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Status of the cod stock in NAFO Division 3M

by

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Recent TAC's and nominal catches (000 t) are as follows:

	1977	1978	1979	1980	1981	1982	1983	1984
TAC	25	40	40	13	12.75	12.4 ¹	12.4 ¹	12.4 ¹
Catch	27	33	33	11	14	13 ²		

¹Excludes expected catches by Spain

²Provisional data including catch (4,500 t by Spain)

Age and length sampling from the commercial fishery consisted of three age length keys and four length frequencies as follows:

Month	Source	Gear	No. measured	No. aged	Avg. wt.
April	Faroe Islands	Long line	1471	105	2.10
June	Spain	Pair trawl	1644	110	1.34
October	Faroe Islands	Long line	1995	101	2.07
December	Portugal	Otter trawl	263	35	1.08

The length frequency taken in April shows two modes at 49 cm and at 70 cm (Fig. 1), while those taken in June and October have only one dominant mode corresponding to age 3 fish, the 1980 year-class (Fig. 2). The sample taken in December was comprised mainly of fish between 40 and 50 cm which were determined to be of age 3 as well. Average weights at age were calculated from these samples using the relationship

$$\log_{10} = -5.2106 \times 3.0879 \log_{10} \text{ length}$$

The results are shown in Table 1 and demonstrate a general increasing trend in weight at age for most ages.

Catch and effort data for commercial catches by Faroe Islands and Norway, long line, tonnage class 4, have been reported to NAFO (ICNAF). For both series the catch rates are lower in recent years than they have been historically.

	1975	1976	1977	1978	1979	1980	1981	1982
Faroe Islands	-	-	0.43	0.22	0.25	0.17	0.16	0.14*
Norway	0.20	0.31	0.25	0.24	0.30	0.17	0.20	-

*Provisional

Abundance estimates, 1977-1984

In February, 1984, 129 successful half-hour tows with lined codend were made on the Flemish Cap by the *Gadus Atlantica* following a random-stratified sampling design. The estimated numbers at age per standard tow show that the 1981 year-class comprise 80% of the total (Table). The average length of this year-class in February 1984 was 35.4 cm. The population at present is composed mostly of cod younger than age 7. In Table are shown for comparison similar estimates for 1977-1983.

The abundance estimates for the 1973 and older year-classes in 1978-1984 as well as estimates of total mortality are shown below:

Year	Abundance (000's)	Z
1978	58868	1.90
1979	8825	0.76
1980	4136	0.63
1981	2211	2.22
1982	241	-0.03
1983	248	0.93
1984	98	

The average Z value over the period is estimated at 1.07.

Table 1. Average weights at age from the commercial catch of cod from Division 3M.

Age	Commercial Catch				1982 LL Oct-Nov	1983		
	1978	1979	1980	1981		LL Apr.	PT Jun	LL Oct.
3	0.37	0.79	0.86	-	-	0.96	1.17	1.51
4	0.60	1.07	1.14	1.24	2.39	1.89	1.23	2.12
5	1.10	1.48	1.75	1.79	3.16	2.72	2.11	3.22
6	1.58	2.45	2.47	2.63	-	3.64	3.75	3.65
7	2.65	4.35	3.17	3.13	4.62	6.90	-	2.32
8	3.56	5.34	4.42	4.73	6.07	6.60	6.90	2.76

Table 2. Numbers of cod (000) estimated to be available to the research gear.

Age	1977	1978	1979	1980	1981	1982	1983	1984
1	12	-	-	-	32	628	293	43
2	2,134	95	4,675	1,030	-	1,781	71,001	1,526
3	10,272	4,757	1,067	19,475	5,172	21	7,824	15,833
4	27,208	15,531	5,610	2,377	15,479	1,663	319	1,897
5	5,958	45,688	5,437	2,990	975	978	2,357	73
6	768	12,135	6,712	2,737	2,108	32	958	645
7	165	476	1,706	3,912	1,041	150	45	426
8	13	181	108	160	2,069	137	84	12
9	177	65	55	23	102	219	68	44
10	40	154	20	6	23	11	237	63
>10	50	169	224	35	17	11	11	98
Total	46,797	79,251	25,614	32,745	27,018	5,631	83,197	20,660

