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Orientation: Sustainable Use of Marine Resources

Specialization Area: Management and Use of Resources

Research Area: 2.1 Research into resources based on knowledge of ecosystems



**PhD project: Study of the age and growth of black hake (*M. polly* and *M. senegalensis*) from the macro and microstructure of the otoliths.**

**Supervisors:** Dr. Carmen Piñeiro Álvarez (Spanish Oceanographic Institute)  
Dr. Alberto García García (Spanish Oceanographic Institute)

**Summary:** The objective of this study is to provide a series of basic parameters for the management of the stock of toothfish from the point of view of growth and advance the global knowledge of the biology of these species. The results obtained will have a direct application in the management of the fishery and will allow the development of evaluation models different from conventional methods. From the correct calculation of the parameters of growth and age, estimated in this work, the accuracy of data as important as the fishing mortality by age class, the age of first maturity or the longevity of these species will depend.



For many years a slow growth model has been used to assign ages in *M. merluccius*, based on the analysis of the otolith macrostructure. Recent studies based on tagging programs, otolith microstructure and captive experiments have shown that the European hake growth model is 2 times faster than the one traditionally considered. This has had a key importance in the knowledge of the biology of the genus *Merluccius* but there are still important gaps to solve related to this aspect as it is to know the biological significance of the growth rings formed in the otoliths. The comparative study of other species of the same genus is essential to help better understand the signals that appear in otoliths in relation to the factors that govern their formation. This study will improve the knowledge of the growth when making a comparative analysis of these two species of toothfish. The combined use of the macro and microstructure of the otolith section will facilitate the comparative analysis of growth on an annual and daily scale, thus enabling a better understanding of the relationships between the deposited rings and the environmental and physiological events that have occurred.