



## 9<sup>TH</sup> MEETING OF THE SPRFMO COMMISSION

*Held virtually, 26 January to 05 February 2021 (NZDT)*

### COMM 9 – Report ANNEX 4a 2021 Scientific Committee Multi-Annual Plan (COMM 9 – Doc 06\_rev3)

#### 1. Introduction

Paragraph 282 of the 8th Scientific Committee Meeting Report notes that the SC requested that the Secretariat coordinate a small intersessional working group to develop the work plan prior to COMM9. A group consisting of the Chair of the Scientific Committee and the Chairs of the SC Working Groups discussed the work plan via email, incorporating new items identified at SC8 and updating timelines affected by the COVID-19 pandemic. This report summarizes results from those activities.

The following tables are meant to track priority tasks with timelines. The year noted is the Scientific Committee meeting at which the work is expected to be reported back. In some cases the work is expected to be repeated over a number of years, and this is indicated with a plus sign. The column labelled “Coordinator” identifies the Member(s) (or in some cases the Secretariat or Chair) who has specifically been assigned to ensure that progress towards the task is made intersessionally. In some cases no Member has been specifically identified and this is indicated with a blank. The funding required is identified, and funding sources (such as the SC Scientific Support Fund or a Member voluntary contribution) if this is known. A notation of “In-kind” signifies that the work will be conducted by Members and that no additional funding is expected to be required.

Based on input from COMM9, the recommendations to the SC for their multi-annual work plan is as follows:

#### 2. Jack Mackerel Working Group

Task	Subtask	Timeline	Coordinator	Funding
Jack mackerel assessment data	Review available input data JM assessment	2021	US/EU	In-kind
	Develop quality control diagnostics of the catch input data to the assessment	2021	EU	In-kind
	Evaluate the impact on age-length keys due to any revisions in age determinations	2021-22		In-kind
	Update and compare standardizations of commercial tuning indices among different fleets	2021		In-kind
	Review industry data availability and usability (using self-sampling biological data and acoustic data from fishing vessels in the JM assessment)	2021		In-kind
	Development of a programme for an exchange of otolith samples and a meeting to allow analysts to compare and test methods in order to achieve international cross validation of Jack mackerel ageing methods	2021	Chile	In-kind
	A Jack mackerel data workshop, to address issues including revised age determinations and CPUE indices	2021		NZ\$35k (SC)
Jack mackerel assessment	SC and other funds to support experts	2021+	SC Chair/ Secretariat	NZ\$10k (SC)
	An evaluation of alternative stock structure hypotheses	2021+		In-kind



Task	Subtask	Timeline	Coordinator	Funding
	Provide TAC advice according to Commission request (“adjusted Annex K”)	2021		In-kind
	Review biological reference points (BRPs), develop and carry out MSE evaluation to design alternative management procedures (see COMM8-Report Annex 8b) (this to include carryover, accumulating quota over 2 years, and one/two stock hypotheses, paragraphs 80, 102,118 COMM8-Report)	2021	EU	NZ\$167k (EU)
	MSE objectives workshop	2021-2022	EU	NZ\$50k(EU)
	A Jack mackerel stock assessment benchmark workshop to cover topics such as a review of the single and two-stock hypothesis implementations of the JJM assessment model <sup>1</sup>	2021-2022	EU	NZ\$42K (EU)
Estimation of growth	Analyse growth estimation in light of spatial- temporal changes using a variety of techniques such as daily increment, carbon dating, tagging	2021	Chile	In-kind
	Update growth estimation (including explanation of implications and methodology, Paragraph 15 COMM8 report)	2021	Chile	In-kind
Predict recruitment under climatic drivers	Investigate SPRFMO specific drivers of recruitment such as El Niño to improve productivity prediction	2021+		In-kind
Jack mackerel connectivity	Use modelling and observation data to predict connectivity and seasonal to decadal variability therein	2021+		In-kind

