Otolith interpretation in senegalese sole, *Solea senegalensis*, and growth parameters.

Ramos, S. [1], F. Ribeiro [1] and P. Santos [1, 2]

[1]CIIMAR Centro Interdisciplinar de Investigação do Marinha e Ambiental. R. Campo Alegre, 826, 4150-180, Porto, Portugal. Tel 351-226080470-fax 226060423

[2]Faculdade de Ciências da Universidade do Porto, Praça Gomes Teixeira 4099-002, Porto, Portugal. Tel 351-223401515, fax 351 - 223401511

INTRODUCTION

Flatfish are commercially important in Portuguese fisheries. The management of the stocks depends on adequate research related to the biology of the exploited species. This work deals with the otolith interpretation of *Solea senegalensis* and presents the growth parameters obtained from the otolith interpretation.

Fig. 1 - ***sagitta* otoliths of *S. senegalensis***

MATERIAL AND METHODS

Age was interpreted in 896 individuals of *S. senegalensis*, collected between June 1998 and August 1999, from commercial fisheries in the North and South of Portugal (ICES IXa). All *sagitta* otoliths were read twice and, in some cases, three times by each reader. Otolith interpretation for age was based in the observation of digital images collected with a image grabber and processing unit Leica Qwin500, with the whole otolith immersed in ethilic alcohol 95% and dark background The Eltink (1994) method was used to analyse otolith interpretation for age (software version 2000). The Saila's iterative method (FISHPARM) was used with the age-length key to determine the von Bertalanffy growth parameters, both sex together and separated by area and by sex.

RESULTS AND DISCUSSION

The results show:

➔each reader attained more than 50% agreement between it's own first and second readings

➔the complexity of the otolith ring pattern was confusing and partially accounts for the mismatching of the age interpretation between readers

➔the analysis of the deviations obtained in these readings were performed using Elting's method and revealed no more than 58% agreement with the modal age

➔the evolution of the otolith's edge along the sampling period, opaque or translucent, is quite difficult to interpret, as the tridimentional morphology of the otolith of this species produces a thin border, which appears translucent most of the time

➔results on edge interpretation were confusing since readers presented different results for the same set of otoliths; we can notice the presence of opaque edge mainly in the 2nd and 3rd trimesters in both geographic areas

➔the length at age didn't reveal significative differences by sex (F=0.243; p=0.629 for North and F=1.197; p=0.274 for South).

➔the ANOVA test also showed significative differences regarding the area (F=37.216; p=0.0000), higher values appearing in the South

➔the values for growt parameters are, both sex together, L_∞=45.25 cm; K=0.324; to=-0.338, females 37.41; 0.740; 0.684 and males 71.12; 0.108; -2.006); the results obtained for fishes collected in the South were inconclusive, so only the growth parameters for fishes collected in the North were obtained; compared to other studies, these results are similar for females and very different for males; the ageing difficulties and the lack of younger individuals in the sample are responsible for the biased results and indicate the need of further studies.

Origin of Readers	Trimesters	% Opaque	% Translucent
Porto	1st	36 (N=62)	64 (N= 108)
	2nd	74 (N= 197)	26 (N= 71)
	3rd	58 (N= 63)	42 (N= 46)
	4th	35 (N= 73)	65 (N= 136)
Faro	1st	20 (N= 29)	80 (N= 118)
	2nd	33 (N= 89)	67 (N= 177)
	3rd	28 (N= 30)	72 (N= 77)
	4th	27 (N= 55)	73 (N= 152)

Table 1 - Percentage of opaque and translucent border, read in Faro and in Porto, for the otoliths of *S.senegalensis* collected in Faro area.

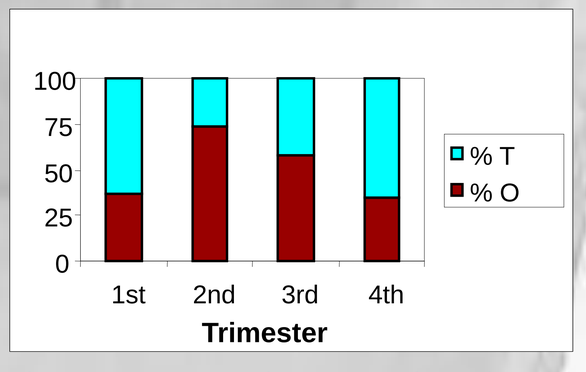

Fig. 2 - Percentage of opaque and translucent border, read in Porto, for the otoliths of *S.senegalensis* collected in Faro area.

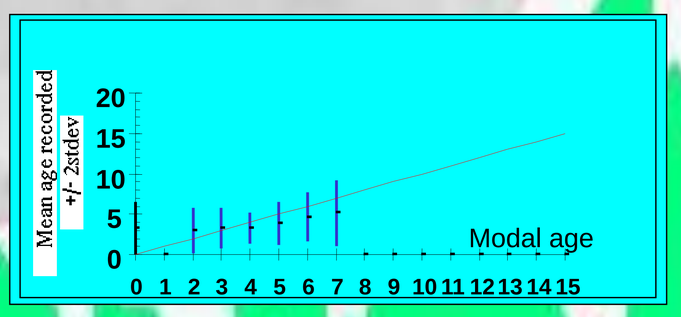

Fig. 3 - Results of the Eltink (1996) method on the otolith reading of *S. senegalensis* from Porto, all readers combined.

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