Northwest Atlantic Fisheries Organization

Serial No. N1791 NAFO SCR Doc. 90/69

SCIENTIFIC COUNCIL MEETING -JUNE 1990

Results of an American Plaice (*Hippoglossoides platessoides*) Otolith Exchange Between Canada and Spain

by

J. Zamarro*, and W. B. Brodie**

*Instituto de Investigaciones Marinas, Eduardo Cabello 6
Vigo, Pontevedra, Spain

**Dept. of Fisheries and Oceans, Science Branch, P.O. Box 5667
St. John's, Newfoundland, Canada A1C 5X1

INTRODUCTION

Exchanges of American plaice otoliths between Canada, Portugal and Spain have been conducted from 1987 to 1989. The objetive of this exchange is to reach a common criterium in the interpretation of the otolith year rings, and to compare the age compositions obtained by the different readers. The first exchange was conducted with otoliths from Division 3N, reaching a wide agreement betwen readers. In this paper we analyse the results obtained in the exchange of otoliths from Divisions 3M and 3L between Canada and Spain in 1989.

MATERIAL AND METHODS

The objetive of this otolith exchange is to get an idea about reader agreement and to prepare futures exchanges to achieve better agreement.

In 1989, there was an exchange of 97 otoliths caughtin in November Division 3L and 125 from July in 3M.

The otoliths were stored dry, and polished before being inmersed in a solution of 30% glycerine in ethanol to be read. The Canadian reading was made with reflected light an the Spanish one with transmitted polarized light. These differences are considered to be of little importance in relation to the differences obtained in the results.

The American plaice size composition from the EEC surveys

of July 1988 and 1989 in Division 3M and the size composition of the commercial catch in March and April 1989 were used to test the growth indicated by the Spanish readers in the 1986 year class.

RESULTS AND DISCUSSION

The comparison between Canadian and Spanish reading of otoliths from Divisions 3M and 3L are shown in Tables I and II respectively. The agreement between readers is relatively low, 27% and 56% respectively, in contrast with the previous exchange for Division 3N where th agreement was 80%.

In the otolith exchange from Division 3L, the distribution of differences was slightly shifted to the reading of more rings by the Spanish than the Canadian readers. The differences are not in the interpretation of the otolith edge, which is opaque in all cases for both readers. The cause of the low inter-reader agreement is, for the Spanish readers, the frequent duplication of the otoliths rings in this division, and the difficulty in to distinguishing the winter rings from the others. The criterium to differentiate these rings was not clear for the Spanish readers - an exchange of photographs could be a solution for a better comprehension, by the Spanish readers, of the criteria used by the Canadian readers.

In Division 3M the inter-readers agreement is lower than in 3L (27%) and the distribution of differences shows that the Spanish readers count fewer rings than the Canadians. The differences are not in the interpretation of edge, were the agreement between readers is complete. For the Spanish readers, the nucleus of the otolith is more important cause of the differences. The presence of two close, distinct rings in the nucleus was interpreted by the Spanish readers as being caused by the change from pelagic to demersal life (Dery 1988), and can explain most of one-year differences.

The American plaice growth rate obtained from the Spanish reading in 3M is faster than that obtained in 3LNO (Table III).

To check if this kind of growth is possible, we have followed the 1986 (Spanish readers) year class from July 1988 to July 1989, using the size and age composition from the 1988 and

1989 EEC surveys, and the Spanish commercial catch of March and April 1989.

The growth of this strong year class (1986) is shown in the displacement of its mode, from 17 cm in July 1988 to 20 cm in March-April 1989, and to 25 cm in July 1989. The mean size corresponding to the 1986 year class in the same samples is 16.7 for July 1988, 21cm for March-April 1989 and 24.2cm for July 1989. This growth of 7.5 cm in a year is consistent with a mean size of 24.2 cm for 3 year old individual in July.

To improve the agreement between readers of American plaice otoliths in Division 3M it is necesary to continue with the validity of the interpretation of the otolith nucleus. The exchange of photographs should help to clarify the criteria used to differenciate these rings.

LITERATURE CITED

DERY, L.M. 1988.

American plaice Hippoglossoides platessoides. In: Age determination methods for Northwest Atlantic species (Ed. J.Penttila and M.D.Dery). NOAA Techn cal Report NMFS,72:111-118

Table I. Comparison between Canadian and Spanish reading for Division 3M otoliths.

		SPAIN									
	Age	2	3	4	5	6	7	8	9	10	11	Total
	2											
	3	1										1
C	4	2	20									22
A	5	1	17	5	12							35
N	6			2	5	9						16
A	7				4	10	5		4			19
D	8				1	1	5	4				11
A	9						3	6	2	1		12
	10						2	2		1		
	11									1		
Total		4	37	7	20	20	15	12	2	3		
Difference			-3		-2		-1	0	+1	+2		
Percentage			3.5		25		43	27	0.9			

Table II. Comparison of readings by Canada and Spain of otoliths taken in Division 3L.

