



**WCPFC TUNA TISSUE BANK
STEERING COMMITTEE**

ELECTRONIC MEETING

16 July 2020 (from 18:00-19:30 hours Pohnpei time (UTC+11 hours))

Report of the Tuna Tissue Bank Steering Committee

WCPFC-SC16-2020/RP-P35b-03

TTB Steering Committee

1. PRELIMINARIES

The 2nd meeting of the Tuna Tissue Bank Steering Committee was held via video conference through Microsoft Teams on 16 July 2020, in preparation for the 16th Regular Session of the WCPFC Scientific Committee.

A list of meeting participants is provided in Annex 1 of this report.

Background

The WCPFC Tuna Tissue Bank (TTB) is a repository of biological samples from marine specimens collected from across the WCPO, and its ongoing operation is now funded by WCPFC through Project 35b. WCPFC established its TTB so that national and international fisheries research institutes could access the collections needed to advance our understanding of the dynamics of tuna and related species in the WCPFC region (including analyses to estimate spatially- and temporally-explicit age, growth and reproductive parameters, and to investigate stock structure, for consideration within future stock assessments). In a broader ecosystem context, the collections are also used for trophic analyses, including diet studies, measurement of stable isotopes, mercury and other biochemical elements for exploring trophic structure and movement, in addition to taxonomic studies.

The objective of Project 35b is to maintain the TTB, with particular emphasis on WCPO bigeye, yellowfin, albacore and skipjack tunas and swordfish, and, to facilitate transmission of samples to specified researchers with due cognizance of the WCPFC TTB Access Protocols (Anon. 2016). SPC as the Scientific Services Provider is tasked with maintaining and developing the TTB, and through the biological sampling programme, expanding the inventory of samples held. Project 35b currently runs to 31 December 2020 with funding for 2021 and 2022 subject to the decisions of WCPFC 17 and WCPFC 18.

In 2018, it was agreed to run the process of TTB reporting in a similar manner to the PTPP (Project 42) at SC15, with a brief report of the TTB Steering Committee presented to the SC Plenary by its chair (i.e. this report). This serves to expedite the work of the Scientific Committee whilst giving adequate time to discuss details of the TTB during the Steering Committee meeting.

1.1: Review and adoption of agenda

The provisional agenda for the TTB Steering Committee meeting was adopted and is provided in Annex 2.

2. TTB PROGRESS REPORT

Prior to the TTB Steering Committee meeting, a progress report to SC16 on TTB activities during 2019-20 (SC16-RP-35b-01) was finalised, posted on the WCPFC website at <https://www.wcpfc.int/node/46480> and made available to meeting participants. A presentation summarising the progress report was circulated in the lead up to the meeting, and presented at the meeting. This served as a useful reference for addressing each item listed on the adopted agenda (Annex 2). Below we outline the key information presented to participants under Agenda item 2.

2.1: TTB activities – Between 1 July 2019 and 30 June 2020, 7322 new biological samples, taken from 1551 fish, were added to TTB holdings. SPC now houses 126,566 biological samples taken from nearly 40,000 individual animal specimens.

2.2: Observer-based sampling – Following the peak in activity in 2015, the number of observer trips involving biological sampling has gradually declined. Signs of recovery were evident in 2019, with a 64%

increase in sample returns compared with 2018, due largely to efforts ~~from~~by PNG and FSM. In early 2020, WCPO-wide restrictions on observer coverage (due to COVID-19) have effectively removed opportunities for onboard sample collection, though the sampling rate has remained stable.

2.3: Port sampling – Port sampling activity increased in the first half of 2020, attributable largely to efforts by in-country port samplers and observers limited to land-based duties during the COVID-19 lockdown period.

2.4: Conversion factors – From December 2019 through to May 2020, biological samples were collected at port from very small (i.e. < 30 cm fork length) skipjack, yellowfin and bigeye tuna captured by ring net and manually-hauled purse seine fisheries in the Philippines. These represent the smallest tunas sampled to date for the TTB. Length and weight measurements on these fish have resulted in the derivation of small-tuna specific conversion factors for Length–Length and Length–Weight, under WCPFC Project 90. This is reported in an Information Paper SC16-ST-IP-06, now available on the SC16 website at <https://www.wcpfc.int/node/46471>.

2.5: Training – Over the 2019-20 reporting period, training and refresher courses were run in five countries (i.e. Solomon Islands, New Caledonia, Fiji, Papua New Guinea and the Philippines). One hundred and seventy observers undertook training in biological sample collection, with a total of 553 samplers trained to date. Thirty eight debriefers were trained in debriefing, and nine observer trainers were ‘refreshed’ in delivering biological sampling training.