### 3. Deepwater Working Group

Task	Subtask	Timeline	Coord.	Funding
Orange roughy assessment	Louisville Ridge stock(s): <ul style="list-style-type: none"> <li>Explore alternative stock assessment models</li> <li>Estimate stock status</li> <li>Provide advice on sustainable catch levels</li> </ul>	2022	NZ	In-kind
Orange roughy assessment data	Ageing of existing and new orange roughy samples	2021-2022	NZ	In-kind
	Coordinate and design acoustic surveys for relevant stocks (intersessional consideration)	2021-2022	NZ	In-kind
Deep water stock structure	Review the list for deepwater stock structure analyses based on assessment for non-orange roughy stocks	2025		In-kind
	Use modelling and observation data to predict connectivity: Using genetic, microchemistry, morphometric, parasite prevalence and tagging experiments	2021		NZ\$23.6k (SC)
	Develop workplan to drive stock structure delineation studies for orange roughy and alfonsino and other key target species	2021+		In-kind
Other stock assessments, & ecological risk assessment	Review the risk assessment of teleost and elasmobranch species considering new available information and methods	2024-2025		In-kind
	Develop a tier-based assessment framework for all DW stocks and recommend relevant reference points and/or management rules for these stocks	2021+		In-kind

<sup>1</sup> Note that in the event that COVID19 travel restrictions remain prohibitive, a full “benchmark assessment” will be postponed until 2022. However, a virtual workshop **will be needed** to begin to inform the SC on the likely impacts of the revised historical data. This is envisaged to occur sometime within the May-August 2021 timeframe.



Task	Subtask	Timeline	Coord.	Funding
VME Encounters and benthic bycatch	Finalise list of VME taxa (incorporating FAO criteria) and design approach for benthic bycatch review	2021		In-kind
	Annually collect and review VME catch and other benthic sampling data	2021 +		In-kind
	An assessment of how VME taxa ID guides could be developed	2021		SC funds?
	Compile information on VME groups to contribute to upgrades to the multi-taxonomic level list of VME indicator taxa	2021+		In-kind
	Investigate the relationship between benthic bycatch from fishing vessels (including encounter events) and the habitat suitability models	2022+		In-kind
	Investigate the relationship of benthic bycatch to estimates of abundance of VME taxa	2022+		In-kind
	Development of a process to review all recent and historical benthic bycatch data to determine the ongoing effectiveness of the spatial management measures, and an annual update of that analysis using the most recent bycatch data.	2021+		In-kind
	Develop advice on appropriate move-on distances for potential VME encounters[, based on the size and spatial clustering of VME indicator taxa distributions	2021		
CMM 03 request regarding Encounters with VMEs.	<p>Review all reported VME encounters and:</p> <ul style="list-style-type: none"> <li>• provide advice on whether each encounter is consistent with the models applied to prevent SAIs on VMEs</li> <li>• determine whether any encounters were unexpected based on the relevant VME habitat suitability models,</li> <li>• provide advice on appropriate management actions (including but not limited to any proposed by the relevant Member or CNCP).</li> </ul> <p>This review should include consideration of:</p> <ul style="list-style-type: none"> <li>• analyses provided by a Member or CNCP;</li> <li>• historical fishing events within 5nm of the encounter, in particular, any previous encounters, and all information on benthic bycatch;</li> <li>• model predictions for all VME indicator taxa;</li> <li>• details of the relevant fishing activity, including the bioregion; and any other relevant information</li> </ul>	2021+		In-kind
CMM 03 request regarding ongoing appropriateness	Review all available data and provide advice on the ongoing appropriateness of the management measures to ensure the CMM continues to achieve its objective and the objectives of the Convention	2021+		In-kind
Bottom Fishery Impact Assessment	Consider any possible changes to BFIAS adopted in 2019 in the light of the cumulative BFIA done in 2020.	2021		In-kind
	Develop protection level options for VME indicator taxa at ecologically-meaningful spatial scales, using different approaches. Scenarios should encompass protection levels 70%, 80%, 90%, 95% for the modelled VME indicator taxa using temporally static and temporally	2021+		



