

Consultancy Agreement

Date: 20 February 2024

Project title:

WCPFC Project P123: Scoping the Next Generation of Tuna Stock Assessment Software

Contractor:

Paula Vivili

Deputy Director-General (Science and Capability)

Pacific Community

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Project contact point:

Paul Hamer, Principal Fisheries Scientist (OFP) FAME

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Dear Deputy Director-General,

I am pleased to offer the Oceanic Fisheries Programme of the Pacific Community (SPC-OFP, as Consultant) this consultancy work (*P123: Scoping the Next Generation of Tuna Stock Assessment Software*) with the Western and Central Pacific Fisheries Commission ('the WCPFC') in accordance with the terms and conditions of this Agreement ('the Agreement').

1. Terms of Reference

The terms of reference for the consultancy are set out in **Attachment A**, which forms part of this Agreement and also defines the role of the Consultant and the scope of the consultancy work.

2. Duration

The duration of the Agreement is from 1 February 2024 to 31 December 2026.

3. Fees and Incidental Expenses

The total fee for the consultancy is USD 150,000 for 3 years (2024 – 2026). The total funding for 2024 is USD 50,000 and the same amount for funding annually for 2025 and 2026 subject to decisions by WCPFC21 and WCPFC22, respectively. A variation to the fee must be approved by the WCPFC Executive Director and confirmed in writing.

4. Payment Schedule

WCPFC will make an advance payment to the Consultant of USD45,000 within 30 days of the signature of the contract in 2024 and upon receipt of an invoice from the Consultant. A final payment of USD 5,000 will be made within 30 days after the submission of an annual final report as detailed in **Attachment A** and upon receipt of an invoice from the Consultant.

5. Status of Consultant

- (1) The Consultant (and agents or employees, if any) shall not be regarded as officials or staff members of the WCPFC.
- (2) The Consultant is entitled only to those benefits provided in the Agreement.
- (3) Notwithstanding 5(1) above, the Consultant, while undertaking consultancy work under the Agreement, will have full regard to the interests of the WCPFC and will not take any action that might adversely affect the WCPFC interests and public profile. If for any unjustifiable reason the Consultant acts in a manner that adversely affects WCPFC in a serious way as determined by the Executive Director, WCPFC reserves the right to unilaterally and immediately terminate the Agreement.
- (4) The WCPFC will not unreasonably withhold payment for work completed up to the time of termination of the Agreement provided that such work is satisfactory as determined by the WCPFC Executive Director.

6. Title and Rights

- (1) With the exception as noted in clause 6(2) below, unless otherwise stated in the Agreement, the title, rights, copyrights and all other rights in any material produced under the Agreement shall be the exclusive property of the WCPFC. Release, presentation and/or publication of information and images obtained through this consultancy can be obtained only with the express written consent of the WCPFC. Reasonable consent will not be withheld.
- (2) Information and analyses produced under the Agreement shall remain with the Pacific Community and the Pacific Community shall have full rights to analyse and publish those technical analyses in technical reports and in the scientific literature.
- (3) Pre-existing intellectual property and other pre-existing title rights in regard to any documents, materials and other works used in or resulting from the activities under this Agreement shall remain with the Pacific Community.

7. Confidentiality

- (1) Unless otherwise stated in the Agreement, the Consultant will maintain the confidentiality of all information and data obtained during the course of the Agreement.
- (2) Subject to 7(1) above, any Reports, working or discussion papers and other material obtained during the course of the Agreement shall be the property of WCPFC.

8. Disclaimer

The Consultant agrees that the WCPFC and its staff shall not be liable to the Consultant or any person claiming through the Consultant for any insurance cover, whether life, medical, travel, luggage, personal effects or otherwise, nor for any payment related to illness or injury, during the term of the Agreement and any extensions thereof or any other loss or damage howsoever arising whether directly or indirectly, whether under the Agreement or not and whether arising in contract, tort or otherwise.

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9. Termination

- (1) Subject to 5(4) above, either party may terminate the Agreement at any time by giving the other fourteen (14) days' notice in writing of intention to do so.
- (2) Compensation for actual work done will be payable provided the work performed up to the termination of the Agreement is satisfactory as determined by the WCPFC Executive Director.
- (3) Payment for work completed shall not be unreasonably withheld.

10. Dispute resolution

Any dispute arising out of or in connection with this contract, including any question regarding its existence, validity or termination, shall be referred to and finally resolved by arbitration in accordance with the UNCITRAL Arbitration Rules 2010.

11. Applicable Law

The Agreement shall be governed by the laws of the Federated States of Micronesia.

Should the terms and conditions outlined herein be acceptable to you, please sign below and also initial each page of the Agreement and its attachments and return one copy of each to me.

