

## 11<sup>TH</sup> MEETING OF THE SPRFMO SCIENTIFIC COMMITTEE

*11 to 16 September 2023, Panama City, Panama*

### SC11 – Doc05

### 2024 Scientific Committee Multi-Annual Plan

*Secretariat*

#### 1. Introduction

[COMM11-Doc06](#) presented the 2023 Multi-annual Plan for the Scientific Committee. This previous SC multi-annual plan is presented as a working document to SC11, so that the Scientific Committee might be guided in its deliberations and for it to be used as a basis for a proposed 2024 multi-annual plan to be presented to COMM12 in February 2024.

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.

In this report, additional detail regarding the funding sources for the projects outlined in the multi-annual workplan has been included as an Annex to this document.

- During SC11 the Working Groups and Scientific Committee are requested to revise the multi-annual workplan.
- This involves updating years, removing tasks that have been achieved, and adding new tasks that encourage and promote cooperation in scientific research and/or have been identified as work that is needed to support advice and recommendations to the Commission.



## 2. Jack Mackerel Working Group

Task	Subtask	Timeline	Coordinator	Funding
Jack mackerel assessment	Review available input data JM assessment	2023	US/EU	In-kind
	Finalize development of quality control diagnostics of the catch input data to the assessment	2023	EU	In-kind
	Continue to update and compare standardizations of commercial tuning indices among different fleets and the impacts of increased efficiency in the fleets	2023		In-kind
	SC and other funds to support experts during SC assessment	2023+	SC Chair/ Secretariat	NZ\$10K (SC)
	Provide TAC advice according to Commission request (based on the updated assessment and MSE results)	2023		In-kind
	Evaluate the impact on stock status in the short and medium term of a range of quota percentage increases (0, 5, 10, 15, 20%) based on deterministic projections of the jjm model.	2023		
Jack mackerel MSE	MSE objectives and HCR measures workshop with stakeholders and managers [completed at Comm11]	2023	EU	NZ\$50k (EU)
	Develop and carry out an MSE (see COMM8-Report Annex 8b). This shall include revising the operating model to be consistent with the assessment developed during the 2022 benchmark workshop. Initial management procedures (MPs) will be developed to accommodate some desired management settings (e.g., paragraphs 80, 102, 118 COMM8-Report; including carryover).	2023+	EU	NZ\$90k (EU) NZ\$60k (EU)
Jack mackerel connectivity research	Task group on CJM connectivity to improve the understanding of origin and admixture of populations or subpopulations of jack mackerel in the Southern Pacific. Terms of reference as included in G137-2022.	2022-2026	Chile Peru EU	NZ\$15k (EU) Total NZ\$150K/yr [TBD]
Jack mackerel ageing techniques	Task group on CJM ageing analysis and otolith exchange to addresses the current practices in ageing of jack mackerel, the validation techniques to verify ages and a comprehensive documentation of ageing techniques and protocols. Terms of reference as included in SC9.	2022-2024	Chile Peru EU	NZ\$ 15k (EU) Total NZ\$75K/year



### 3. Deepwater Working Group

Deepwater group Task	working	Subtask	Timeline	Coord.	Funding
Orange assessment	roughly	<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>	2025	NZ	In-kind
		Evaluate the orange roughy population and wider ecosystem impacts of carrying forward of TACs over multiple years	2023	NZ	In-kind
Orange assessment data	roughly	Coordinate and design acoustic surveys for relevant stocks ( <i>intersessional consideration</i> )	2023+	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
		Develop workplan to drive stock structure delineation studies for orange roughy and alfonsino and other key target species	2023+		In-kind
Other stock assessments, & ecological risk assessment		Review the risk assessment of teleost and elasmobranch species considering new available information and methods	2024	AU	In-kind
		Develop a tier-based assessment framework for all DW stocks and recommend relevant reference points and/or management rules for these stocks	2023+		In-kind
VME Encounters and benthic bycatch		Develop VME taxa ID guide for benthic bycatch, following the steps proposed in SC9-DW12, and associated training videos	2023+	NZ	In-kind
		Investigate the relationship between benthic bycatch from fishing vessels (including encounter events) and the habitat suitability models	2023+		In-kind
		Investigate the relationship of benthic bycatch to abundance models of VME taxa	2023+		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.	2023+		In-kind
		Assess the feasibility and develop a research programme within the SPRFMO Convention Area to allow the determination of taxon-specific estimates of catchability for VME indicator taxa. <i>(The total cost for such a programme will need to be determined. The two amounts indicated will be used to commence the programme).</i>	2023+	NZ	NZ\$58K (AUS) NZ\$23.6K (SC)
CMM 03 request regarding Encounters with VMEs		Developing a multi-spatial scale risk-based approach to assess encounters with VME indicator taxa	2023	NZ	
		Develop an encounter review standard	2024	NZ	
		Review all reported VME encounters	2023+		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	2023+		In-kind