Task	Subtask	Timeline	Coord.	Funding
	dynamic assessment methods. The Scientific Committee should also explicitly account for uncertainties in current model predictions, the relative availability of VME indicator taxa in an area, and information from other RFMOs or guidance documents (if any) when formulating its recommendations to the Commission. Evaluations should be undertaken at spatial scales comparable to the Fisheries Management Areas described in SC8-DW07_rev1.			
	Develop abundance models for VME taxa	2021+		
	Work to reduce uncertainties in risk assessments for benthic habitats and VMEs	2021+		In-kind
CMM 03 request regarding Marine mammals, seabirds, reptiles and other species of concern.	The Scientific Committee shall provide advice biennially to the Commission on: <ul style="list-style-type: none"> <li>• Direct and indirect interactions between bottom fishing and marine mammals, seabirds, reptiles and other species of concern;</li> <li>• Any recommended spatial or temporal closures or spatially/temporally limited gear prohibitions for any identified hotspots of these species; and</li> <li>• Any recommended bycatch limits and/or measures for an encounter protocol for any of these species.</li> </ul>	2022,  2024  2026		In-kind
	Develop a framework for providing precautionary advice on captures of marine mammals, seabirds, reptiles and other species of concern	2021		In kind

#### 4. Squid Working Group

Task	Subtask	Timeline	Coordinator	Funding
Squid workshop	Squid Workshop including potential assessment techniques and appropriate measures of fishing effort (prior to SC9)	2021-22	SQWG Chair/ Secretariat	NZ\$10K (SC)
Squid assessment and CMM development	Develop a plan for more detailed within-season fishery monitoring	2021	SQ WG	In-kind
	Develop and present alternative assessment approaches	2022+	SQ WG	In-kind
	Design and evaluate MSE and harvest control rules	2023+	SQ WG	In-kind
Standardise biological sampling	Identify where protocols differ e.g. type of sampling, areas and timing of sampling, ageing	2021	Peru, Chile	In kind
	Reaching an updated agreement on consistent approaches to genetic analyses for Jumbo flying squid	2021		In kind
Observer Coverage	Review minimum observer coverage (including in relation to different fleet segments, CMM18-2020)	2023		In kind
Squid assessment data	Sample biological information year-round in its entire distribution area	2021		In-kind
	Record and analyse diet data	2021		In-kind
	Review on the acoustic surveys for Squid biomass estimation (pros, cons, challenges)	2021		In-kind
	Evaluate stock structure and assessment approaches applicable to stocks found in the SPRFMO area throughout their entire range (potential benchmark workshop)	2022		In-kind



Squid connectivity	Collect and analyse genetic samplings (Convention area and adjacent EEZs)	2021-2022		\$36k (China)
	Use modelling and observation data to predict connectivity and seasonal to decadal variability possibly using genetic, microchemistry, morphometric, parasite prevalence, and tagging experiments	2021-2022		In-kind

