



**SCIENTIFIC COMMITTEE
FIFTH REGULAR SESSION**

10-21 August 2009

Port Vila, Vanuatu

REPORT OF THE THIRD PTPP STEERING COMMITTEE

WCPFC-SC5-2009/ GN-WP-5

PTPP Steering Committee

1 Preliminaries

1.1 Background

The Pacific Tuna Tagging Programme (PTTP) is a joint research project being implemented by the Oceanic Fisheries Programme (OFP) of the Secretariat of the Pacific Community (SPC) and the PNG National Fisheries Authority (NFA) with assistance from the Western and Central Pacific Fisheries 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 of Phase 2 are:

1. **To obtain data that will contribute to, and reduce uncertainty in, WCPO tuna stock assessments.** Conventional tagging data are an important component of tuna stock assessments, providing quasi-fishery-independent information on various biological and fishery processes, such as exploitation rates, natural mortality, movements and growth rates, and their spatial and temporal variability.
2. **To obtain information on the age-specific rates of movement and mixing of skipjack, yellowfin and bigeye tuna in the equatorial WCPO, between this region and other adjacent regions of the Pacific basin, and the impact of FADs on movement at all spatial scales.** This information is important for understanding the relationship of tuna stocks in the tropical WCPO with those in the sub-tropical WCPO and the EPO. Movement rates are particularly important for assessing the potential for interaction between fisheries operating in different areas. The comparison of tagged fish movements from areas of high FAD density with tagged fish movements from the same areas in the early 1990s (before extensive FAD deployment) will provide important new information on the meso- to large-scale effects on tuna movement of high-density FAD arrays. This will allow various hypotheses regarding the impact of FADs on the movements of small tuna, to be tested. The movement data will also provide critical information on appropriate spatial structuring of stock assessment models.
3. **To obtain information on species-specific vertical habitat utilisation by tunas in the tropical WCPO, and the impacts of FADs on vertical behaviour.** Vertical habitat utilisation plays a large role in determining vulnerability to all major gear types operating in the fishery. This objective seeks to characterise the effect of FADs (anchored and drifting) and other possible impactors (e.g., seamounts) on tropical tuna vertical behaviour and habitat utilisation. This information will allow better estimation of abundance indices and standardised effort for the main fisheries and possibly contribute directly to the design of management measures for FAD fishing.
4. **To obtain information on local exploitation rates and productivity of tuna in various parts of the WCPO.** Knowledge of local exploitation rates, productivity and movements is important for understanding the impact of fishing at more local scales and to estimate optimal exploitation of tuna resources within EEZs. In particular, it allows estimation of the extent to which current catch levels may reduce the standing stock of tuna and the catch-per-unit-effort of the fisheries, a phenomenon commonly known as “local depletion”.

The PTTP Steering Committee¹ 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 third meeting of the PTTP Steering Committee was held at Le Lagon Hotel, Port Vila, Vanuatu on 15 August 2009.

1.2 Review and adoption of agenda

The provisional agenda was adopted with the addition of items 4.4 and 4.5 (Attachment 1).

2 PTTP Progress Report (SC5-GN-IP-13)

Since the last PTTP Steering Committee meeting, two Western Pacific pole-and-line tagging cruises (WP1 and WP2) and one Central Pacific handline tagging cruise (CP2) have been conducted. WP1 was completed in November 2008 covering the EEZs of FSM, Palau, Philippines, Indonesia and PNG. WP2 was completed in June 2009 covering southeastern PNG, eastern FSM, Marshall Islands, Kiribati (Gilbert Islands), Tuvalu and Solomon Islands. The two cruises comprised a total of six months and resulted in the deployment of 107,892 conventional tags and 225 archival tags.

CP2, which was a collaborative exercise between SPC and IATTC, took place in May-June 2009, and visited the TAO buoys at 155°W and 140°W. During this cruise, 2,605 tuna (2,238 bigeye) were tagged with conventional tags and 90 archival tags deployed.

For the PTTP as a whole, >215,000 conventional and 681 archival tags have been released. In excess of 25,000 conventional and 73 archival tags have been recovered to date, with recovery rates of the two tag types almost identical for yellowfin and bigeye tuna. Various descriptive analyses of the tag recoveries were presented to provide indications of potential tag reporting problems and to illustrate the nature of the data being accumulated.