Deepwater group Task	working	Subtask	Timeline	Coord.	Funding
Bottom Fishery Impact Assessment		Explore thresholds for “significant” adverse impact (SAI) for VMEs at different spatial scales, and understanding knowledge gaps and uncertainties	2023	NZ	NZ\$74K (EU)
		The Scientific Committee shall review, and update if required, the SPRFMO BFIAS every 5 years, to ensure that it reflects, as appropriate, best practice	2025		In kind
		Develop abundance models for VME taxa	2023+	NZ	NZ\$15K (EU)
		Work to reduce uncertainties in risk assessments for benthic habitats and VMEs by exploring: <ul style="list-style-type: none"> <li>the overlap between the spatial distribution of bottom trawling fishing impact (i.e., the ‘naturalness layer’) and abundance estimates of VME indicator taxa [potentially at multiple spatial scales]</li> <li>assessing the effectiveness of the Spatial Management Areas (i.e., “post accounting”) using abundance estimates of VME indicator taxa</li> </ul>	2023+		In kind
		Complete cumulative BFIA including any changes to the Management Area boundaries that are proposed by CMM03 intersessional working group and seek to reduce uncertainties where possible.	2023		
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>	2024 2026 2026		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 ( <i>prior to SC11</i> )	2023	SQWG Chair/ Secretariat	NZ\$10K (SC)
Squid assessment and CMM development	Develop a plan for more detailed within-season fishery Monitoring depending upon the uptake of EM, etc.	2024	SQ WG	In-kind
	Develop and present alternative assessment approaches	2023+	SQ WG	In-kind
	Design and evaluate MSE and harvest control rules	2026+	SQ WG	In-kind
Standardise biological sampling	Identify where protocols differ, e.g., type of sampling, areas and timing of sampling, ageing	2023	Peru, Chile	In kind
Observer Coverage	Provide advice on the appropriate level of observer coverage in the jumbo flying squid fishery	2025		In kind
Squid assessment data	Record and analyse diet data	2023+		In-kind
	Revise data template to sufficient detail and create scripts to allow current assessment methods to be used and also future higher resolution approaches (e.g., depletion estimator by phenotype)	2023		In-kind
	Develop a task group to coordinate data and templates needed for assessment models with a goal that they will account for phenotypic spatial patterns	2023-24	SQ WG	In-kind
Squid connectivity	Collect and analyse genetic samplings (Convention area and adjacent National Jurisdiction Areas)	2023		NZ\$47K (China)
	Sample exchange where Members choose to do so	2023+		In-kind
	Register DNA sequences in public DNA databases (such as GenBank), considering a list of metadata related to samples analysed (using the template in the SC9-Report).	2023		In-kind
	Description of genetic diversity based on mtDNA markers, integrating data from all members	2023		In-kind
	Reaching an updated agreement on consistent approaches to genetic analyses for jumbo flying squid	2023+		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	2023+		In-kind



