

OBJETIVE 4: BIOLOGICAL PARAMETERS

4.D.- GROWTH

Objective: the elaboration of size-age keys for the transformation of the size distributions into age distributions. The initiation of a methodology for the study of growth by means of analyzing the hard parts.

Methodology: the acquirement the first spinal radius of the first dorsal fin of a determined number of red tuna samples of all sizes. The acquirement of the LF size and live weight for each sample. The acquirement of sections of the spinal radii by using an ISOMET slow cutter. The reading of the age using a profile projector. Course on methodology.

Results:

MOROCCO (INRH)

Objective 4.1d

For the first two years of the Project, sampling the first ray from the first dorsal fin was impossible at all because bluefin tuna catch is directly transhiped at sea, to the Japanese market. Being conscious of the importance of growth studies for the management of highly migratory stocks, further contact with the people in charge of the Moroccan traps is scheduled for year 2001 in order to get the aforementioned samples.

SPAIN (IEO)

Objective 4.2d

In continuation with the activities planned for the Project, the collection of spinal radii of the red tuna which had been initiated the previous year was completed. In total, the first spinal radius of the first dorsal fin from 175 red tuna samples caught by tuna traps was obtained. In 1999, at the Oceanographic Centre of Malaga IEO, a course was developed for the reading of age from spinal radii sections. This methodology was applied to the previously mentioned sample collection in such a way that once the cutting has been done and the sections prepared, the next procedure was the age reading with the purpose of revising / developing a size/age key according to sex for the red tuna catches caught by tuna traps and thereby permitting the acquirement of the demographic structure of the mentioned catches and the exploitation rates by means of transforming the size distributions into age distributions. A study has been planned to compare the rest of the obtained samples from other participating countries as well as to develop the size-age keys for the tuna trap fisheries whose results will be presented in a Scientific Document at the SCRS of ICCAT.

TUNISIA (INSTM)

Objective 4.3d

With the aim of determining the age of the fish caught in Tunisian waters, we have decided to extract, in the case of bluefin tuna, two different types of osseous structures from the catch of the trap-net. These structures are, the first spine of the first dorsal fin and the caudal vertebrae. In the case of the swordfish, only the first spine of the anal fin.

The study of these structures, particularly that of the transversal layers of spines, was based upon the theoretical and practical training course on this respect carried out at IEO Fuengirola (Spain) in 1998. **Figure 4.1**

Results – Bluefin tuna
- Vertebrae analysis

Relation entre la longueur mesurée sur la vertèbre et la taille à la fourche du poisson

Structure	N	R ²	Equations
36ème, Diam. Frontal	131	0,995	Di.fr = 0,172816*L ₅ ^{0,92339}
36ème.Diam. transversal	131	0,996	Di.tr = 0,097375*L ₅ ^{1,03861}
39ème. largeur	131	0,997	la.vc = 0,36614*L ₅ ^{1,034}
39ème . Masse	131	0,998	W = 1,6271*10 ⁻⁶ *L ₅ ^{3,10633}

- Spines analysis

Relation entre la longueur mesurée sur la 1EPND et la taille à la fourche du poisson (L₅)

Structure	N	R ²	Equations
Taille , (Lo)	131	0,996	Lo.ép= 1,027115*L ₅ ^{1,00287}
Diamètre base (Diam.bas.)	169	0,996	la.ép = 0,05621*L ₅ ^{1,0247}

The keys "age length" and "age mass" both for the bluefin tuna and for the swordfish are in preparation. The final results will be first of all discussed and approved by the COPEMED group before their definite version is presented.

