

SCIFISH

PROJECT STEERING COMMITTEE MEETING

Monday 28 February 2011
Secretariat of the Pacific Community Conference Centre
Noumea, New Caledonia
18:00-19:00

SUMMARY REPORT

1 Introduction

The fourth SCIFISH (Scientific Support for Oceanic Fisheries Management in the Western and Central Pacific Ocean) Project Steering Committee was convened at the SPC Conference Centre on Monday 28 February 2011. The meeting was attended by representatives of Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Western and Central Pacific Fisheries Commission, Palau, Papua New Guinea, Samoa, Timor Leste, Tonga, Tuvalu, Vanuatu, New Caledonia, French Polynesia, and Wallis and Futuna as well as representatives of Collecte Localisation Satellites, Forum Fisheries Agency, and the Pacific Islands Forum Secretariat. The meeting was opened at 18:00 and closed at 19:00.

1.1 Opening remarks

Mike Batty (SPC Director of the Fisheries, Aquaculture and Marine Ecosystems Division) welcomed participants to the fourth meeting of the SCIFISH Project Steering Committee (PSC).

1.2 Selection of Chair

In accordance with convention, it was agreed that Mike Batty would chair the meeting.

1.3 Adoption of agenda

The provisional agenda (Annex 1) was adopted without amendment.

2 SCIFISH administration

John Hampton provided an overview of the administration of the project, reminding PSC participants that SCIFISH is a four-year project funded by the 9th EDF. SCIFISH has separate funding resources for ACPs and OCTs, although project activities are integrated and complementary. The ACP Regional Administrative Officer is the Pacific Islands Forum Secretariat and the OCT Regional Administrative Officer is the Government of New Caledonia. The project activities are being undertaken by SPC, FFA and the Government of New Caledonia, however SPC is the co-ordinating and administrative contact organisation for the project.

3 Project Progress

The logical framework that guides implementation of SCIFISH is outlined in Figure 1. Substantial progress has been made towards achieving the purpose and objectives of the project, with a strong contribution of the project towards the development of WCPFC conservation and management measures, national tuna management plans and regional tuna stock assessments.

Activities conducted during 2010 contributing to the achievement of the Key Result Areas were presented to the meeting and are summarised in Annex 2.