## 5. Habitat Monitoring Working Group

Task	Objective	Timeline	Coordinator	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	Permanent	Peru/Chile	In-kind
	Subgroup of specialists to evaluate advantages and biases of analysis methods <i>Workshop to be virtually conducted</i>	2023	Peru/Chile	In-kind
	Subgroup of specialists to organise classification of fishing fleets and develop an inventory of technologies available aboard fishing vessels in order to identify the potential to collect data using the technologies currently being deployed <i>Workshop to be virtually conducted</i>	2023	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)	2023	Peru/Chile	In-kind
	Provide ecosystem status overview for SC at seasonal to decadal scale	2024	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) <i>Workshop to be virtually conducted</i>	2023+	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	2023+	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	2023+	Peru/Chile	In-kind
	Develop an inventory of research programmes currently being developed by industry and scientific institutions regarding data collection and monitoring of marine habitats	2023+	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	2024	Peru/Chile	In-kind
	Habitat suitability modelling of jack mackerel	2023	Peru/Chile	In-kind
	Incorporate behaviour, distribution, and abundance information about mesopelagic, euphausiids and other key species of the Humboldt Current System	2023	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 utilization of different platforms (Scientific surveys, fishing vessels, satellite oceanography, gliders, buoys, AUV)	Permanent	Peru/Chile	In-kind
Symposium	Symposium on Habitat Monitoring organised after the 2023 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	2023	Symposium Steering Committee	NZ\$63k (SC) (US\$25k) USA



## 6. Other (Crosscutting issues)

Task	Subtask	Timeline	Coord.	Funding
Observer programme	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> <li>Periodically review the appropriate levels of observer coverage for SPRFMO fisheries in support of stock assessment needs.</li> </ul>	2023+		In-kind
Seabird/bycatch monitoring	Progress southern hemisphere quantitative risk assessment (SEFRA)	2023+		In-kind
Seabird bycatch mitigation	Review seabird bycatch mitigation measures in CMM 09-2017, and the seabird related data collection requirements in CMM 02-2022	2023+		In-kind
EBSA	Evaluate impacts of fishing activities	2023+		In-kind
CMM 17 Marine pollution	SC Members and CNCPs 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	2023+		In-kind
Climate change	Identify management implications of climate change on habitat and fisheries in the SPRFMO area (Decision 13-2023)	2023+	USA	In-kind
CMM 02-2020 Data Standards	Review and update data standards to ensure appropriate scientific data are collected in SPRFMO fisheries (Paragraph 8 of CMM 02-2020)	2023+		In-kind
FAO ABNJ Deep Sea Fisheries	Coordinate activities over their next five-year plan that could involve member scientists and a number of SPRFMO science projects	2023+	Secretariat	In-kind
Alignment	Work involving the alignment of Deepwater and Habitat Monitoring workstreams	2023+		In-kind
Species synopses	To update long version profiles (FAO species synopsis format) for jack mackerel, chub mackerel and jumbo flying squid	2023+		
Research in the Nazca and Salas y Gomez ridges area	Research cruises aimed to know the bio-oceanographic and meteorologic characteristics of Salas y Gomez ridge; as well as biodiversity, current circulation, morphology and geology of sea bottom.	2023-2024	Chile	In-kind
	Climate change impacts of fisheries in Salas y Gomez and Nazca ridges	2023	Chile	In-kind
	Expedition to Salas y Gomez and Nazca aboard oceanographic research vessel	2023-2025 (TBD)	Chile	In-kind
Data Working group	Create terms of reference and prioritization for data needs of Members (SC10 report).	2023+		In-kind
CPPS joint work plan	Increase cooperation and collaboration between both organisations as envisioned under the existing MoU (SC10 report)	2023+	Secretariat	In-kind
Secretariat scientific support	Continue with analyses of catch composition and fishing activities; support CPUE analyses; and general scientific analyses, as capacity allows.	2023+	Secretariat	In-kind
Assessment and monitoring	Development of assessments for species in the SPRFMO Convention Area that are bycaught or subject to targeted fishing operations (in line with tier-based assessment approach)	2023+		In-kind
	Update the evaluation of patterns in species catch composition from fisheries targeting jack mackerel; redbait and/or alfonsino in FAO	2023+		In-kind



Task	Subtask	Timeline	Coord.	Funding
	Statistical Area 87 from within the SPRFMO Area including an evaluation of Russian Federation-flagged vessel(s) for the years 2007 - 2022; using set level information assess operation characteristics using catch location, gear, fishing depth, proximity to seabed, species composition and catch in relation to prior sets. Evaluate these characteristics relative to those where jack mackerel target fishery.			
Redbait research	Characterize the fishing activity and develop an assessment as needed in order to ensure future exploitation of such species is consistent with the precautionary approach	2023+	Russian Federation	In kind