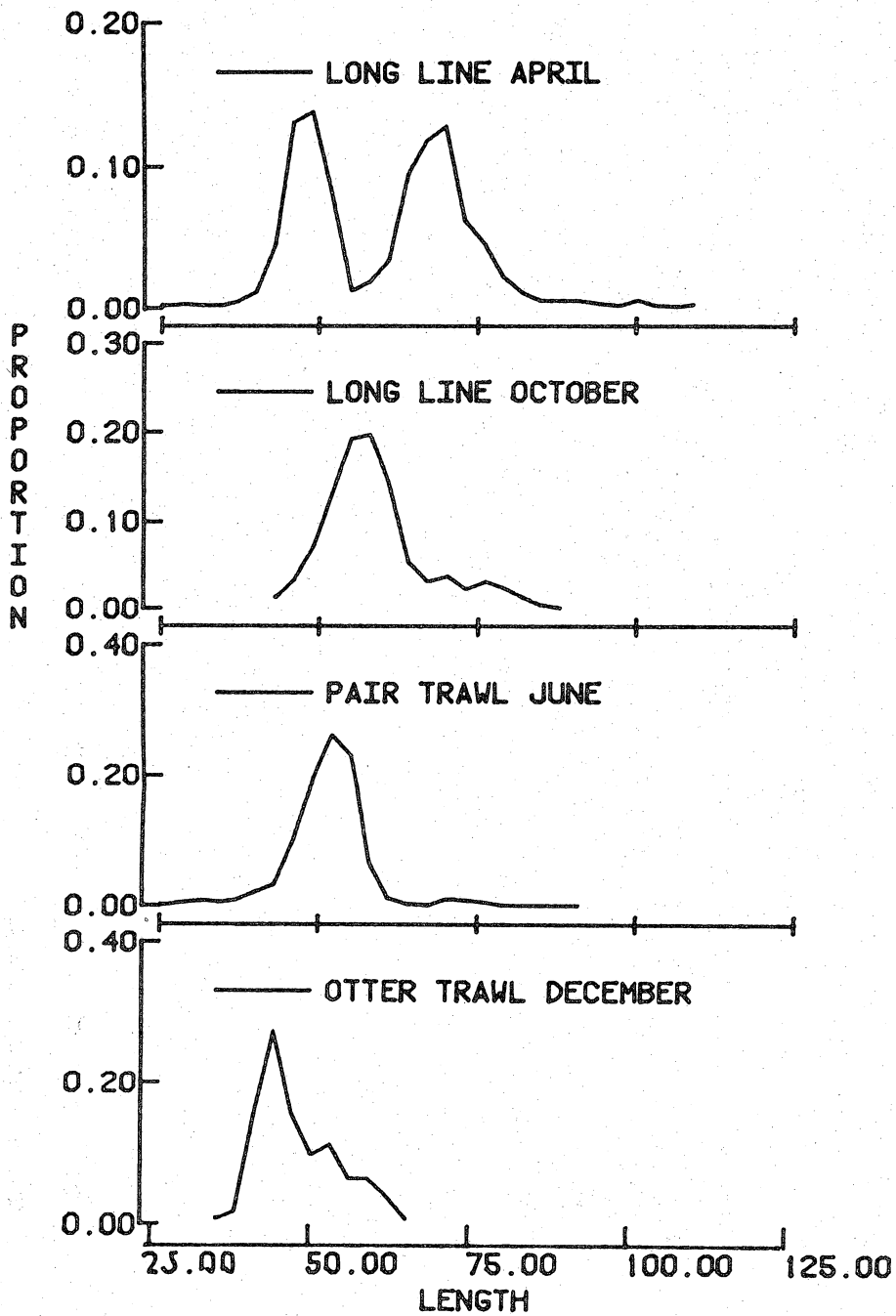


Fig. 1. Length frequency from samples of the commercial catch of cod in Division 3M during 1983.