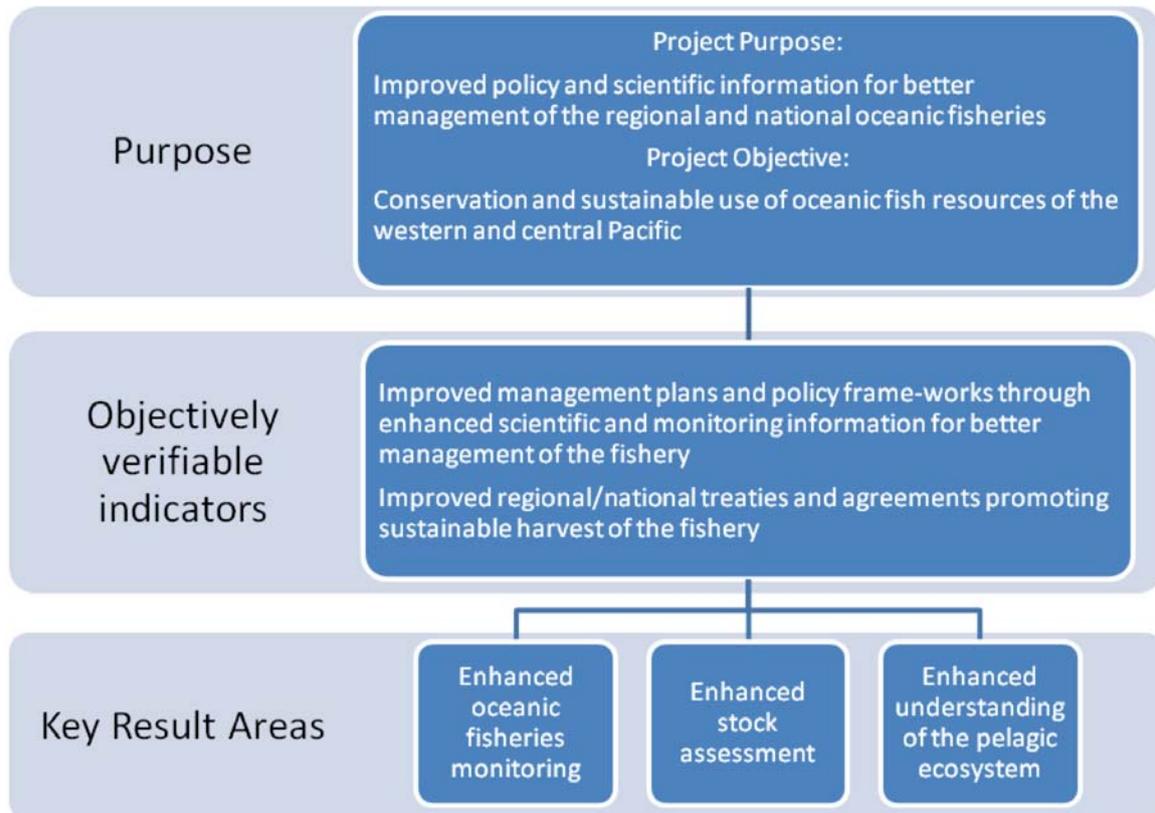


Figure 1. Outline of Logical Framework for SCIFISH

The following points were raised in discussion of the 2010 project report:

- The excellent progress made in observer training under difficult circumstances with the implementation of the WCPFC 100% observer coverage CMM was noted. Access to sub-regional observer training for Tuvalu and the Cook Islands in the future was raised and it was recommended that the SCICOFISH project team be advised of this priority. Should resources become available within the 2011 workplan for SCIFISH then consideration should be given to supporting this activity.
- The observer programs in French Polynesia and New Caledonia are now well established and both Territories have the capacity to satisfy 2012 regional requirements for 5% longline observer coverage. French Polynesia noted that they have made arrangements to support the observer program in the second half of 2011 and 2012 however financial support beyond 2012 is not guaranteed.
- The steering committee noted the extensive work that has been undertaken to collect reproductive organs and otoliths for south pacific albacore and looks forward to incorporation of this data into future stock assessments. The steering committee also noted the difficulties in tagging albacore for estimation of exploitation and encouragement for further use of satellite tags and other indirect methods (otoliths microchemistry and isotope signatures) for estimating rates of movement. Incorporation of such data will assist with reducing uncertainties in the stock assessment for South Pacific albacore.
- The steering committee noted that the completion of all national and sub-regional reports was a key feature of the 2011 work plan. For national level reports the steering committee suggested that where feasible the national level reports should also include a summary of region wide trends. The steering committee also requested that summary statistics from the implementation of the tagging project be included in national level reporting as appropriate.
- The steering committee suggested that the executive summary of the pilot study on use of satellite based radar and VMS should be distributed broadly to ACP participants. Whilst recognising that infrastructure in the Pacific and existing budgets may currently be limiting the application of this technology the dissemination of the report will assist ACP and regional organisations with future planning requirements for the region
- The steering committee acknowledged the importance of local level support for tag recovery and implementation of spill sampling experiments and noted their continued priority to facilitate these activities.

4 2011 Workplan

The provisional work plan for year 4 (2011) of the project was presented to the meeting and is summarised in Annex 3. The 2011 work plan was endorsed by the meeting.

5 Conclusion

The PSC expressed its strong support for the SCIFISH project, noted the progress of 2010 activities towards achieving the objectives and purpose of the project and endorsed the 2011 work plan as presented.

Annex 1

SCIFISH

PROJECT STEERING COMMITTEE MEETING

Monday 28 February 2011 (6.00pm-8.00pm)
SPC Conference Centre
Noumea, New Caledonia

PROVISIONAL AGENDA

5 Introduction

- 5.1 Opening remarks
- 5.2 Selection of Chair
- 5.3 Adoption of agenda

6 Report of SCIFISH Year 3 (2010)

- 6.1 Project administration
- 6.2 Result 1: Enhanced Oceanic Fisheries Monitoring
- 6.3 Result 2: Enhanced Stock Assessments
- 6.4 Result 3: Enhanced Understanding of the Pelagic Ecosystem

7 Work Plan 2011

- 7.1 Result 1: Enhanced Oceanic Fisheries Monitoring
- 7.2 Result 2: Enhanced Stock Assessments
- 7.3 Result 3: Enhanced Understanding of the Pelagic Ecosystem

8 Discussion and Recommendations

BACKGROUND DOCUMENTS

PSC-4 BP-1 SCIFISH – Year 3 Annual Report and Provisional 2011 Work Plan and
Cost Estimate (1 January 2011 – 31 December 2011)

Annex 2. Progress towards the achievement of the Key Result Areas.

