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The 1984 Inshore Capelin Fishery in Div. 3L

by

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Abstract

An analysis of records from logbooks kept by capelin fishermen during the 1984 fishery is presented. Discarding has declined significantly from 1983. Catch/effort indices for capelin traps and purse seines have increased from 1981 to 1983 and declined in 1984 from 1983 levels. Age compositions of the inshore commercial catch from 1979 to 1984 are shown.

Introduction

This report summarizes and presents data concerning the inshore commercial capelin fishery in 1984 which were collected by fishermen using research logbooks and from biological samples taken during the fishery. Inshore landings from 1974 to 1984 in Div. 3L are given in Table 1 and indicate a large increase from 1983 to 1984. This increase may be attributed to a larger requirement for Newfoundland capelin to fill the needs of the Japanese roe market in 1984 due to a partial failure of the Norwegian fishery to meet their share of the Japanese roe market.

Materials and Methods

In 1984, 205 logbooks were distributed to fishermen residing and fishing in Div. 3L (Table 2). After the fishery we received 39 purse seine and 91 fixed gear logbooks which were utilized in this report. Summaries of logbook surveys conducted from 1981 to 1983 are in documents published earlier (see Nakashima and Harnum 1982, 1983, 1984). Purchase slips provided by Statistics Branch were examined and landings were compared to those recorded in the logbooks.

Random samples of capelin were collected on the basis of two per statistical section (Fig. 1) per gear type per week during the fishery. These samples were processed as LSM (length-sex-maturity) and length and sex stratified samples to determine the age composition of the commercial catch.

A digital thermograph was located on a trap mooring near Old Bonaventure, Trinity Bay in 1983 and 1984. The thermograph was situated approximately 4 m below the surface and recorded continuously from May 27-September 8, 1983 and June 11-September 2, 1984. Only the June values are documented in this report. All daily mean temperatures are the average of 48 measurements taken at $\frac{1}{2}$ hr intervals.

Results

Discarding

The level of discarding was much lower in 1984 than in 1983 as documented in research logbooks. Discards expressed as a percentage of logbook landings were 17% for purse seines (Table 3), 13% for capelin traps (Table 4), and 50% for beach seines (Table 5). These are comparable to 1982 estimates of 21% for purse seines, 14% for capelin traps, and 24% for beach seines (Nakashima and Harnum 1983) and considerably less than the 80% for purse seines, 43% for traps, and 33% for beach seines reported for the 1983 fishery (Nakashima and Harnum 1984) when redfeed was an important problem in selling capelin. As defined in all our earlier reports (Nakashima and Harnum 1982, 1983, 1984), we make no distinction between capelin which are released alive and those which are dumped (dead). All capelin which are caught but not landed are considered as having been discarded.

Table 2. Responses from a logbook survey conducted in Div. 3L, 1981-84.

Year	No. contacted	No. logbooks returned	Did not fish capelin	Logbooks not returned
<u>Purse seine</u>				
1981	70 (7)*	37 (44)	11	22
1982	91 (7)*	54 (61)	10	27
1983	75 (9)*	37 (46)	7	31
1984	63 (3)*	39 (42)	3	21
<u>Fixed gear</u>				
1981	119	74	13	32
1982	136	81	36	19
1983	131	66	38	27
1984	142	91	20	31

* fishermen who reside in Div. 3K but fished in Div. 3L. These are added to the 'No. logbooks returned' column in parenthesis.

Table 3. Total purse seine landings (t) compiled from logbooks and from purchase slips in Div. 3L.

Area	Landings by logbook	Discards by logbook*	Landings by purchase slips	No. of Fishermen
Bonavista Bay	1738.5	250.2	1778.1	8
Trinity Bay	1647.3	570.9	1757.5	24**
Conception Bay	2820.8	322.3	2455.6	27
Southern Shore	20.6	0	0	3
St. Mary's Bay	1030.3	76.7	1041.9	5**
Div. 3L	7257.5	1220.1	7126.4	39

* includes capelin given to other fishermen

** includes fishermen with purchase slips from this area according to Economics Branch but did not fish there according to Research Branch logbook records

Table 4. Total capelin trap landings (t) compiled from logbooks and from purchase slips.

