

## 8<sup>th</sup> MEETING OF THE SCIENTIFIC COMMITTEE

*New Zealand, 3 to 8 October 2020*

### SC8-Doc05

### 2020 Scientific Committee Multi-Annual Plan

*Secretariat*

*(COMM8 requests highlighted, and timeframes revised to address 2020 priority items)*

#### Jack Mackerel Working Group

Task	Objective	Timeline	Coordinator	Funding	COMM8 request
Jack mackerel assessment data	Review available input data JM assessment	2020	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	<i>Note</i>		In-kind	
	Update and compare of 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	
Jack mackerel assessment	SC and other funds to support experts	2020 +	SC Chair/ Secretariat	NZ\$10k (SC)	
	An evaluation of alternative stock structure hypotheses	<i>Note</i>		In-kind	
	Provide TAC advice according to Commission request (“adjusted Annex K”)	2020		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)	2021	EU	NZ\$126k (EU)	Paras 80,102, 118 COMM8-report
	MSE objectives workshop	2021	EU		Para 29 COMM8-report
Explore alternative stock assessment models and hold a benchmark workshop	2021	EU	NZ\$10K (SC)		
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		In-kind	



	Update growth estimation to be provided to the SC intersessional prior to SC08 to allow the SC to schedule a data compilation workshop at its earliest convenience (including explanation of implications and methodology)	2021		In-kind	Para 15 COMM8- report
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	2020+		In-kind	
Impact of national measures	Assess possible impact of national measures	2020			CMM01 Para 28

## Deepwater Working Group

Task	Objective	Timeline	Coordinator	Funding	COMM8 request
Orange roughy assessment	Relevant Tasman Sea stock(s)( <i>NW Challenger and update for Lord Howe Rise (catch history) only for 2020</i> ): <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>	2020	NZ	In-kind	
	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	2020-2022	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	
	Recommend relevant reference points and/or management rules for all assessed DW stocks	2021+		In-kind	
VME Encounter	Finalise list of VME taxa and design approach for benthic bycatch review	2020-2021		In-kind	
	Annually collect and review VME catch and other benthic sampling data	2020 +		In-kind	



Task	Objective	Timeline	Coordinator	Funding	COMM8 request
Spatial management	Update and re-assess VME and habitat suitability modelling as appropriate including model testing and updating using all new data, review of historical bycatch data, review of naturalness layer, relationship between likelihood of occurrence and abundance, sensitivity to issues of scale, and reassessment of the performance of the spatial management measure	2020		In-kind	
CMM 03 request regarding Encounters with VMEs.	Review all reported VME encounters and: <ul style="list-style-type: none"> <li>• provide advice on whether each encounter is consistent with the models applied to prevent SIAs 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> This review should include consideration of: <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>	2020+		In-kind	
CMM 03 request regarding VME management measures	Review and provide advice on the effectiveness of the applied management measures, including: <ul style="list-style-type: none"> <li>• VME indicator thresholds;</li> <li>• The number of encounters;</li> <li>• The number of encounters that were expected based on habitat suitability models;</li> <li>• The appropriateness of the management approach (e.g. scale);</li> <li>• Additional relevant VME indicator species that have not been modelled, assessed or for which thresholds have not been established;</li> <li>• Refinement of the encounter protocol;</li> <li>• Measures to prevent the catch and/or impacts on rare species; and</li> <li>• Anything else the SC considers relevant to ensure the measure is achieving its objective and the objectives of the Convention</li> </ul>	2020+		In-kind	
CMM 03 request regarding ongoing	Review all available data and provide advice on the ongoing appropriateness of the management measures to ensure the CMM continues to	2020		In-kind	



Task	Objective	Timeline	Coordinator	Funding	COMM8 request
appropriateness of CMM	achieve its objective and the objectives of the Convention				
Bottom Fishery Impact Assessment	Consider any possible changes to BFIA adopted in 2019 in the light of the cumulative BFIA done in 2020.	2021		In-kind	
	Review updated BFIA, including cumulative impacts, from members relative to revised BFIA	2020		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>	2020, 2022, 2024+		In-kind	