## 5. Habitat Monitoring Working Group

Task	Subtask	Timeline	Coord.	Funding
Evaluate the applicability of data collected from fishing vessels targeting pelagic species	Mapping spatial-temporal population density distribution of jack mackerel using a combination of the existing acoustic survey data and acoustic information as obtained from industry vessels	2021+	Peru/Chile	In-kind
	Subgroup of specialists to evaluate advantages and biases of analysis methods	2023	Peru/Chile	In-kind
	Subgroup of specialists to organise classification of fishing fleets and develop an inventory of technologies available aboard fishing vessels to identify the potential to collect data using the technologies currently being deployed	2022	Peru/Chile	In-kind
Development of standardised oceanographic data products/modelling	Characterise jack mackerel habitat (e.g., past studies done in Peru and Chile)	2023	Peru/Chile	In-Kind
	Provide ecosystem status overview for SC at seasonal to decadal scale	2024	Peru/Chile	In-kind
Habitat monitoring	Review the state of the art of habitat research in order to recommend specific lines of investigation in this topic within the framework of the SPRFMO	2021	Peru/Chile	In-kind
	Explore the concept of jack mackerel habitat under an interdisciplinary ontogeny approach for jack mackerel and other species (by life history stages and regions). Workshop virtually conducted during 2021.	2021+	Peru/Chile	In-kind
	Define a list of existing environmental data: satellite, acoustic surveys, acoustic fisheries surveys, fishing data, fishing vessel data (VMS, Observers) in time and space that already exist inside the SPRFMO area	2021+	Peru/Chile	In-kind
	Integration of databases provided by different members of the HMWG and other working groups of the SC with linkage to a metadata repository	2021+	Peru/Chile	In-kind
	Develop an inventory of research programmes being developed by industry and scientific institutions regarding data collection and monitoring of marine habitats	2022	Peru/Chile	In-kind
Species behaviour and preferences	Analyse the habitat preferences of jumbo squid and Jack mackerel, noting the useful data and analyses provided by Peru and Chile	2023	Peru/Chile	In-kind
	Habitat suitability modelling of Jack Mackerel	2022+	Peru/Chile	In-kind
	Incorporate behaviour, distribution, and abundance information about mesopelagic, euphausiids and other key species of the Humboldt Current System	2022+	Peru/Chile	In-kind
Use of new Tools	Develop new approaches based on different tools such as GAM, GLM, INLA, ROMS, Biogeochemical, Geostatistics, big data and machine learning (e.g. for acoustic classification of targets) and utilisation of different platforms: scientific surveys, fishing vessels, satellite oceanography, gliders, buoys, AUV	2021+	Peru/Chile	In-kind



Task	Subtask	Timeline	Coord.	Funding
2021-22 Symposium	Symposium on Habitat Monitoring prior to the 2022 meeting of the Commission to review the state of the art of habitat research in order to recommend specific lines of investigation in this topic within the framework of the SPRFMO	2022	Chile/Peru	NZ\$63k (SC)

## 6. Other (Crosscutting issues)

Task	Subtask	Timeline	Coord.	Funding
Observer programme	Analyse observer coverage rates from simulation studies for SPRFMO fisheries and recommend values to Commission (periodically review)	2021+		In-kind
	Evaluate available observer data on seabird interaction rates (jack mackerel, different squid fisheries, demersal) and determine where estimates can be improved	2021+		In-kind
	Advise on the appropriate levels of observer coverage for each of the major fisheries to: <ul style="list-style-type: none"> <li>Identify bycatch issues related to seabirds and other species of concern (short and medium term)</li> <li>provide statistically robust quantitative estimates for all species of seabird combined and some of the more common bycatch species (medium term)</li> </ul>	2021+		In-kind
	Provide advice on the appropriate levels of observer coverage for fisheries for which there is no fishery specific CMM in force	2021+		In-kind
Exploratory fishing	Review CMM 13 (CMM 13-2020 Paragraph 25)	2021+		In-kind
	Update of the exploratory fisheries checklist with specific attention given to guidelines for exploratory fisheries in areas with very low prior knowledge	2021+		In-kind
	Review results from the New Zealand exploratory toothfish fishery and provide advice on progress, including whether any stock indicators show sustainability concerns and what, if any, additional measures might be required to restrict the likely bycatch of deep-water sharks or other non-target species	2021-2022	NZ	In-kind
	Develop an FOP template	2021	Secretariat	In-kind
Seabird / bycatch monitoring	Progress southern hemisphere quantitative risk assessment (SEFRA)	2021		In-kind
EBSA	Evaluate impacts of fishing activities	2021		In-kind
CMM 17 Marine pollution	SC Members and CNCs are encouraged to undertake research into marine pollution related to fisheries in the SPRFMO Convention Area to further develop and refine measures to reduce marine pollution and are encouraged to submit to the SC and the CTC any information derived from such efforts	2021+		In-kind
Climate change	Identify key area and management implications of climate change on VMEs and main fisheries in the SPRFMO area	2021+		In-kind
CMM02-2020 Data Standards	Review and update data standards to ensure appropriate scientific data are collected in SPRFMO fisheries (Paragraph 8 of CMM02-2020)	2021+		In-kind
FAO ABNJ Deep Sea Fisheries Project	Planning phase	2021+	Secretariat	In-kind
Alignment	Work involving the alignment of Deepwater and Habitat Monitoring workstreams	2021+		In-kind