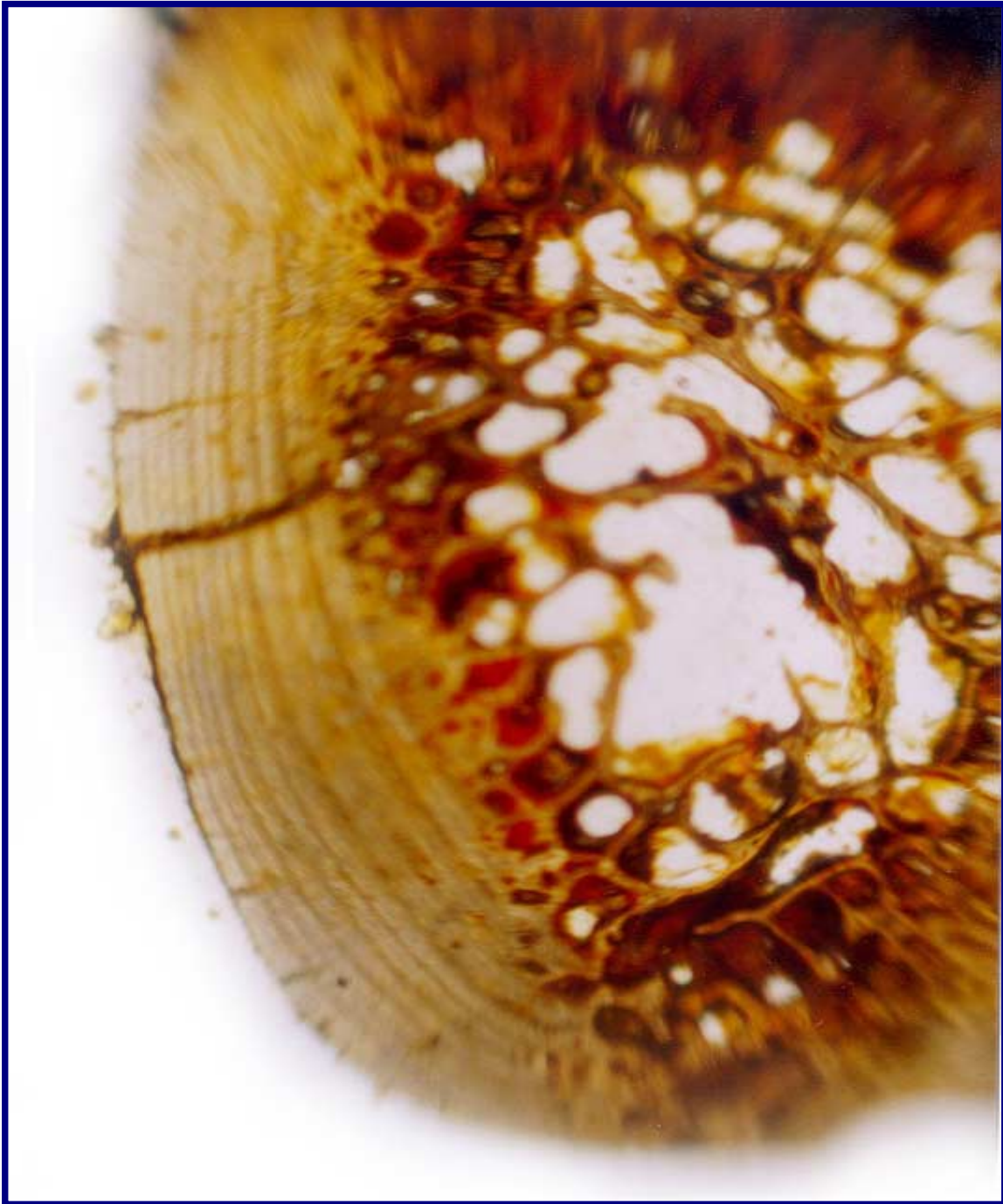


Fig. 4.1 - Transversal cut of the first spine of an old bluefin tuna

MALTA (NAC)

Objectif 4.4d

Growth Studies

The first dorsal fin of each tagged tuna landed in the fish market was spread and the membrane between the two first dorsal rays was cut. Then the first dorsal ray was bent forward until the ligaments were broken. The ray was then turned round to the right and to the left alternatively until it came out. Each ray was kept in an envelope labeled with the tag number. The spiny rays were kept in a cool place until laboratory analysis.

120 spines were collected by the two observers onboard. Samples were collected from each size range but since no ISOMET apparatus is available, they could not be studied. At the moment they are being kept in Malta until it is decided where the sectioning will be carried out. Finally a key can be presented for BFT caught from around the Maltese Islands.

LIBYA (MBRC)

Objective 4.5d

In 1999, the first spinal radius of the first dorsal fin was obtained for a total of 350 red tuna samples caught by tuna traps. In addition to the radius, the LF size, weight in kg and sex were obtained for each sample. A course on methodology was given on the study of growth by preparing and processing the biological samples obtained (radis), the acquirement of sections through the use of the ISOMET cutter and the age reading. This course was organized by the Oceanographic Centre of Malaga IEO. It has been planned that in the year 2000 the collection of the radii will be completed and the size-age key developed in order to transform size distributions into age distributions for the catches of red tuna by tuna traps in Libya.