

9th MEETING OF THE SCIENTIFIC COMMITTEE

Held virtually, 27 September to 2 October 2021

SC9-JM07

**Updating information associated with age and growth of jack mackerel, in the
context of the SPRFMO.**

Chile

Late working paper

Updating information associated with age and growth of jack mackerel, in the context of the SPRFMO.

By Francisco Cerna.

Instituto de Fomento Pesquero (Fisheries Development Institute), Valparaíso, Chile.

September, 2021

Abstract

This document resumes the new project that Chile starts to improve accuracy of age and precision of jack mackerel otolith reading among SPRFMO scientists. The aim is to homologate methods and ageing criteria by means of an age protocol based on an otolith reference collection.

Introduction

The stock assessment model used for Jack Mackerel in the South Pacific Regional Fisheries Management Organization (SPRFMO) request age-structured fishery-dependent and age-structured fishery-independent time series, that are provided by different countries.

Jack Mackerel working group of the Scientific Committee of the SPRFMO has critically examined the data and information used in the stock assessment model and have important discrepancies in the determination of the age.

In this sense, it is necessary, on the one hand, to verify the absolute age of fish older than 2 years, to have a greater accuracy of the age estimation criteria, but also by other hand, to ensure a high precision of the age estimation of SPRFMO member laboratories that perform otolith readings and provide age structured data.

Main Objective

To elaborate an ageing protocol of jack mackerel (*Trachurus murphy*) otoliths from reference collections and graphic catalogs, which contributes to the homologation of the age determination process and parameters estimation for stock assessment, in the context of the SPRFMO.

Specific Objectives

1. To elaborate a reference collection of otoliths based on reproducibility percentages among experienced readers from SPRFMO countries.
2. To elaborate a graphic catalog by means of a reference collection of otoliths validated by readers and a manual that contains protocols and criteria for otolith reading.
3. To reconstruct historical length-age keys, catch matrices, mean weights according to the new ageing criteria.
4. To estimate growth parameters, natural mortality and mean age-at-maturity (A_{50}).
5. To reduce uncertainty of age validation of adults (age 2+) using otoliths microstructure analysis methods with electronic microscopy.

Method

The success of specific objectives 1 and 2 requires that countries participate by collaborating with otoliths samples to compile a reference collection and by participating in meetings, age precision exercise and international workshop.

IFOP has selected 500 otoliths for a reference collection of both fleets (Fleet 1 and 2), however requires otolith samples from others zones to represent the whole variability of otolith of jack mackerel throughout its distribution.

The main objective this project is elaborate the jack mackerel's age determination protocol for and otolith images catalog that would describe the ageing criteria. The success of this objective, need that the countries of SPRFMO collaborate in activities because the result is relevant that the age data used in the stock assessment shall be have high quality.

The challenge is to do a new protocol that should be used by all countries that read otoliths to elaborate age-length keys, matrices catch-at-age and abundance-at-age from hydroacoustic surveys.

Schedule

The project began in September 2021 and ends in June 2022. For this reason, we have defined five key moments in which the member countries could be collaborate or participate.

Date	Activity	Expected result
September 30 th 2021	To identify focal point scientists by country (Peru, Ecuador, Russia, Polonia, China).	Coordinated otolith interchange.
November 15 th 2021	To receive and file otoliths from different countries in a reference collection.	Reference collection that covers a wide jack mackerel distribution
January 2022, date by define	Meeting for define reading otolith criteria based on age validation results	To define ageing criteria before doing precision exercises
March 1 to 31 th , 2022	Reproducibility age exercises between	Precision of age estimations

	readers. Using otoliths images	between readers based on images
May 2022, date by define	International Workshop. Reproducibility age exercises between readers. To elaborate age determination protocol	Precision of age estimations by readers based on real otolith readings. Age determination protocol finished.