

# 1<sup>st</sup> Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific Committee

21-14 March 2015, Esplanade Hotel, Fremantle

SC-01-INFO-21

## The 2014 Orange Roughy Stock Assessments

*Relates to agenda item: 8*

Working paper  info paper

### Delegation of Cook Islands

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#### Abstract

In 2014, four New Zealand orange roughy stocks were assessed using Age-structured, single-sex, and single-area models. Age frequency data were obtained for all stocks so that recruitment patterns could be estimated within the models. This was essential because it avoided the assumption of deterministic recruitment (all year class strengths equal to 1) which had previously undermined orange roughy modelling efforts. A high threshold was placed on data quality. This excluded, from the stock assessment models, much data that had previously been used. In particular, CPUE time series were not used in the models. In the past, CPUE indices were used as abundance indices but this is not appropriate for orange roughy fisheries which generally focus on aggregated fish in a small area. The models focused on using recent acoustic survey data on orange roughy spawning plumes to provide information on current biomass. The acoustic survey estimates were used as relative biomass indices with an informed prior on the proportionality constant ( $q$ ). The development of the assessments followed the usual Bayesian estimation procedure: experimentation and development of a base model using the mode of the posterior distribution (MPD runs), followed by a subset of runs using the full posterior distribution obtained by Markov chain Monte Carlo simulation (MCMC runs). These assessments were independently reviewed when 3 of these stocks were taken through the MSC Certification process.

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