Discussion

The meeting expressed its strong support for the work conducted to date, and congratulated those involved in its implementation. The meeting also expressed its appreciation to the donor agencies that have supported the Programme, to the Pacific Island country government agencies that have facilitated logistics of port visits and EEZ access, and to the industry who have cooperated in the return of tags. The following points were raised in discussion:

- There is no evidence that tuna tagged in association with floating objects show a greater tendency to aggregate around such objects than tuna tagged from unassociated schools. It was also noted that when large numbers of tuna are tagged at an anchored FAD, it is desirable to drift the school away from the FAD in order to disperse the aggregation.
- The number of longline returns remains relatively small, despite the fact that many tagged yellowfin and bigeye tuna would now be of a size typical of longline-caught fish. It is expected that such returns will soon occur, in

particular returns of tagged bigeye from the central Pacific longline fishing ground adjacent to the CP1 and CP2 tag release areas.

- The absence of tag returns to date from the Japanese coastal skipjack fishery was noted. This might be due to restricted movement rates from the equatorial region. Considerable returns in this region had occurred in previous tagging projects, mainly from tuna tagged in Philippines waters; however, little tagging by the PTTP has occurred in Philippines, which may provide a partial explanation.
- One of the important objectives of the Programme is to use the tag recaptures in models to estimate fishing mortality. Therefore, the success of the programme is not judged so much on the tag recovery rate (which is indicative of the fishing mortality rate), but by the extent to which the tagging data can provide an unbiased estimate of fishing mortality. A high reporting rate of recaptured tags is crucial in this respect.
- It was noted that information on the sex of recaptured fish would be useful for a number of analyses relating to estimation of growth and natural mortality.
- The question of whether large arrays of anchored FADs can modify the movement behavior of tuna is one of the key issues being investigated by the project. In particular, comparative analysis of Bismarck Sea (PNG) releases from the present project with earlier tag releases in the same area in the 1990s before the large-scale deployment of anchored FADs should provide an answer to this question.
- While many tag returns have occurred close to the release locations because of the close vicinity of fishing effort, it will be possible to correct for this in the fine spatial-scale analysis of the tagging data in a way that should result in unbiased estimates of movement rates.

3 2009-2010 Work Plan and Budget (SC5-GN-IP-15)

The proposed PTTP work plan for the period 2009-2010 comprises:

- Western Pacific Cruise 3, a three month cruise initiated in July 2009 will concentrate tagging operations in the EEZs of FSM, Papua New Guinea, Indonesia and adjacent high seas. .
- Central Pacific Cruise 3, a 6 week cruise that will undertake tagging operations on the TAO Oceanographic buoys at 140°W and 155°W, commencing October 2009. The cruise will be a joint operation between SPC and the IATTC.

In addition to the above cruises, work will intensify on tag seeding, tag return data quality and preliminary analysis of both conventional and archival tag data.

The contribution of the Government of Korea to the PTTP budget was gratefully acknowledged by the meeting.

Discussion

The meeting endorsed the work plan for 2009-2010 as presented. It was noted that future pole-and-line based tagging is dependent on the availability of a suitable vessel, and that

there is some uncertainty regarding the future availability of the current tagging vessel Soltai 105. It is hoped that the situation will be clarified in the near future to allow contingency plans to be made if necessary.

4 Other Regional or Sub-regional Tagging Projects

4.1 Hawaii Tuna Tagging Project (SC5-GN-IP-14)

David Itano presented an update of the Hawaii Tuna Tagging Project 2 (HTTP2). The project will undertake conventional and electronic tagging of skipjack, yellowfin, and bigeye tuna and lustrous pomphret in the US EEZ around Hawaii. The project will update estimates of movement, local fishing effects, interaction and mortality (fishing and natural) for yellowfin and bigeye tuna derived during the original Hawaii Tuna Tagging Project (1995-2001), while producing the first such estimates for skipjack and pomphret. The project will also contribute tagging data as an integral sub-regional component of the PTPP. Fieldwork for the project has to date concentrated on archival and sonic tagging on small vessels with larger-scale tagging cruises scheduled to begin during the fourth quarter of 2009.

4.2 Eastern Pacific (SC5-GN-IP-17)

Kurt Schaefer of IATTC presented an overview of recent conventional and archival tagging of tunas in the eastern Pacific. During 2000-2005, 19,471 bigeye tuna have been conventionally tagged and 323 archivally tagged. Recovery rates of 43% for conventional tags and 51% for archival tags have been achieved. Both conventional and archival tagging results indicate relatively restricted movement from the core tagging area, although one archivally tagged bigeye tuna at liberty for 4.1 years made two excursions to the central Pacific during October – February of the last two years of the deployment. Archivally tagged bigeye tuna spent on average 12% of their time associated with floating objects, with the frequency of this behavior declining with age. Archival tagging of yellowfin tuna has also been undertaken, with 845 deployments and 319 recoveries (38%) to date. Plans for a major regional tagging project in the eastern Pacific were also outlined.