## Squid Working Group

Task	Objective	Timeline	Coordinator	Funding	COMM8 request
Squid workshop	Organise a workshop to estimate fishing effort prior to SC08 (two days meeting), provide advice on a potential management measure	2021	SQWG Chair/ Secretariat	NZ\$10K (SC)	
Squid assessment and CMM development	Develop a plan for more detailed within-season fishery monitoring	2020	SQ WG	In-kind	
	Develop and present alternative assessment approaches	2021	SQ WG	In-kind	
	Design and evaluate MSE and harvest control rules	2022+	SQ WG	In-kind	
	Template for the reporting of catch and effort data	2020	Secretariat		CMM18-2020
Standardise biological sampling	Identify where protocols differ e.g. type of sampling, areas and timing of sampling, maturity staging, ageing	2021?	Peru, Chile	In kind	
Observer data collection template	Develop a template to support stock assessment	2020	China & Chile with Secretariat, CALAMASUR	In kind	
	Develop a template to monitor the fishery	2020	China & Chile with Secretariat, CALAMASUR	In-kind	
Observer Coverage	Review minimum observer coverage (including in relation to different fleet segments)	2023			CMM18-2020
Squid assessment data	Identify data needs and recover historical data	2020		In-kind	Completed?
	Sample biological information year-round in its entire distribution area	2020		In-kind	



	Reconstruct historical total catch records including non-CNCPs and non-members	2020		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)	2021-2022		In-kind	
Squid connectivity	Collect and analyse genetic samplings (Convention area and adjacent EEZs)	2021-2022		In-kind	
	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	

## Habitat Monitoring Working Group

Task	Objective	Timeline	Coordinator	Funding	COMM8 request
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	2020	Peru/Chile	In-kind	
Further developments of standardised oceanographic data products and modelling	Characterise jack mackerel habitat (e.g., past studies done in Peru and Chile)	2020	Peru/Chile	In-Kind	
	Provide ecosystem status overview for SC at seasonal to decadal scale	2020	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	2020		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)	2021+		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	2020-2021		In-kind	
	Retrospective analyses based on the integration of databases provided by different members of the HMWG and other working groups of the SC with linkage to a metadata repository	2021		In-kind	
	Develop an inventory of technologies available aboard fishing vessels in order to identify the	2020		In-kind	



Task	Objective	Timeline	Coordinator	Funding	COMM8 request
	potential to collect data using the technologies currently being deployed				
	Develop an inventory of research programmes currently being developed by industry and scientific institutions regarding data collection and monitoring of marine habitats	2020		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	2021		In-kind	
	Habitat suitability modelling of Jack Mackerel	2021		In-kind	
	Incorporate behaviour, distribution, and abundance information about mesopelagic, euphausiids and other key species of the Humboldt Current System	2021		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)	2020		In-kind	
	Utilization of different platforms: Scientific surveys, fishing vessels, satellite oceanography, gliders, buoys, AUV	2021		In-kind	
2021-22 Symposium	Symposium on Habitat Monitoring is organised prior to the [year] meeting of the Commission ideally during the first half of [year] in South America	2021	Peru/Chile	NZ\$63k	



## Other (Crosscutting issues)

Task	Objective	Timeline	Coordinator	Funding	COMM8 request
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	2021			CMM 13 Para 25
	Develop interpretive notes for checklist categories	2021			Recommendation 166(g) Perf Review
	Evaluate and review analyses on data collected from second year voyages of Cook Islands exploratory lobster/crab fishery and provide advice to Commission (including assessment of CPUE limit if necessary)	2020	Cook Islands	In-kind	CMM 14b Para 9
	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	2020-2022	New Zealand	In-kind	
	Review results from the EU 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 (including VMEs)	2020	EU	In-kind	
Seabird / bycatch monitoring	Progress southern hemisphere quantitative risk assessment (SEFRA)	2020		In-kind	
EBSA	Evaluate impacts of fishing activities	2020		In-kind	



Task	Objective	Timeline	Coordinator	Funding	COMM8 request
CMM 17 Marine pollution	SC Members and CNPCs 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	2021			CMM02 Para 8