

International Commission for



the Northwest Atlantic Fisheries

Serial No. 3902
(D.c.9)

ICNAF Res.Doc. 76/VI/89

ANNUAL MEETING - JUNE 1976

Notes on the biology of Atlantic salmon taken in Saint Pierre and Miquelon waters in 1975

by

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Introduction

In 1975, fishing experiments for salmon were carried by the Institut Scientifique et Technique des Pêches Maritimes (I.S.T.P.M.) in St Pierre et Miquelon.

The trials took place in Langlade and Miquelon islands during four periods of five fishing days in June and July. Although the main goal of these trials was to promote the development of a fishery, a biological sample of 130 fishes has been collected from the East coast of Langlade island fishing stations (46°53' N - 56°16' W). Some informations on behaviour, morphological characters, ages, feeding and parasites were obtained from this sample.

Material.

The fishing gear used during the experiment was a fleet of three to five 25 fathoms monofilament set nets handed from a powered dory. The mesh sizes were five and six inches (stretched meshes), used alternatively in June, while in July only the five inch meshes were used as fish was of smaller size.

Environment.

Data on environment was collected during the trials. They consisted in the empirical observation of the weather and sea conditions. The sea surface temperature readings were rising from 4°1 C on June 6 to 10°4 C on July 31. They showed that no salmon was encountered during the last week of July, when the temperature was over 10° C. Usually, better catches have been reported when the water was clear, which happened under clear skies with light winds coming from the sea.

Biology.

Results concerning the morphometric characters have been separated by month, according to the two main catching periods : June 4 to 13 and July 7 to 13.

The size distribution by sex (Fig. 1) show that the larger salmon approached the coast in early June, most of it being females. Two modal fork lengths are then found, one at 50 cm and another at 76 cm.

In July, fishes were much smaller and a balance of the sex ratio was observed. The modal fork length was 55 cm.

Size proportions in relation with the mesh size show an important selectivity of the nets. Of 84 fishes caught in June, 59 (70 p.cent) were in the 5 inch nets. The catching efficiency for both types of nets was therefor very similar as the commercial weight of the catch is distributed in the proportion of 51 p.cent in the 5 inch nets and 49 p.cent in the six inch ones.

Concerning the behaviour of the salmon in relation with the fishing gear, we found that in June, 92 p.cent of the fish was gilled in the upper part of the net, 8 p.cent in the middle and none in the lower part while in July, we had 57 p.cent, 36 p.cent and 7 p.cent respectively.

The age and length distribution which is summarized in Table I and Fig. 2 show that grilse accounted for 71.5 p.cent of the sample ; the remainder being 24 p.cent of Two sea year fish and 4.5 p.cent of previous spawners. The river age 3 was the most abundant in either of the two sea age classes (Fig. 3). The average smolt age was 3.32 years for the one sea year group, 3.10 for the two sea year and 3.25 years for the whole sample.

The examination of 41 stomachs showed that salmon was mainly feeding on capelin (Mallotus villosus) and partly on launce (Ammodytes sp.) or Euphausiids (Tabl. II). Thirty p.cent of the stomachs were infested by internal nematods.

Conclusion.

Results obtained after the 1975 experiment have permitted to give us a basis knowledge on the behaviour and biology of the Atlantic salmon. In 1976, the study will be persued, datas will be collected from new fishing sites and extended to the commercial catch.

Reference

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Tabl. I : Age-length key.

Fork length	age	1 SEA YEAR				Total	2 SEA YEARS				P.S.	Total
		2	3	4	5		2	3	4	Total		
47	:		1			1						1
48	:	1	1			2						2
49	:		3	2		5						5
50	:	2	6	8		16						16
51	:		10	5		15						15
52	:	1	6	7		14						14
53	:	1	6	3		10						10
54	:		8	4		12						12
55	:	1	5	4		10						10
56	:		1	1		2						2
57	:	1			1	2						2
58	:		2			2						2
59	:							1		1		1
60	:							1		1		1
61	:											
62	:											
63	:											
64	:		1			1						1
65	:			1		1						1
66	:											
67	:											
68	:											
69	:							1		1		1
70	:							1		1	2	3
71	:							1		1		1
72	:							3		3		3
73	:							3		3	1	4
74	:						1	1	2	4		4
75	:						1			1		1
76	:							3	3	6		6
77	:						1	1		2		2
78	:						1	2		3	2	5
79	:							2	1	3		3
80	:							1		1		1
81	:											
82	:											
83	:											
84	:										1	1
85	:											
Total	:	7	50	35	1	93	4	20	7	31	6	130
Av. Fork length:	:	52.1	52.5	52.4	57.0	52.5	76.0	73.4	74.9	74.1	75.5	59.1

Tabl. II : Weight proportion of the stomach contents.