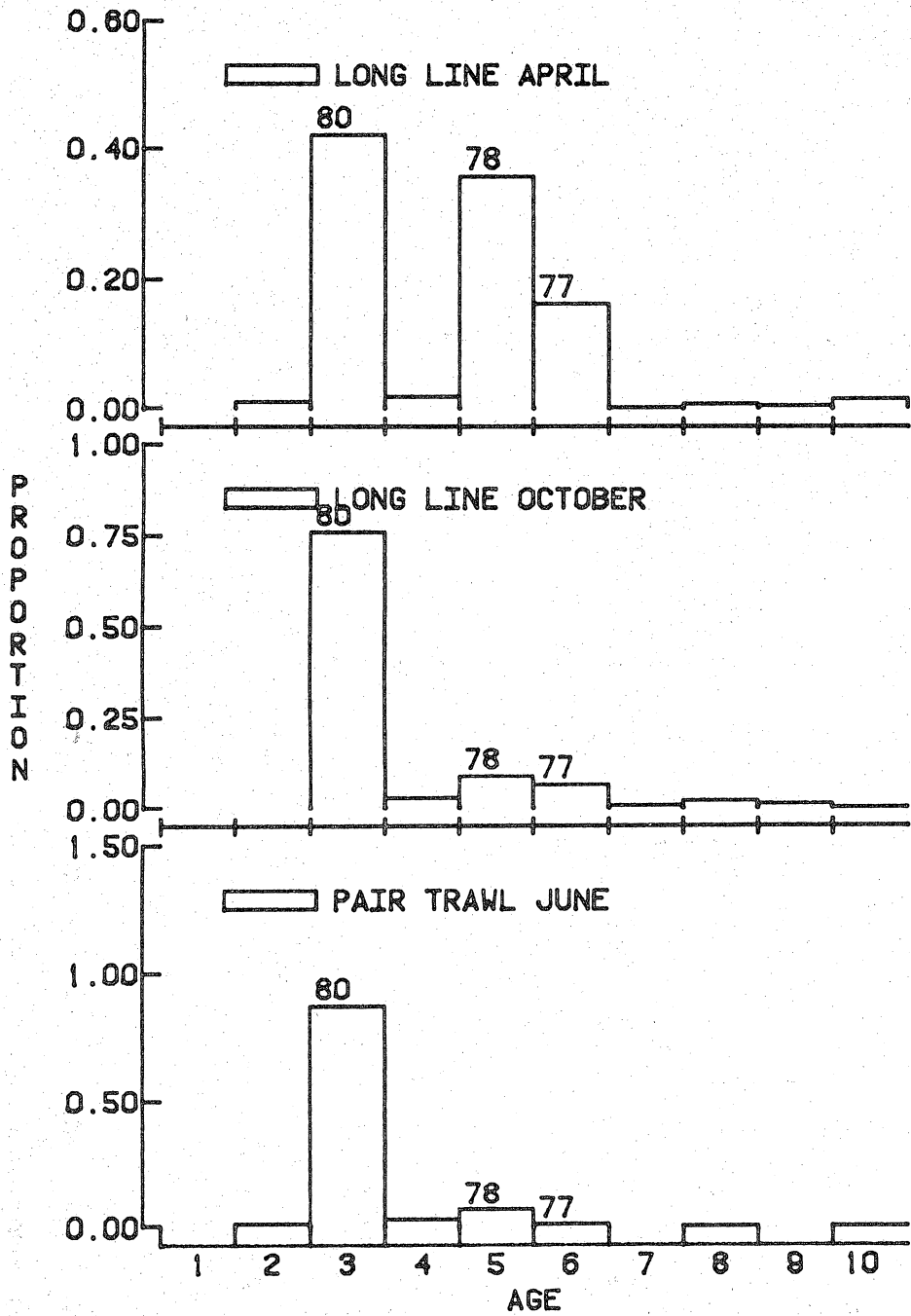


Fig. 2. Age composition for cod in the commercial catch from Division 3M as determined from samples taken during 1983.