New training resources and tools have been developed and released. Notably, the new ‘Shark and ray identification manual’ (Park et al. 2019) was published in late 2019. The primary purpose of this guide is to improve identification of shark and ray species encountered by observers and crew working in WCPO tuna fisheries. Both hard copies and online copies available – a link is included in the TTB report to SC16. In addition, SPC has recently produced a series of online training videos documenting standard biological sampling procedures on tunas. These videos were designed to aid observers wishing to undertake / refresh training in biological sampling in the near term, and are particularly timely given that face-to-face training courses are currently not possible in many instances.

2.6: New sampling approaches – SPC is currently undertaking work to develop and trial new biological sampling approaches that optimise purse-seine observer efforts for tuna sample collection. The approaches are outlined in detail in Information Paper SC16-RP-P35b-02, now available on the SC16 website at <https://www.wcpfc.int/node/46540>.

The primary objective is to expand sampling coverage for the TTB in space and time, and in a systematic fashion, and to ensure that the highest-quality biological material is available for the scientific analyses/applications needed to meet WCPFC objectives. Both approaches discussed in SC16-RP-P35b-02 make use of vessel monitoring system (VMS) data to identify a suite of purse seine vessels operating simultaneously, but in different regions, from which tuna samples are then collected. Both rely on effective dialogue with fisheries authorities, fishing companies and observer programmes. A key difference relates to where sample processing occurs. In ‘Approach 1 – VMS bag and store’, fish are set aside, and stored whole at sea, with sample processing undertaken at port, whereas ‘Approach 2 – VMS Widget’ sample processing occurs at sea, and uses the ‘Widget’ tool developed over a number of years by CSIRO (Bradford et al. 2016).

SPC noted that a proposal for a field trial of Approach 1 was formally endorsed at the 20th Regional Observer Coordinator Workshop held in Funafuti, Tuvalu, in February 2020. The roll-out of this trial has now been delayed due to COVID-19 related travel restrictions.

2.7: Infrastructure – The TTB has long-term storage facilities at SPC Headquarters in Nouméa and at CSIRO, Brisbane, Australia. Storage at the CSIRO facility in Brisbane has been upgraded with smaller single plastic containers that can accommodate samples from a single sampling event rather than multiple sampling events. Samples have been inventoried and reorganised with the new storage system, allowing future fast sample retrievals. In 2019-20 the TTB acquired a new stereomicroscope, an X-ray machine and two -80°C freezers, the latter to guarantee long-term sample quality for genetic studies. Cold storage facilities have been expanded in Nouméa, providing an extra 10m³ of space, and new facilities have been organised in General Santos in the Philippines.

2.8: OnShore app – Over the 2019-20 reporting period the TTB relational database ‘BioDaSys’ continued to be maintained and populated with recent sample collections. During 2019, a feature for recording biological sampling data was developed within the E-Reporting app *OnShore*, used by port samplers to collate data at landing sites. This feature has been updated, with biological sampling data now directly uploaded to the ‘TUFMAN2’ database and then automatically transferred into BioDaSys. Between July 2019 and June 2020, the *OnShore* biological sampling feature was thoroughly tested in New Caledonia and is currently in use in the Philippines. During this period, training was provided to FSM and Marshall Islands’ port samplers.

2.9: TTB access and outputs – There were no formal requests from third parties to withdraw samples from the TTB in 2019-20. However, several informal enquiries were registered from university-based researchers around sample availability and access rights in the context of future collaborative projects. SPC noted some confusion by potential researchers on the process for withdrawing samples from the TTB as well as for adding samples to the TTB. There are also expectations for requests arising from SC16 associated with radiocarbon analyses of otoliths and potentially further work associated with yellowfin and bigeye biology depending on SC16 decisions concerning the stock assessments.

At present, nine projects are classified as ‘pending’ in accessing samples from the TTB for WCPFC-related work, led by SPC and/or other national and international organisations. Around 30 projects utilising TTB samples are ‘completed’ as at 30 June 2020.

Seven Information or Research Papers related to TTB activities have been or are in the process of being submitted to SC16. Seven other books, peer-reviewed journal articles, conference papers or popular articles associated with TTB work were published during the 2019-20 reporting period (see SC16-RP-35b-01 for details).

Steering Committee discussion on Agenda item 2

The Steering Committee noted the plans for improving sample storage and, in particular, any additional needs for storage of genetic samples. It was noted that SPC now has capacity for approximately 75,000 genetic samples to be housed in the super cold freezers (-80°C) for long-term storage. In addition, collaborators at CSIRO have capacity to store samples at -80°C for long-term storage. Both SPC and CSIRO also have large walk-in freezer facilities for longer term storage between -20 to -30°C for all samples requiring freezing.

