

Age and growth of Arctic Cod (*Boreogadus saida*) taken off  
Labrador in September, 1978

by

R. Wells  
Department of Fisheries and Oceans  
P.O. Box 5667  
A1C 5X1

INTRODUCTION

Apparently no age and growth information has been published for Arctic cod of the Northwest Atlantic. From the large catches of Arctic cod taken off Labrador in September 1978 (Lear 1979), samples examined to date for age amount to almost 200 specimens.

MATERIALS AND METHODS

The otoliths of all laboratory specimens taken from fishing sets 16, 17, 84 and 94 were broken at about the midpoint and the broken surfaces examined under 15 power magnifications by transmitted light. As fork length to the nearest centimetre was observed for those samples measured at sea, an age-fork length key was constructed. The age-length key was used to estimate the age compositions and average length-at-age of the length frequencies reported by Lear (1979).

RESULTS

The age-length key comprises Table 1. Ages were determined for specimens in fork length range 9-29 cm and comprises ages 1-5. One specimen was considered to be 6 years of age. The distribution by length of 4-year-old fish in the key appears unlikely to be representative.

Table 2A shows the percentage age compositions for areas grouped by latitude. In the southernmost areas, fish of ages 1 and 2 comprised about 80 percent of the total, but amounted to less than 5 percent in the northernmost areas. The 1973 year-class, as 5 year-old fish comprised from 57-89 percent of the catch in the 3 northern areas. The 1974 year-class appears to have been weak in all areas.

It is clear that the average age and average length increased with latitude. In addition, there was a consistent trend towards greater average length-at-age with latitude for fish of ages 3, 4 and 5.

## CONCLUSIONS

1. Age compositions were composed mainly of fish of ages 1-5.
2. Average fork length-at-age increased from about 11 cm at age 1 to about 26 cm at age 5.
3. Progressively larger and older fish were taken with increasing latitude. In addition, there was a tendency in fish of ages 3-5 for the larger individuals to occur in the higher latitudes.

Table 1. Age-length key for Arctic cod on Gadus 13, September, 1978.

FORK LENGTH	AGE						TOTAL
	1	2	3	4	5	6	
9	4						4
10	16						16
11	9						9
12	2						2
13		2					2
14		3					3
15		6					6
16		9					9
17		5					5
18		1	1				2
19		2	2				4
20			7	1			8
21			3	2			5
22			4	7	4		15
23			2	-	9		11
24				2	19		21
25				2	20	1	23
26					24		24
27					9		9
28					8		8
29					3		3
TOTAL	31	28	19	14	96	1	189

Table 2. A. Percentage age compositions and

B. Average-length-at-age of Arctic cod taken in September 1978 off Labrador by R.V. Gadus Atlantica.

		<u>PERCENTAGE AT AGE</u>							<u>AVERAGE</u>
<u>AREA</u>		1	2	3	4	5	6	<u>TOTAL</u>	<u>AGE</u>
A.									
1.	59 30N to 60 30N	1	3	4	4	89	+	101	4.79
2.	59 00N to 59 30N	+	2	9	7	81	1	100	4.70
3.	58 30N to 59 00N	+	13	20	9	57	1	100	4.11
4.	57 40N to 58 30N	27	54	11	1	8		101	2.11
5.	55 20N to 57 40N	40	42	14	2	3		101	1.86

		<u>AVERAGE FORK LENGTH AT AGE</u>					
<u>AREA</u>		1	2	3	4	5	<u>ALL</u>
B.							
1.	59 30N to 60 30N	11.57	16.56	21.25	22.95	26.96	26.21
2.	59 00N to 59 30N	11.30	18.09	20.97	22.54	25.72	24.91
3.	58 30N to 59 00N	10.59	17.33	20.17	22.00	25.68	23.11
4.	57 40N to 58 30N	11.31	15.69	18.92	21.86	26.15	15.78
5.	55 20N to 57 40N	11.26	16.08	19.02	20.92	26.14	14.95