Yours sincerely,



Rhea Moss-Christian
Executive Director

Date: 02/20/2024

Dr Paula Vivili
Deputy Director-General
Pacific Community

Date: _____

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TERMS OF REFERENCE
for
WCPFC Project P123: Scoping the Next Generation of Tuna Stock Assessment Software

BACKGROUND AND NEED

Following the retirement of the lead developer of MULTIFAN-CL (MFCL), Dave Fournier, future advances to the MFCL software are not expected to be as mathematically innovative as they were in the past. While this does not render MFCL obsolete in the medium-term, it flags the need to plan and identify whether alternative existing software exists, or new software must be developed in the longer-term, to continue to support the specificities and future requirements of WCPFC tuna stock assessments.

While MFCL continues to be improved to service the WCPFC tuna assessment needs over at least the next 5+ years, it is important to start on a phased approach to its replacement. An initial scoping phase is required to assess what features and capabilities will be important in future assessment software for tunas. This scoping phase will benefit from input from stock assessment scientists across global tuna RFMOs. Once this scoping phase is conducted, consideration of available software packages in relation to the desired features and capabilities can be conducted. This may identify suitable existing software that has potential to provide the desired features and/or has potential to be developed further. Alternatively, it may indicate whether embarking on development of a new software package is recommended.

There has also been discussion around the need to explore, through modeling/simulation exercises, the benefits of applying alternative assessment structures (i.e., length-age structured versus the traditional length-based age-structured approach of MFCL and Stock Synthesis) before embarking on major software developments or changing methodology. Similar can be said about exploring benefits of state-space models and their use of random variables. Simulation exercises to explore the benefits or drawbacks of alternative model structures or approaches will also require collaboration across tuna RFMOs and experienced practitioners using the alternative approaches and/or software.

An important outcome of this work would be to ultimately have a software package that has the desired functionality for tuna assessments, not only for WCPFC, but globally, thus creating a user community and ongoing development support capacity, so as to avoid the current situation we are facing with MFCL. Wider collaboration in this venture is essential to achieving this and is expected to be encouraged through this project.

OBJECTIVES

The overriding goal of the project is to ensure WCPFC tuna stock assessments remain robust and provide the best available scientific information through the appropriate planning for a state-of-the-art successor to the MULTIFAN-CL assessment software.

SCOPE OF WORK

The project is divided into stages, as follows:

Year 2024

1. Review and identify a list of necessary and desired features for software to conduct tuna stock assessments.
2. Identify existing software platforms that have some or all these features or can be extended to add such features.
3. Reach out to and initiate collaboration with developers who are already exploring extensions to current age-structured catch-at-age and state-space models that would allow those models to fit to length data.
4. Conduct two workshops with selected experts from other tuna RFMOs and or with relevant expertise. The first workshop can be remote (prior to SC20) and the second one potentially in person (post SC20). The main goal will be to plan and document collaborative simulation studies to evaluate the performance of candidate software platforms for tuna stock assessments.

Year's 2025 and 2026 (subject to SC advice and funding approvals by WCPFC)

5. Conduct the simulation studies outlined in stage 4, in collaboration with experts that are supported by other agencies/RFMOs.
6. Based on the results from simulation studies, determine which, if any, software platforms can be considered viable candidate platforms for WCPFC tuna assessments.
7. If a viable candidate platform has been identified, provide a plan to transition assessments to this software. Evaluate which transitioned assessments could replace old MFCL assessments and build the transition into the WCPFC assessment schedule.
8. If no viable candidate platform is identified, further extensions to existing platforms may be required, or the development of a new assessment software platform. The design process for a new platform would require additional development workshops and involvement of software developers (additional funds likely required) and could include identification of MFCL features and algorithms that can be borrowed and ported across to a new framework.

Note that support for development of new software would need to be considered as a new program of work with new funding. This scoping project should have a strong focus on generating collaborative opportunities to work with other agencies/RFMO scientists on finding/developing a suitable software platform for common use in tuna assessments across tuna RFMOs.

This is anticipated to be a multi-year endeavor that may need to adapt as it progresses, including finding additional funding. **As a result, the current agreement focuses on the first four scoping stages of the project (1-4 above).** Based upon the findings of the work in 2024 and subsequent recommendations from the SC20, further project TORs would be developed to progress the work in following years. Findings would be reported to SC each year.

OUTPUTS AND SCHEDULE

The key outputs of the assignment will be:

1. Submission of a draft progress report for Project P123 to the WCPFC Secretariat (SungKwon.Soh@wcpfc.int; Elaine.Garvilles@wcpfc.int) by 19 July 2024, and succeeding years (2025 and 2026), 25 days prior to SC meetings;
2. Presentation of Project P123 (stages 1-4) to SC20 in 2024, and following stages in 2025 and 2026 subject to SC support and funding approvals;
3. Submission of a final progress report for Project P123 (Year 2024) to the WCPFC Secretariat by 8 November 2024, and succeeding years (2025, 2026) by November 2025 and 2026; and
4. Submission of a final report for Project P123 to the WCPFC Secretariat by 31 December 2026 or earlier.

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