At present, there is no other formal agreement for longer-term cold storage other than that between SPC and CSIRO. It was suggested that such agreements be developed, which could also extend to collaboration with industry. For example, large walk-in freezer storage at ports within the region are currently used to store material before being sent for analysis. The steering committee noted the potential to explore the hiring of freezer space in certain locations around the region for longer term storage purposes.

The TTB Steering Committee also noted that the BioDaSys database should allow a decentralised system to manage the TTB. BioDaSys keeps track of the metadata regarding how, where and when samples have been stored. The possibility for local agents with responsibility for overseeing the storage and

shipment of samples would perhaps remove the need to ship samples to SPC and reduce the risk of sample damage during that shipment (i.e. the samples would go straight to the requesting laboratory for analyses). SPC offered to explore the potential for a more decentralised storage system over the next 12 months.

SPC noted that the protocols for access to the TTB contain some ambiguity, with potential third-party contributors to the TTB confused on the implications that contributing to the TTB would then have on their access rights to their samples. In light of this, it was suggested that the TTB Steering Committee revisit this issue at the next meeting in 12 months. SPC offered to prepare a discussion paper for the 3rd Steering Committee of the TTB, with the aim of outlining a clearer protocol for access to the TTB.

3. WORK PLAN 2020-21

3.1 : General work plan

The TTB work plan for the coming year was then presented and discussed. Actions planned for 2020-21, continuing from previous years, include:-

- Standard maintenance of the TTB, ensuring the curation of new samples received and improvements to infrastructure.
- Exploration of new biological sampling opportunities, including sampling trials proposed in Section 2.3 of SC16-RP-35b-01.
- Continuous development of BioDaSys to improve traceability of samples, sample preparation protocols and analyses.
- Ongoing training of observers, observer-trainers, port samplers and debriefers.
- Ongoing development and improvement of the E-reporting app *OnShore* based on users' feedback.

New actions planned for 2020-21 include:-

- Development of a document on standard operating procedures for the TTB.
- Provision of training to Vanuatu and Samoa and to members interested in using *OnShore* for biological sampling.
- Creation of species reference guides to improve species identification. In particular, the production and distribution of new ID books (shark and rays, in French; seabirds, in French and in English) and the production of a new ID book on billfishes.
- Investigation of the use of temperature probes to monitor conditions in portable cold-storage units (e.g. 'Eskies') during transportation for sample quality traceability.
- Updating and improving training materials for biological sampling.
- Development and enhancement of E-reporting apps, such as integration of biological sampling data within the *Olló* app, and investigation into other standalone biological sampling apps.

3.2: Sampling rates and new opportunities – As discussed under Agenda item 2.6, and as part of the 2020-21 workplan, SPC is testing new approaches for improving tuna sampling protocols on purse seine vessels (reported in SC16-RP-P35b-02).

SPC reminded the steering committee that some of the impetus for this work arose from recommendations by SC15 to develop initiatives to combat the decrease in observer-based sampling seen in recent years. Recalling that the motivation to explore new approaches stems from the acknowledged importance of resolving uncertainties around tuna stock structure and population

connectivity in the region (Moore et al. 2020; SC15-SA-IP-03), and the potential for emerging genetic approaches (for which specialised tissue sampling protocols are needed) to achieve this task (SC16-SA-IP-14), it was stressed that such genetic applications have not been the focus of observer-based biological sample collection in the past.

Despite COVID-19-related delays in trialling the new sampling approaches outlined in SC16-RP-P35b-02, it was noted that it may be possible to commence some trials now in countries with vessels that fish locally, and still carry observers, for example.

3.3: Other initiatives – The continued development of E-reporting apps, including *OLLO*, the latest addition to the suite of apps (e.g. *OnShore*, *OnBoard*, *Tails*), remains a priority. *OLLO* is used to collect observer data from longline vessels fishing across the WCPO. Integration of biological sampling data within this app is ongoing.

Steering Committee discussion on Agenda item 3

The Steering Committee sought clarification on whether *OLLO*, *OnBoard* or any of the other biological sampling applications can be used as standalone apps. SPC noted that the aim of these tools is to not replicate data entry, and so in this way these applications should potentially be used to enter data in a standalone manner, which could then be sent on to various databases (e.g. FIMS).

4. ADMINISTRATIVE MATTERS

4.1: Budget – The annual cost of supporting the TTB is USD 97,200 baselined in 2018, with an annual inflation adjustment agreed by the Commission in 2018 for out-years.

The Steering Committee was reminded that the approved budget for 2020 was USD 99,195 with indicative annual budgets for 2021 and 2022 of USD 101,180 and USD 103,204 respectively. This comprises 60% for tuna tissue bank coordination, information management and training for samplers, 23% for sampling fees and freight, and 17% for the additional storage facility in Brisbane.

