year)	Alder (Age)										Total
	1	2	3	4	5	6	7	8	9	10+	
1993	90	32	54	85	92	91	86	92	91	83	66
1994	38	36	40	54	68	77	67	71	92	92	43
1995	50	36	58	89	89	95	92	83	100	100	53
1996	30	28	48	75	71	79	83	72	75	20	33

Tabell 6.14. Total dødsrate for torsk observert under vintertoktet i Barentshavet i perioden 1993-98.  
*Total mortality observed for cod during the winter survey in the Barents Sea in 1993-98.*

År (Year)	Alder (Age)							
	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
<i>Akustiske undersøkingar (Acoustic investigations)</i>								
1993-94	0.90	0.19	-0.13	0.02	0.62	0.44	1.25	1.10
1994-95	1.35	1.33	0.80	0.47	0.83	0.87	1.50	0.69
1995-96	2.07	1.07	0.95	0.63	1.05	1.19	1.79	0.69
1996-97	1.63	0.61	0.58	0.32	0.84	1.23	1.66	1.10
1997-98	1.01	0.22	-0.03	0.18	0.44	0.39	0.45	0.69
<i>Botntrål-undersøkingar (Bottomtrawl investigations)</i>								
1993-94	0.07	0.18	0.05	0.04	0.39	0.48	1.10	1.25
1994-95	0.54	0.54	0.18	0.18	0.73	0.96	1.39	1.19
1995-96	1.92	1.04	0.91	0.52	0.84	1.06	1.83	1.70
1996-97	1.66	1.02	0.95	0.38	0.88	1.27	1.30	0.88
1997-98	2.03	0.95	0.29	0.44	0.96	1.05	1.00	1.64