



**SCIENTIFIC COMMITTEE**  
**12<sup>TH</sup> REGULAR SESSION**  
Bali, Indonesia  
3-11 August 2016

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**REPORT OF THE PACIFIC TUNA TAGGING PROGRAMME STEERING  
COMMITTEE**

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**WCPFC-SC12-2016/RP-PTTP-01**

PTTP Steering Committee

## Preliminaries

### *Background*

The Pacific Tuna Tagging Programme (PTTP) is a joint research project being implemented by the Oceanic Fisheries Programme (OFP) of the Pacific Community (SPC) and the PNG National Fisheries Authority (NFA) with assistance from the Western and Central Pacific Fisheries Commission and the Inter American Tropical Tuna Commission. The goal of the Pacific Tuna Tagging Programme is to improve stock assessment and management of skipjack, yellowfin and bigeye tuna in the Pacific Ocean. The specific objectives are now:

1. To obtain data that will contribute to, and reduce uncertainty in, WCPO tuna stock assessments including estimation of overall and local exploitation rates, extent of mixing and appropriate spatial strata for use in assessments.
2. To obtain information to better understand the interactions between tropical tuna species and major fishing gears to support development of mitigation measures (where appropriate) and better interpret fisheries data (e.g., CPUE).

Under these objectives, information collected includes age-specific rates of movement and mixing, movement between this region and other adjacent regions of the Pacific basin, species-specific vertical habitat utilisation by tunas, and the impacts of FADs on behaviour.

The PTTP Steering Committee was established by SC2 to provide guidance and oversight in the development of firstly the project document (WCPFC-SC3-GN-WP-10) and subsequently of operational plans, implementation and analytical work. The 10<sup>th</sup> meeting of the PTTP Steering Committee was held at the 12<sup>th</sup> Regular Meeting of the WCPFC Scientific Committee, Bali, Indonesia on 4<sup>th</sup> August 2016. The current donors to the project are Papua New Guinea, ISSF, Korea, European Union and the WCPFC.

## Review and adoption of agenda

The provisional agenda was adopted.

## PTTP Progress Report (SC12-RP-PTTP-02)

Since the last PTTP Steering Committee meeting, one tagging cruise, CP11, in the tropical central Pacific has been conducted, one at-sea trial of tagging in the western tropical Pacific has been conducted, and in addition continued implementation and refinement of tag recovery processes, tag data curation, tag seeding, and data preparation for use in WCPO stock assessments.

CP11 was a cruise of 56 days duration conducted in Sep-Nov 2015 targeting bigeye tuna aggregations associated with the TAO oceanographic moorings located along the longitudes 170°W, 155°W and 140°W and between the 8°N and 5°S Latitudes, and drifting fish

aggregations devices (dFADs) in this area. CP11 was designed to include data collection on tuna movements, exploitation rates and dFAD association dynamics.

The Hawaii-based multipurpose vessel Gutsy Lady 4 was chartered for the cruise. A total of 2,959 fish (1953 bigeye, 773 yellowfin, 228 skipjack, 3 trigger fish and 2 silky sharks) were tagged. Within these releases, 95 archival tags were deployed on bigeye tuna and 70 on yellowfin tuna. A majority (62%) of the total tagged fish were released in association with dFADs and the rest in association with TAO moorings. A total of 9 different dFADs were visited and tagged fish were released in association with 8 of them.

Three dFADs were equipped with a satellite communicating acoustic receiver manufactured by Vemco. These types of units utilize Iridium satellite communication and eliminate the need to retrieve the receiver to download information. Fifty nine fish were implanted with acoustic tags across the 3 equipped dFADs (23 bigeye, 21 yellowfin, 10 skipjack, 2 silky sharks and 1 triggerfish).

CP11 occurred during a very strong El Nino period, unusual amongst the other Central Pacific tagging experiments. Like CP10, the cruise was again hampered by the lack of large bigeye aggregations under the TAOs. However the large numbers of fish caught using the dangler method around dFADs meant the cruises were very successful.

The total tag releases for the PTPP is 399,683 tuna including 1603 that were tagged with archival tags. Over 73,000 tagged tuna had been recaptured and the data reported to SPC. Tag attrition follows the expected declining pattern with the rate of decline in skipjack tag returns indicating their shorter expected lifespan and higher natural mortality when compared to yellowfin and bigeye tuna. The pattern of recoveries is very similar to that reported to the steering committee at SC11 in 2015. The yellowfin and bigeye remain very useful for stock assessment purposes, but, it is clear that there is a significant gap in the tagging of larger BET in the western central Pacific.

Tag Recovery staff continued their work in Wewak, Madang, Lae, Honiara, Rabaul, General Santos, Tarawa and Manta. The establishment of these positions has provided greater opportunity for collection of tags during unloading, transshipments and processing in canneries with more complete and reliable capture information.