	Mallotus villosus	Ammodytes sp.	Euphausiids	Fish remains
JUNE	77.2 %	16.9 %	0.2 %	5.7 %
JULY	70 %	10 %	5 %	15 %

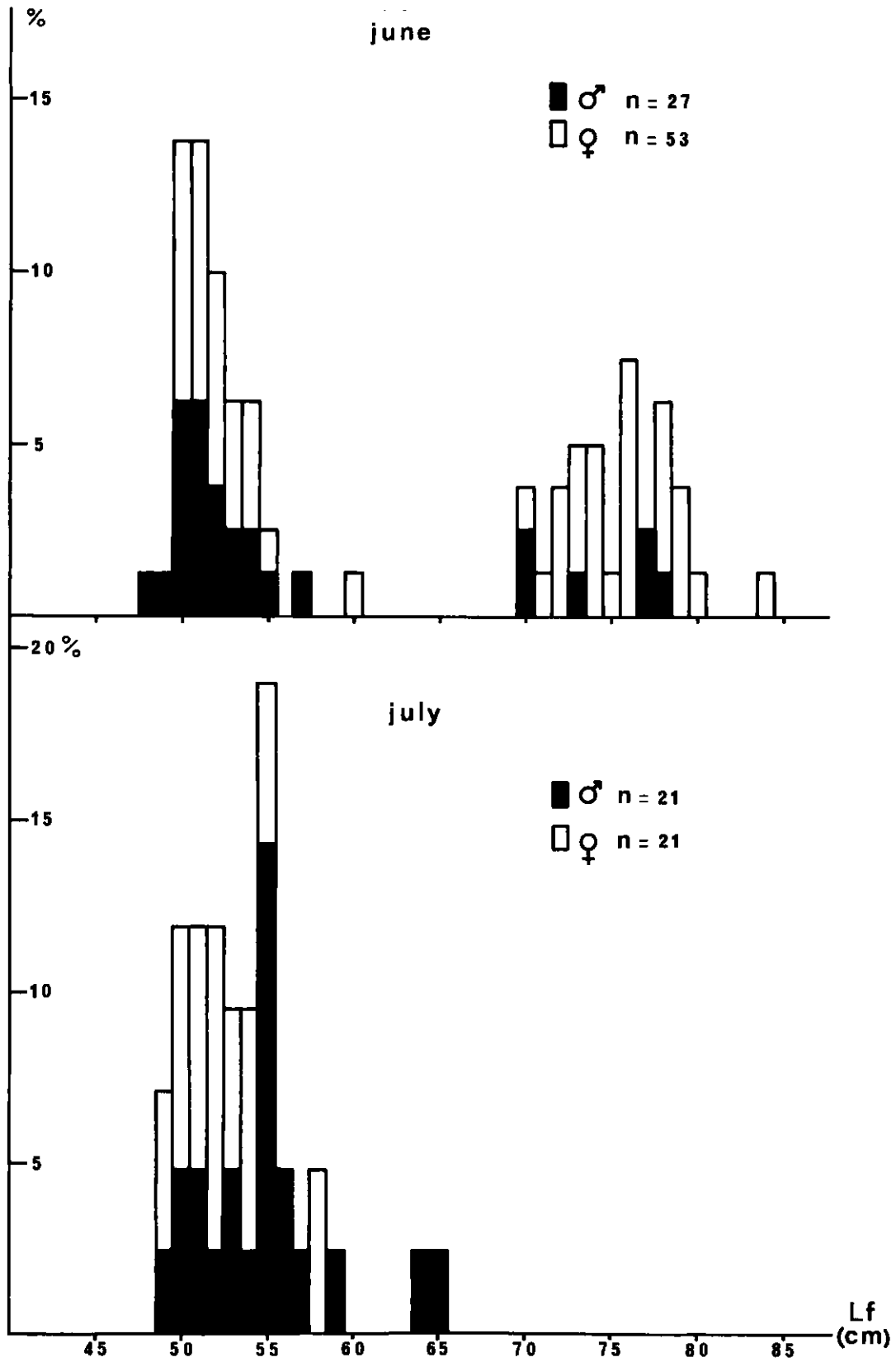


Fig. 1 : Length distribution of salmon by sex and by month.