Key Result Area	Evaluation against ACP indicators
1. Enhanced oceanic fisheries monitoring	
<p>1.1 Improvement in the observer and port sampling coverage and quality of data to meet the required regional standards</p>	<p><i>Observer Coverage</i></p> <ul style="list-style-type: none"> • 478 observers (2008 – 89; 2009 – 239; 2010 – 150) certified through observer training workshops during the course of the project to PIRFO standard. Observer training workshops have been held in, or have had participants from, most the participating states (ACP and OCTs), and also on a sub-regional basis. • This increase in capacity has resulted in sufficient numbers of trained and certified observers to largely meet the purse seine observer requirements specified in WCPFC Conservation and Management Measure (CMM) 2008/01: <ul style="list-style-type: none"> (1) 100% observer coverage of ROP purse seine vessel trips for August–September 2009. (2) 100% observer coverage of ROP purse seine vessel trips in 2010 as required by CMM 2008/01. • 4 observers, 4 port samplers certified and 1 observer coordinator in New Caledonia and 5 observers, 3 port samplers certified and 1 observer coordinator in French Polynesia. • This increase in capacity has resulted in sufficient numbers of trained and certified observers to satisfy the longline observer coverage standards (5% coverage of ROP LL vessel trips from July 2012) in New Caledonia and French Polynesia, making these the first 2 Pacific Island members of WCPFC to satisfy this requirement. • Observer coverage has increased steadily since project inception (NC: 6% (2008) 8% (2009) 10% (2011); FP: 2% (2008), 3% (2009) 5% (2010)). • Port Sampling coverage in NC & FP has exceeded the target (10%) in each year since project inception (NC: 42% (2008), 20% (2009), 42% (2011); FP: 72% (2008), 76% (2009) 75% (2010)). <p><i>Data Quality</i></p> <ul style="list-style-type: none"> • Competency Based Training endorsed by FFC 67 and Agreed Competency Based Standards implemented in PIRFO observer training and evaluation. • Increased capacity in fishery monitoring data management in priority PICTs achieved through 9 attachments to SPC. Training included a comprehensive introduction to the WCPFC fishery, data collection procedures and use of current tuna databases. • Auditing conducted during annual Tuna Data Workshops used to identify data quality issues. • Tuna Data Workshop port sampling audit manual published. • MOUs established with CK, KI, NU, PA, WS, TO, TV, MI, FSM, SB to ensure the PIRFO is fully operational. • Agreement to establish sufficient numbers of Observer Debriefers (~ 90) within the PIRFO. • Bias in at sea monitoring of species composition and size identified, correction factor for historical data estimated and new spill sampling methodology in development for application by PIRFO. <p><i>Sustainability beyond SciFish</i></p> <ul style="list-style-type: none"> • The Maritime Training School in Kavieng, PNG, is considered a centre of excellence for basic and advanced observer training. PNG nationally-run courses now operate autonomously with only oversight from SPC observer coordinator. • 3 trainee trainers established and approaching qualification as Trainers for deployment in other ACPs. <p>French Polynesia has in principle agreed to supporting the observer, port sampling and national coordinator positions beyond the cessation of SCIFISH.</p>
<p>1.2 Improved regional coordination of national databases to track and monitor fisheries data for compliance with management requirements</p>	<ul style="list-style-type: none"> • Reporting module in TUFMAN completed which specifically addresses the reporting obligations by ACPs to the WCPFC. • Data auditing procedures developed in TUFMAN to allow comparison of data from numerous sources, including the regional register, VMS, observers, log-sheets, unloading and transshipment, trade information and/or catch documentation schemes, and import/export data to generate data exception reports. • Training provided to ACP MCS and Data Management Officers (<i>in situ</i> and regional workshops) to generate the information necessary for continuous improvement in data quality and preparation of reports for compliance. • TUFMAN version made available to all participating ACPs. • Annual tuna data auditing conducted through Tuna Data Workshop. • Regional MCS Strategy completed incorporating: <ol style="list-style-type: none"> 1. Development of a policy and framework to facilitate collection, processing, storage and exchange of fisheries data to support national, sub-regional and regional MCS initiatives;