The PTPP also provided an opportunity to collect samples as part of a long-term project to characterize the trophic status of the western and central Pacific pelagic ecosystem. Since the beginning of the PTPP, 5923 stomach samples have been collected, mainly from skipjack, yellowfin, bigeye and albacore tuna. The examination of the stomachs is an ongoing process and is conducted in the laboratory at SPC headquarters.

Very recently a tagging trial in PNG occurred (mid-July 2016) in collaboration with NFA using the National Fisheries College training vessel FTV Pokajam. The voyage plan was to visit 2 TAOs anchored in the PNG EEZ along the 156 E longitude, and if tuna aggregations were present to release about 500 conventional tags and 20 archival tags on bigeye tuna. Unfortunately, due to poor weather conditions, a missing TAO and a lack of fish, very few fish (2 BET, 17 YFT) were tagged. Irrespective, the trial proved the suitability of FTV Pokajam for such experiments in PNG waters.

## Archival tagging analyses

F. Abascal-Crespo presented the preliminary results of on-going work on the spatio-temporal vertical distribution of bigeye across the Pacific Ocean. This work is based on the electronic tags deployed in the framework of several SPC-OFP collaborative projects. Current results indicate changes in longline and purse seine catch rates, both in space and time, can be linked to variations in catchability due to swimming depth of bigeye tuna, and challenge previous assumptions attributing spatial variability in CPUE exclusively to abundance. These results will potentially improve future stock assessments and could help in developing management strategies. Improving the coverage of the westernmost equatorial region is indicated as a priority.

## Development of an individual based tagging simulator

J. Scutt Phillips presented SC12-EB-IP-01 which details the preliminary results from an Australian Research Council linkage project with SPC, developing an individual-based model of SKJ distribution in the WCPO. In light of SC11 recommendations for "identifying changes in the spatial distribution of skipjack" and to "provide better information on stock connectivity and movement", this project is developing a simulation modelling tool for use in examining these questions and to test the assumptions of movement and behaviour in current stock assessment models (e.g. SEAPODYM and MFCL). Furthermore, its future use in the simulation of tagging events will improve the analysis of recapture data, information on mixing rate dynamics, and more efficient use of finances when designing effective tagging programmes in the region. It also has potential for analysis and simulation of dFAD tracking data and interactions with tuna.

## 2016-2017 Work Plan

The proposed PTPP work plan for the period 2016-2017 comprises:

- CP12 (September - October 2016) noting that this is the last cruise in the series without additional funding support
- Continued tag recovery efforts across the region
- Further analyses of tag seeding data and reporting rates
- Inclusion of tagging data in MFCL and SEAPODYM analyses
- Ongoing verification of tag recapture information with VMS and logbook data
- Ongoing consolidation of the web-based tag data framework,
- Additional tagging cruises subject to funding, with the intention that a 2017 skipjack cruise would occur if possible.

## Other Regional or Sub-regional Tagging Projects

### *Japan*

Japan advised its intention to move its tagging of skipjack from the subtropical area between 20°N-25°N latitude to more tropical areas in the coming year. Collaboration with other organisations and countries will continue to be required to ensure that reporting of tag recoveries is high. The Steering Committee encouraged SPC and Japan to explore the possibility of collaboration in the 2017 skipjack tagging cruise.

## Administrative Matters

The support of all current and past donors was gratefully acknowledged as were the efforts of all contributors and project collaborators.

## Discussion

The Steering Committee noted that the field component of the PTPP will finish in late 2016 if no further donor funds become available.

The results of the analyses on the vertical behaviour of bigeye were discussed, noting:

- It is increasingly apparent from behavioural data that what we are detecting with longline CPUE is more to do with catchability than abundance,
- A key conclusion of the work is that additional tagging of bigeye is needed in the Western Pacific.

The initial results of the development of an individual based tagging simulator were discussed, noting:

- The development of this simulator was welcome and timely,
- Incorporation of the ability to compare outputs in a range of views and formats would help in using the tool for planning and engaging stakeholders,
- Additional reporting on the development of the simulator would be welcome at SC13.

The Steering Committee discussed the tagging of tunas generally and noted that continued regular tagging of tropical tunas is important for ongoing stock assessment and other research. It was also noted that for logistical and cost efficiency reasons, it is better to have regular tagging events producing a continuous stream of tag recoveries in order to maintain the tag recovery network (in particular as maintaining the tag recovery network is much more cost effective than stopping and re-starting it).

The Steering Committee therefore recommended to SC that it:

- Normalise the tagging programme as part of the ongoing work of the SC, ideally with cruises every year alternating between skipjack via pole and line in one year and

bigeye via longline and dangler fishing in the next – starting with skipjack in 2017 (noting that yellowfin would be adequately covered by these surveys); and

- Support efforts to identify sustainable financing of the tagging programme, through a combination of WCPFC budget support to the extent possible and voluntary contributions from WCPFC members or other stakeholders.