Area	Landings by logbook	Discards by logbook*	Landings by purchase slips	By-catch		No. of fishermen	No. of traps
				Cod	Herring		
Bonavista Bay	311.2	13.7	318.1	2.5	0	6	7
Trinity Bay	1950.3	111.6	1763.5	26.6	0.1	27	36
Conception Bay	1403.9	271.7	1273.9	15.5	0	21	31
Southern Shore	186.3	125.8	154.1	0.5	1.6	6	8
St. Mary's Bay	103.8	0	97.5	0.6	0	1	1
Div. 3L	3955.5	522.8	3607.1	45.7	1.7	61	83

* includes capelin given to other fishermen

Table 5. Total beach seine landings (t) compiled from logbooks and from purchase slips.

Area	Landings by logbook	Discards by logbook	Landings by purchase slips	Cod by-catch	No. of Fishermen
Bonavista Bay	25.6	0	3.1	0	2
Trinity Bay	269.6	149.6	156.6	0	8
Conception Bay	6.7	0.9	0	0	1
Div. 3L	301.9	150.5	159.7	0	11

Table 6. Percent contribution by weight for reasons for discarding capelin in 1984. (This excludes capelin given to other fishermen.)

Area	Redfeed	Low % females	Small females	Females picked out	Females spawned out	No market/ quota filled	Misc.	Not given
<u>Traps</u>								
Bonavista Bay	1	41	-	11	-	47	-	-
Trinity Bay	-	40	-	17	3	30	10	-
Conception Bay	2	25	-	44	4	6	16	2
Southern Shore	-	33	-	34	12	20	1	-
St. Mary's Bay	-	-	-	-	-	-	-	-
<u>Purse seine</u>								
Bonavista Bay	44	56	-	-	-	-	-	-
Trinity Bay	8	87	-	-	+	5	-	-
Conception Bay	22	72	+	-	-	-	6	-
St. Mary's Bay	-	86	-	-	7	-	7	-

Table 7. Catch/effort data for purse seiners from the 1984 logbook survey.

Area	No. days fished	No. sets made	Landings per logbook (t)	Landings and discards per logbook (t)	No. of purse seiners
Bonavista Bay	98	197	17.7/day 8.8/set	20.3/day 10.1/set	8
Trinity Bay	194	347	8.5/day 4.8/set	11.4/day 6.4/set	23
Conception Bay	259	552	10.9/day 5.1/set	12.1/day 5.7/set	27
Southern Shore	3	5	6.9/day 4.1/set	6.9/day 4.1/set	3
St. Mary's Bay	38	77	27.1/day 13.4/set	29.1/day 14.4/set	3
Div. 3L	592	1178	12.3/day 6.2/set	14.3/day 7.2/set	39

Table 8. Catch/effort data for capelin traps from the 1984 logbook survey.

Area	No. days fished	No. hauls made	Landings per logbook (t)	Landings and discards per logbook (t)	No. of traps
Bonavista Bay	86	147	3.6/day 2.1/haul	3.8/day 2.2/haul	7
Trinity Bay	616	996	3.2/day 2.0/haul	3.4/day 2.1/haul	36
Conception Bay	406	612	3.5/day 2.3/haul	4.1/day 2.7/haul	31
Southern Shore	152	179	1.2/day 1.0/haul	2.1/day 1.7/haul	8
St. Mary's Bay	19	47	5.5/day 2.2/haul	5.5/day 2.2/haul	1
Div. 3L	1279	1981	3.1/day 2.0/haul	3.5/day 2.3/haul	83

Table 9. Summary of the commercial samples collected from the inshore capelin fishery in 1984 in Div. 3L.

Gear type	No. of LSM/stratified samples	No. of otoliths aged	Mean number of otoliths aged per sample \pm SD
Purse seine	46	1452	31.6 \pm 3.7
Capelin trap	86	2834	33.0 \pm 7.0
Beach seine	21	730	34.8 \pm 4.0
TOTAL	153	5016	

Table 10. Age-compositions (%) from inshore commercial capelin fishery, Div. 3L, 1979-84.

	Age					
	1	2	3	4	5	6
Males						
1979			47.6	36.3	15.1	.9
1980		.2	53.4	43.4	2.9	.1
1981	9.0	1.9	29.7	37.7	20.6	1.2
1982	.1	.5	88.8	10.0	.6	
1983		1.1	63.0	35.0	.9	
1984		.5	38.1	60.7	.6	
Females						
1979		.8	59.1	25.4	11.3	3.4
1980	.1	3.3	64.6	31.1	.4	.6
1981	5.8	5.6	54.0	20.1	14.0	.6
1982	.2	2.4	76.4	13.0	6.4	1.6
1983		6.0	58.7	32.7	2.5	.2
1984		3.1	41.9	46.6	8.2	.3
Sexes combined						
1979		.2	50.3	33.8	14.2	1.5
1980		1.7	58.9	37.3	1.7	.4
1981	7.4	3.2	42.7	28.7	17.2	.9
1982	.1	1.4	83.1	11.4	3.2	.7
1983		2.9	61.4	34.2	1.5	.1
1984		1.6	39.7	54.9	3.8	.1

Table 11. Percent contribution by weight for reasons for discarding capelin in Div. 3L, 1981-84. (This excludes capelin given to other fishermen.)