	<p>2. Analysis of the benefits of enhanced regional MCS coordination including an examination of the methodology and functional specification for the establishment, funding and operation of a Regional MCS Coordination Centre (RMCC).</p>
1.3 More comprehensive IUU compliance assessments undertaken	<ul style="list-style-type: none"> • Regional MCS Strategy completed incorporating: <ol style="list-style-type: none"> 1. Assessment of risks to oceanic fish stocks from fishing that undermines fisheries management objectives and frameworks; 2. Review of FFA members' compliance with agreed MCS measures; 3. Examination of options for providing an effective surveillance and response capability by identifying more efficient ways to use MCS assets (surveillance aircraft and patrol vessels) as well as other possible providers and funding options, with a view to supplementing national programmes in the short to medium term. • The Strategy has yet to be implemented.
1.4 Improved detection of IUU fishing through strengthening existing technologies and trial of new technologies	<ul style="list-style-type: none"> • Assessment of the acquisition and processing of VMS and RADARSAT image data, and simultaneous analysis of the data sets using custom built software to match VMS records with RADARSAT targets for the detection of IUU fishing activities completed. The results indicate that these methods will have a low rate of detection of IUU fishing activities and this approach does not warrant further investment until resolution of RADARSAT improves.
2. Enhanced stock assessment	
2.1 Tagging of tropical tunas using conventional and electronic archival tags	<ul style="list-style-type: none"> • The total number of tagged tuna in the WCPO is now 271,391 and is the most comprehensive and spatially extensive tuna tagging dataset available for stock assessment. The number of tag recoveries currently exceeds 15%. • Designated tagging website released providing continuous update of release and recovery information. Country specific reporting of results a feature of the website. • Vertical behaviour of bigeye, yellowfin and south pacific albacore described and FAD associated behaviour quantified. • Rates of horizontal movements estimated for bigeye, yellowfin, skipjack and south pacific albacore and included in stock assessment. Preliminary assessments on the impacts of FAD density on horizontal and fishing mortality completed.
3. Enhanced understanding of the pelagic ecosystem	
3.1 Produce better management policies through further development and application of the Spatial Ecosystem and Population Dynamics Model (SEAPODYM)	<ul style="list-style-type: none"> • Significant developments have been completed for the SEAPODYM model including: <ol style="list-style-type: none"> 1. Better definition of habitat indices, movements, and accessibility of tuna and tuna-like predators to different vertically migrant and non-migrant micronekton functional groups (Lehodey et al., 2008, Lehodey et al., 2010). These groups are represented in a three layer vertical environment delineated using predicted euphotic depth that is used to achieve a more realistic vertical structure. The previous version used fixed vertical boundaries. 2. Ability to configure a variable time step for the age structure to improve estimation of the dynamics of younger cohorts using the length-frequency data and at the same time to save computing time by augmentation of the step size for the older cohorts, which are characterized by slow growth and hence small changes in thermal habitat parameters and movement rates. 3. Modification of the approach for computing natural mortality-at-age to allow spatio-temporal variability based on habitat (larvae and juvenile) and the definition of a food requirement index. This index gives a relative measure of the balance between available biomass of prey (micronekton) and food requirement of a predator cohort based on food consumption rates. 4. Parameter optimisation through assimilation of commercial fisheries data using maximum likelihood estimation approach (Senina et al., 2008). The current parameter estimation approach consists in minimizing a cost function (i.e., a log-negative likelihood) that includes both predicted and observed catch (in absolute values), as well as sampled versus computed values from the model length frequencies (in relative values). 5. Model evaluation and diagnostic routines including sensitivity analysis, twin experiments, likelihood profiling, computation of hessian matrix to estimate parameter uncertainty and goodness of fit tests. • Reference models for simulating population dynamics of skipjack, bigeye, south pacific albacore and yellowfin at multiple resolutions. • Preparation and publication of a technical manual and users manual. • Five peer reviewed scientific publications on the model and its application. • Endorsement by WCPFC of a SEAPODYM project for provision of scientific advice on tuna management policies.
3.2 More accurate estimates and assessment of impacts of exploitation in EEZs.	<ul style="list-style-type: none"> • Peer reviewed publication on the preliminary forecasts of population trends for Pacific bigeye tuna under the A2 IPCC scenario. (see Lehodey et al (2010) Progress in Oceanography, 302-315.) • Submitted manuscript on the preliminary assessment of the effects of climate change on oceanic fisheries in the Pacific