Discussion

The meeting congratulated Mr. Schaefer and IATTC on this impressive work. It clearly demonstrates the major benefits that can be obtained from archival tagging data in understanding aspects of tuna population dynamics, particularly movement, and vulnerability to exploitation. In discussion, it was noted that the two long-distance return movements to the central Pacific by the 4.1 year archival tag deployment are unlikely to be related specifically to spawning, because bigeye tuna spawn widely in tropical waters, including in the core area of the fishery where this fish and other bigeye tuna were tagged.

4.3 South Pacific Albacore (SC5-GN-IP-16)

The SPC-OFP undertook a six-week tagging operation in New Zealand waters during January – March 2009, tagging and releasing 2,766 troll-caught albacore tuna, with 1,457

of these injected with oxytetracycline for use in age and growth studies. No recoveries have been received to date, which is somewhat surprising as tagging took place with other troll vessels fishing nearby. A small amount of tag seeding was undertaken, with seeded tags so far escaping detection at NZ landing points, although some have been recovered at canneries in Mauritius and Bangkok. It is hoped that recoveries in the longline fishery will begin to occur in 1-2 years.

4.4 Northwestern Pacific

Miki Ogura described Japanese tagging programs in the temperate waters around Japan. The work seeks to understand the dynamics of the coastal skipjack fishery, and in particular the recent low level of catch in that fishery. The coastal skipjack tagging project was initiated in 2009 funded by the Japanese government and a private company. Almost 2,000 skipjack were released from the coastal area of southern Japan in April and May. Also, yellowfin and bigeye tuna tagging from anchored FAD aggregations in the coastal area and research vessel based tuna tagging in offshore waters are continuing.

Discussion

The meeting strongly supported the work being undertaken by Japan, and encouraged its continuation. It is essential for not only elucidating the dynamics of local fishery dynamics, but also to provide data on the connectivity of skipjack, yellowfin and bigeye tuna in this region with the major fishing areas in the equatorial western and central Pacific.

4.5 Coral Triangle Initiative

Noel Barut of the Philippines outlined a proposal for a 5-6 year tagging project in the waters of the Coral Triangle, focusing on Philippines, Indonesia, PNG and Solomon Islands. The project would undertake both conventional and archival tagging to investigate the local dynamics of tuna stocks and fisheries in these areas, and would build considerably on work already undertaken during the PTTP. The project would also provide an important source of continuous data for an area of regional significance for tuna fisheries assessment and management. A concept proposal is currently being developed for submission to the Global Environment Fund and UNDP.

Discussion

The meeting strongly endorsed the initiative and encouraged the Coral Triangle countries and the SPC-OFP to move forward in developing and implementing the project.

5 Administrative Matters

5.1 PTTP Review

The Chair outlined a commitment to conduct a technical review of the PTTP in early 2010. The review would be undertaken to provide technical advice on the conduct of the remainder of the project, in particular work relating to tag recovery and analysis.

Discussion

The meeting supported the review, noting that good value had been obtained from similar exercise for other tagging programs.



Scientific Committee Fifth Regular Session

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DRAFT AGENDA

Pacific Tuna Tagging Programme (PTTP) Steering Committee

1.30 pm, Saturday 15 August, 2009

1 Preliminaries

1.1 Review and adoption of agenda

2 PTTP Progress Report

2.1 Conventional and electronic tag release update

2.2 Western Tropical Pacific (cruises WP1 and WP2)

2.3 Central Pacific (cruise CP2)

2.4 Tag recoveries

2.5 Conventional tag recoveries

2.6 Data quality issues

2.7 Tag seeding

2.8 Archival tag recoveries

2.9 Analytical work planned

3 2009-2010 Work Plan and Budget

4 Other regional or sub-regional tagging programmes

4.1 Hawaii (PFRP)

4.2 Eastern Pacific (IATTC)

4.3 South Pacific albacore

4.4 North-western Pacific (Japan)

4.5 Coral Triangle Initiative

5 Administrative Matters

5.1 PTTP review

6 Adoption of Report to SC 4