Year	Redfeed	Low % females	Small females	Females picked out	Females spawned out	No market/ quota filled	Misc.	Not given
Traps								
1981	13	43	1	10	+	22	3	8
1982	4	57	+	19	1	4	13	2
1983	17	37	+	3	+	18	13	12
1984	1	31	-	35	6	15	11	1
Purse seine								
1981	32	35	14	8*	+	8	+	3
1982	45	41	3	-	+	+	10	1
1983	70	17	1	-	+	5	3	4
1984	18	78	+	-	+	3	2	-

* use of separators at sea

Table 12. Catch/effort of capelin traps in Div. 3L utilizing research logbook data.

Year	L = Logbook landings (t)		C = Logbook landings and discards (t)	
	L/day	L/haul	C/day	C/haul
1981	2.1	2.1	2.7	2.7
1982	3.3	2.7	3.7	3.0
1983	3.2	2.8	4.6	4.0
1984	3.1	2.0	3.5	2.3

Table 13. Catch/effort of purse seines in Div. 3L utilizing research logbook data.

Year	L = Logbook landings (t)		C = Logbook landings and discards (t)	
	L/day	L/set	C/day	C/set
1981	6.9	3.4	9.4	5.3
1982	13.5	6.7	16.4	8.1
1983	10.4	5.4	18.8	9.7
1984	12.3	6.2	14.3	7.2

