International Consultations on the Establishment of the
South Pacific Regional Fisheries Management Organisation

PROGRESS REPORT OF FULL RESEARCH PROPOSAL

"Population structure of the Chilean jack mackerel, *Trachurus murphyi*, in the South Pacific Ocean "

Guayaquil, Ecuador.
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Population structure of the Chilean jack mackerel, *Trachurus murphyi*, in the South Pacific Ocean.

Background

The Science Working Group (SWG) of the RFMO agreed during the meeting held in Hobart, Tasmania, in the 2nd International Meeting, that the uncertainty in the stock structure of *Trachurus murphyi* was a key question to be addressed for future fisheries management. Results by different authors on this matter are summarized in the jack mackerel species profile.

An understanding of the biological units of the jack mackerel is needed if yields are to be effectively estimated for management purposes. In order to reduce the risk of localized depletion if, as assumed multiple stocks due exist, it is necessary to manage *T. murphyi* as a number of discrete stocks. This project might help in determining the nature of those management areas and address key information gaps identified for this species.

It was also indicated that the proposal should contain a wide-ranging study with samples from throughout the range of the species (see Figure 1) and that a multiple technique approach was needed to resolve the stock structure question of this species with an acceptable degree of certainty.

The overall objective of the research is **"to determine the stock structure of *Trachurus murphyi* to inform future fisheries management".**

This document contains a brief progress report of the research full proposal that will be discussed during the Stock Assessment WS to be held in Chile next June.

Present status

A draft of the full proposal with a detailed description of the multi-methodological approach has been developed but is still under review by Alexander Glubokov and Rodolfo Serra. A copy was send also to Sandy Morison. The review is planned to be finished during the SWG meeting in Guayaquil.

The techniques considered are: body and otoliths morphometry, genetics tags (mtDNA, msDNA), parasites, microchemistry of otoliths and life history patterns. Some of these techniques have been applied already to the jack mackerel to investigate the population structure but independently from each other. Exceptions are otolith morphometry and microchemistry that have not been applied already.

The area covered by the study and potential sampling locations are shown in figure 1. The major challenge is to get samples from 100º W to the west.

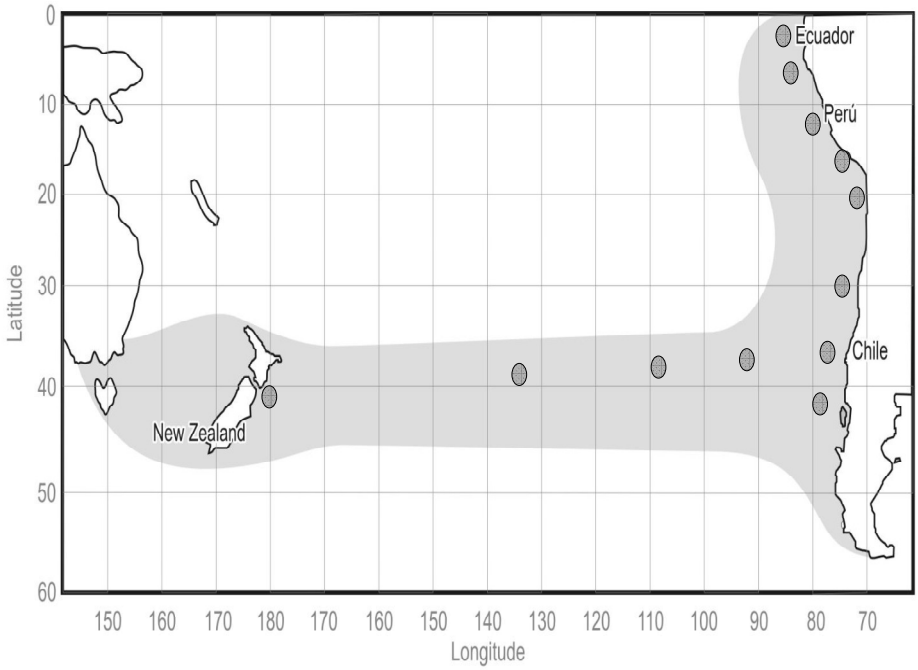

Figure 1. Distribution of the jack mackerel (*Trachurus murphyi*) in the South Pacific Ocean and possible sampling locations.

The cost of the study is still waiting to be estimated. The idea is to have the full proposal finished and distributed before the Stock Assessment WS so it can be reviewed by the interested parties before it for an efficient discussion and decision process during the WS.

Some main identified cost items are:

- jack mackerel samples and particularly those taken beyond 90º W that implies the use of large vessels capable to fish in those areas; the samples along coastal waters and areas in the high seas fished by coastal countries and distant waters flags vessels should have no cost
- the simultaneous processing of the samples so morphometric body data, tissue samples, parasites and otoliths are taken from the same fish what requires the operation of specific personnel in specific places
- laboratory inputs (material, reactive, etc.)
- otoliths laser ablation and use of an Inductively Coupled Plasma Mass Spectrometer to measure minor and trace element concentrations in the otolith
- sample transport, coordination work shops, science work shops and meetings

In relation to man power, specialist and technicians needs to be identified with the time they would spend in the study (specific samples processing (tissue, parasites, etc), data processing, analysis, integration of results). A key question is how to address this aspect between the different participating countries. Ideas on this point will be asked during the 5th International Meeting to facilitate the further development of the proposal.

The total cost of the study is function of the number of samples collected by sampling location taken into account not only the geographical variability but also the temporal. Because of this an intra-year sampling program needs to be considered but the final decision is largely depending on the available funding.

RSB/rsb.