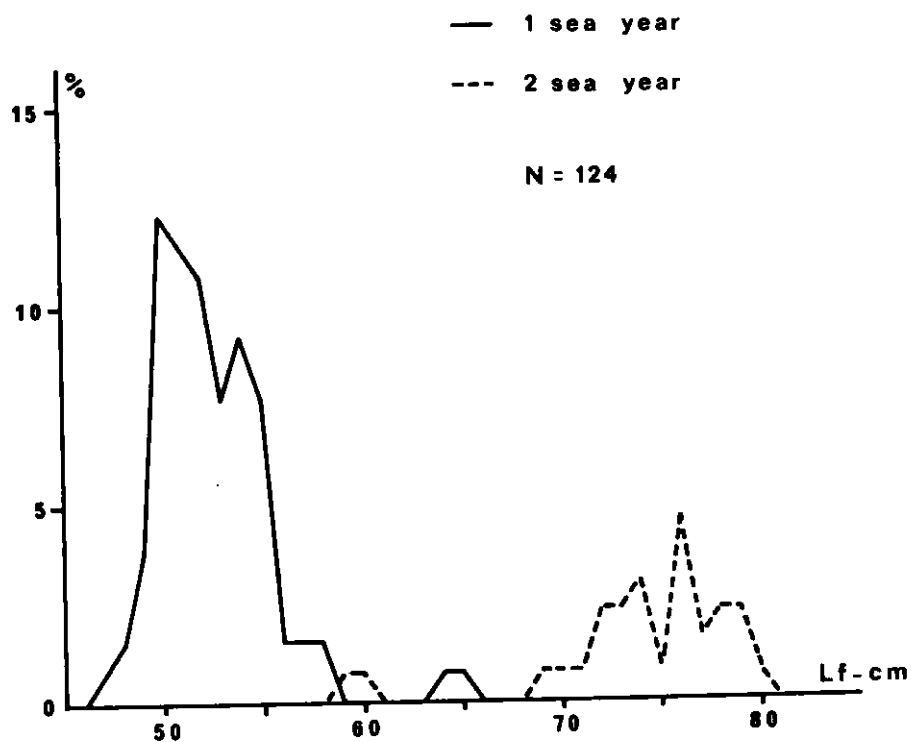


Fig. 2 : Length distribution of grilse and 2 sea year salmon.

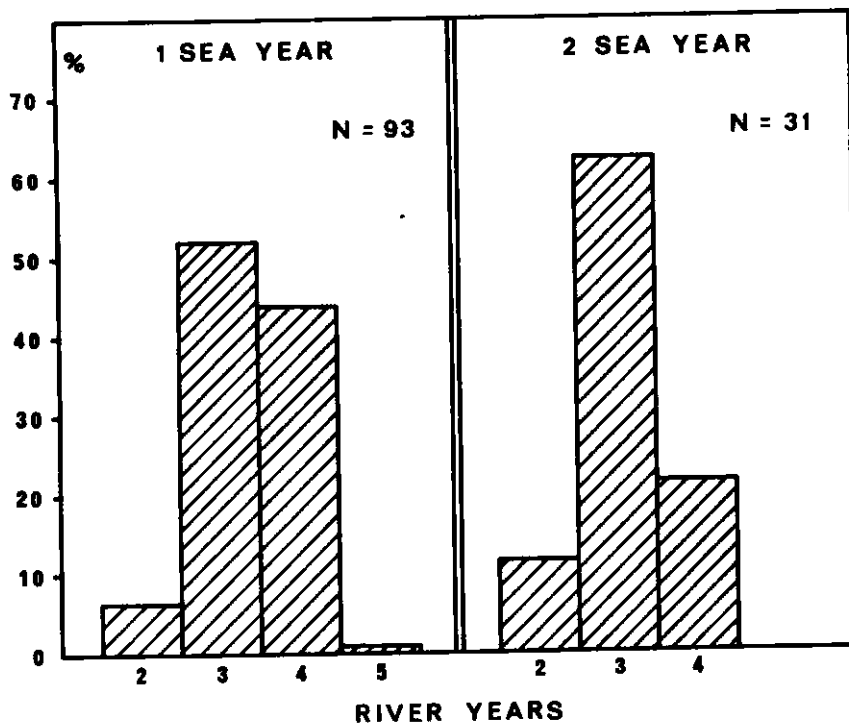


Fig. 3 : Percentage distribution of river ages at each sea age.