	SPAIN													
Age	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
2														
3	1	2	1											4
4		1	5		1									7
5			4	7	1									12
6					5	4	1							10
7						6	8	2						16
8						1	10	4						15
9						1	2	8	5					16
10								1	3					4
11							1	1		3				5
12										1	2			3
13												1		1
14													1	1
Total	1	3	10	7	7	12	22	16	8	4	2	1	1	

Difference	-3	-2	-1	0	+1	+2
Percentage	1	2.1	11.7	56.4	24.5	4.3

Table III Mean size by age obtained in 3M and 3LNO Divisions

AGE	3M	3LNO
2	19.9	
3	24.2	
4	30.6	20.9
5	35.6	27
6	38.6	33
7	42.1	34.6
8	44.4	36.2
9	47.9	38.4
10	50.5	40.1
11	57	45.7
12		49.6
13		53.6
14		57.9
15		62.6
16		65.8
17		70.4

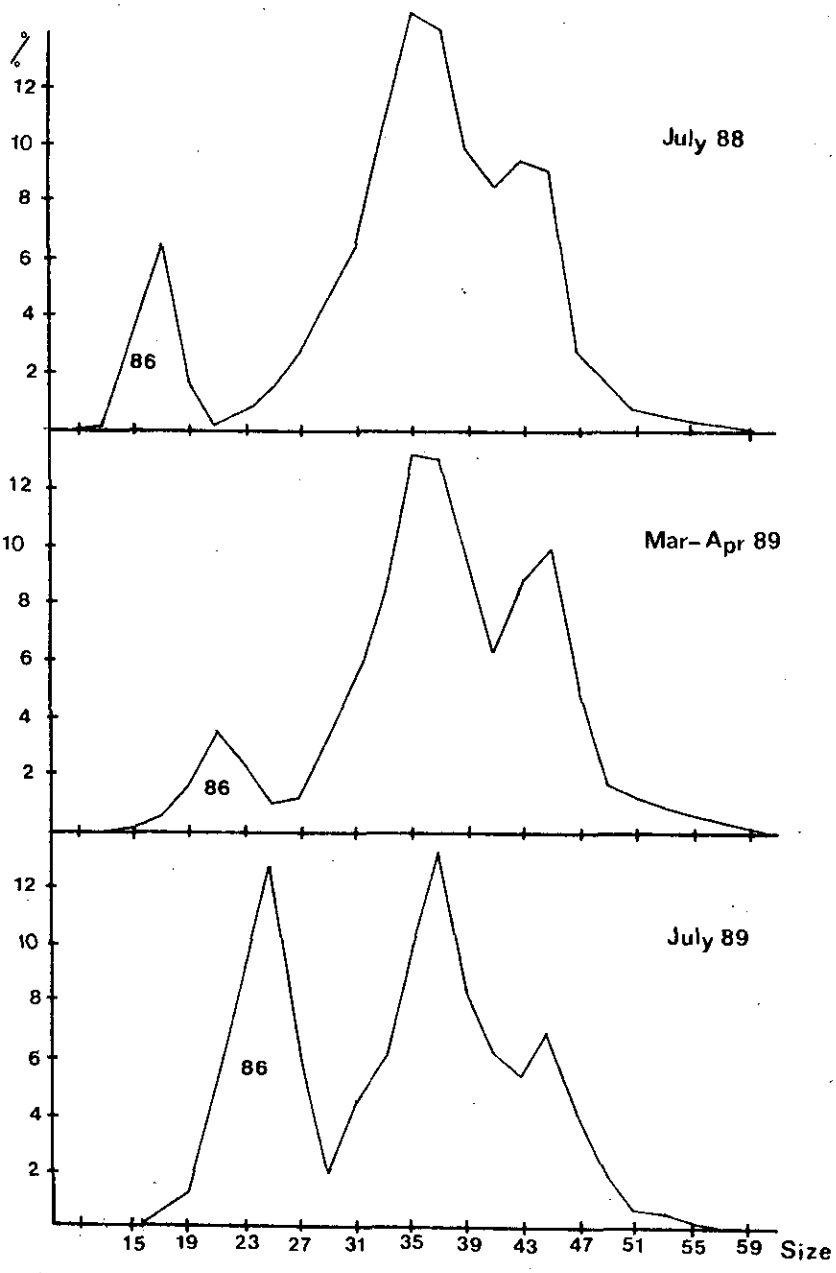

Figure 1. Size composition from the EEC survey of July 1988, 1989 and Spanish commercial catch of March-April 1989, showing the growth of the 1986 year class.