Steering Committee discussion on Agenda item 4.1

The TTB Steering Committee agreed a recommendation to SC16 that it endorse the 2021 budget (USD 101,180) and 2022 indicative budget of USD 103,204, and suggested that an indicative budget for 2023 be provided.

4.2: Recommendations to SC16 – The TTB Steering Committee recommended that:-

- SC16 task the Scientific Services Provider to continue to support initiatives to increase rates of observer biological sampling, noting that this contribution is essential to the ongoing success of WCPFC's work.
- SC16 incorporate the identified budget into the 2021 budget and the 2022-23 indicative budgets, as development of the WCPFC TTB is intended to be ongoing, and is considered essential.
- SC16 endorse that the work plan in Section 3 of this report should be pursued by the Scientific Services Provider, in addition to standard duties associated with maintenance and operation of the WCPFC TTB in 2020-21.
- SC16 task the Scientific Services Provider to provide a background paper with suggested revisions to the access protocols for the TTB that would any eliminate ambiguity associated with depositing or withdrawing samples from the TTB.

5. ADOPTION OF REPORT

This draft report of the 2nd TTB Steering Committee meeting was circulated to meeting participants on 20 July 2020, and is now available online on the SC16 website. SPC invites comments from SC members up until **17:00 Pohnpei time (UTC 6:00) on 24 July 2020**, following which a final endorsed version will be posted on the SC16 website. Please direct any comments and suggestions to Jed Macdonald at SPC (jedm@spc.int).

6. ACKNOWLEDGEMENTS

A number of other funding agencies have supported the TTB project (SPC-OFP 2019; Portal et al. 2020) and are gratefully acknowledged. The TTB Steering Committee also acknowledges the port samplers, observers, debriefers, observer trainers and observer managers across the region that have contributed to the TTB. The TTB Steering Committee also acknowledges the staff of the agencies responsible for coordinating the biological sampling programme and the support received from fishing companies across the region.

7. REFERENCES

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SPC-OFP 2019. Project 35b: WCPFC Tuna Tissue Bank. SC15-RP-P35b-01 Rev. 1 presented to the Fifteenth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission, Pohnpei, Federated States of Micronesia, 12-20 August 2019.

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Annex 1 – Registered participants at the 2nd TTB Steering Committee meeting.

Name	Affiliation
Annie Portal	SPC
Bruno Leroy	SPC
Caroline Sanchez	SPC
Chloe-Ane Wragg	Cook Islands MMR
Cyril Villanueva	Philippines
Elain Garvilles	WCPFC
Elodie Vourey	SPC
Francois Rupsard	SPC
Graham Pilling	SPC
Jamel James	NORMA
Jed Macdonald	SPC
Jessica Farley	CSIRO
Joanna Mae Padua	Philippines
Joe Scutt Phillips	SPC
John Annala	New Zealand MPI
John Hampton	SPC
Keisuke Satoh	Japan FRA
Lara Manarangi-Trott	WCPFC
Latishia Maui	Cook Islands MMR
Leyla Knittweis	New Zealand MPI
Marino-O-Te-Au Wichman	SPC
Mark Beau Bigler	MIMRA
Naiten Bradley Phillip Jr.	SPC
Neil Crusis	Philippines
Neville Smith	SPC
Paul Hamer	SPC
Ren-Fen, Wu	Taiwan
Reuben Sulu	FFA
Rosanna Bernadette Contreras	Philippines
Saiasi Sarau	Cook Islands MMR
Simon Nicol	SPC
SungKwon Soh	WCPFC
Valerie Allain	SPC



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ELECTRONIC MEETING

16 July 2020, from 18:00-19:30 hours Pohnpei time (UTC+11 hours)

ADOPTED AGENDA

WCPFC-SC16-2020/11

1. PRELIMINARIES

- 1.1 Review and adoption of agenda

2. TTB PROGRESS REPORT

- 2.1 TTB Activities (WCPFC-SC16-2020/RP-P35b-01)
- 2.2 Observer-based sampling
- 2.3 Port sampling
- 2.4 Conversion factors
- 2.5 Training
- 2.6 New sampling approaches
- 2.7 Infrastructure
- 2.8 *OnShore* app
- 2.9 TTB access and outputs

3. WORK PLAN 2020-21

- 3.1 General work plan
- 3.2 Sampling rates and new opportunities
- 3.3 Other initiatives

4. ADMINISTRATIVE MATTERS

- 4.1 Budget
- 4.2 Recommendations to SC16

5. ADOPTION OF REPORT