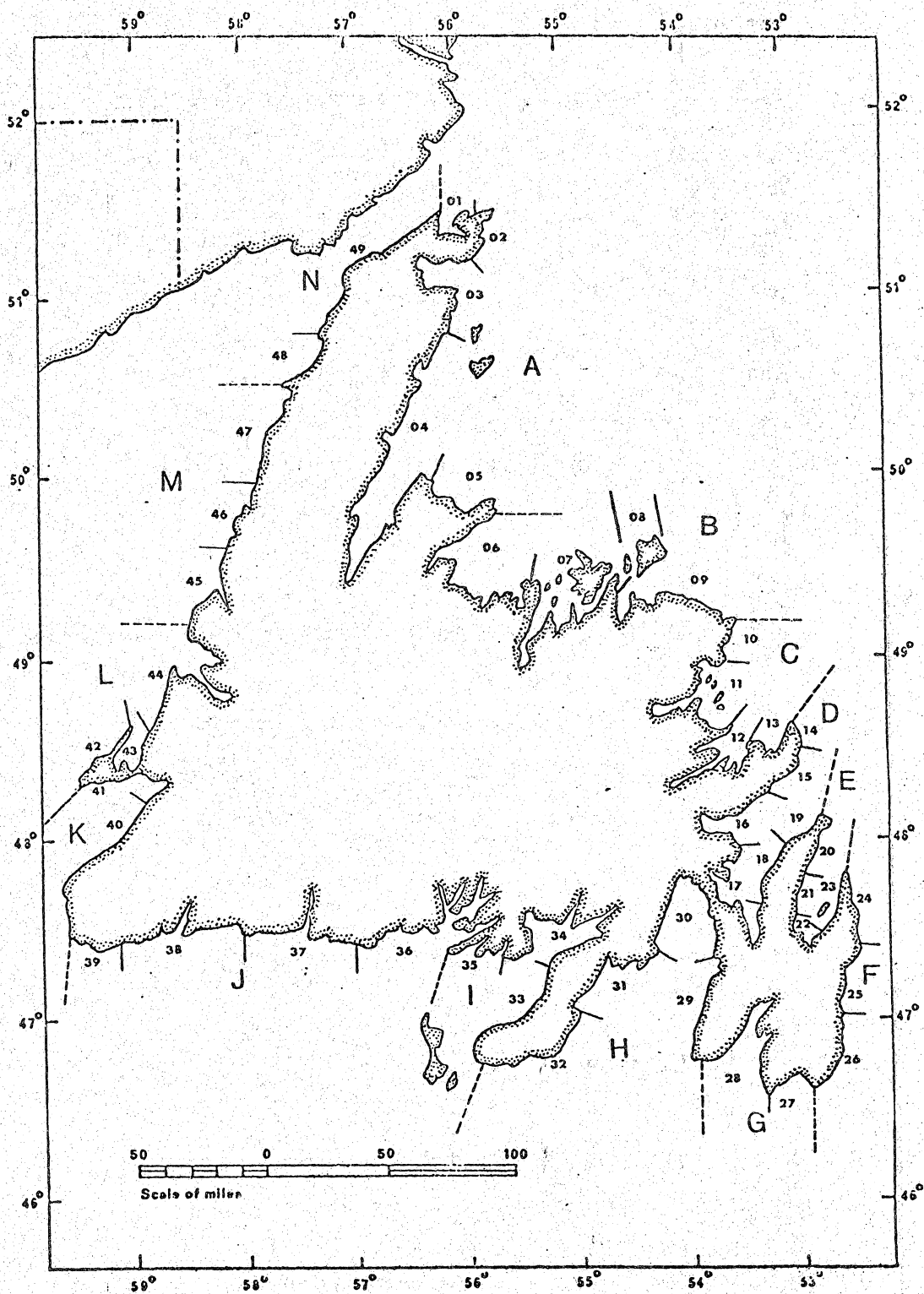


Fig. 1. Statistical areas (C = Bonavista Bay; D = Trinity Bay; E = Conception Bay; F = Southern Shore; G = Trepassey and St. Mary's Bays) and sections (numeric) in the Newfoundland Region.

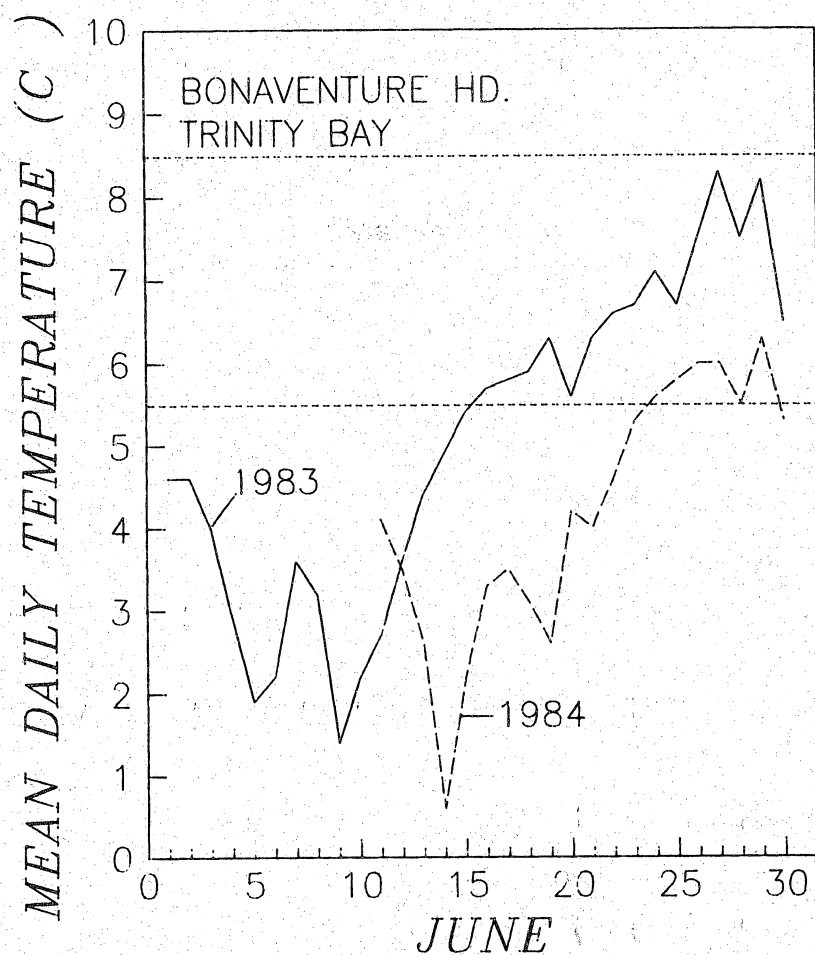


Fig. 2. Comparison of mean daily temperatures for 1983 and 1984 recorded by a digital thermograph located 4 m below the surface attached to the moorings of a capelin trap.