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| | <ul style="list-style-type: none">• Completed analyses on the impacts of time-area closures for tropical tuna management.• Completed analyses on the inter and intra annual variation in oceanography and the dynamics of south Pacific Albacore• Submitted manuscript describing the relationships between albacore longline catch rates and environment in New Caledonia.• Submitted manuscript on the impacts of climate change on the warm pool ecosystem of the WCPO and vulnerability of open ocean food webs in the tropical Pacific to climate change.• EEZ scale projections of environmental variability of biomass distribution completed and manuscript drafted |
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Annex 3. Provisional SCIFISH work plan for 2010.

PROJECT ACTIVITY	COMMENTS
Recruitment	- All recruitment undertaken in 2008, no anticipated recruitment in 2011
Finance	- Year 4 audit and financial reports completed
Monitoring & Evaluation	- Present project and WP to PSC - Prepare six-monthly progress report and final annual report - Include achievements towards achieving the project purpose, and on impacts, in half yearly reports - Participate in Results Oriented Monitoring, if scheduled in 2011
Visibility	- Dedicated SciFish information page created on the SPC OFP website

ACP Component

Over the course of 2011 the focus will be on the following:

PROJECT ACTIVITY					
Result 1: Enhanced Oceanic Fishery Monitoring					
Performance and success indicators	Activity as per Contribution Agreement	Activities 2011	Results to be delivered – quantity, quality and time	2011 activity schedule	Comment
<ul style="list-style-type: none"> Observer capacity and institutional infrastructure established so that P-ACPs can achieve all of national and regional observer and port sampling coverage and data collection requirements and standards. 100% of P-ACPs provided with capacity and tools for implementing continuous data auditing to 	1.1 Observer/port sampling workshops	<ul style="list-style-type: none"> Assessment of future training needs for Observer/Port Sampling Programs. Organisation of Observer Coordinators workshop Develop syllabus for tag seeding, biological sampling and spill sampling training included in observer training courses. 	<ul style="list-style-type: none"> Report via FFC the future training needs for Observer/Port Sampling Programs. 1 Observer Coordinators workshop. Tag seeding, biological sampling and spill sampling training included in 50% of PIRFO training courses 	<ul style="list-style-type: none"> Qtr1-2 Qtr1-3 Qtr1-2 	<ul style="list-style-type: none"> Port Sampling and Observer Coordinator position not supported in Year 4 Port Sampling and Observer trainer supported until 28 February 2011 (LL course in Samoa). Needs assessment in response to MTR recommendation Tag Recovery Officer (TRO) and Research Assistant to develop syllabus for tag seeding & biological sampling
	1.2 Training Attachments	No activities planned for Year 4	<ul style="list-style-type: none"> Four P-ACP trainers certified. 		
	1.3 Operational Support for observer/port sampling programs	<ul style="list-style-type: none"> MOUs to facilitate tag recovery 	<ul style="list-style-type: none"> MOUs established with SB,MI, FSM to facilitate tag recovery 	<ul style="list-style-type: none"> Qtr1 	Recommendation of MTR to establish sub regional TRO

<p>maximise data quality for scientific decision making</p> <ul style="list-style-type: none"> 100% of P-ACPs provided with capacity, tools and access to information for detecting and managing IUU fishing activities. 	1.4 Quality control of observer/port sampling data	<ul style="list-style-type: none"> No activities planned for Year 4 			
	1.5 Develop and trial new technologies for enhancing quality of data and timeliness of data collection	<ul style="list-style-type: none"> Implement spill sampling trials in collaboration with WCPFC 	<ul style="list-style-type: none"> Results of spill sampling trials reported to WCPFC SC7 	<ul style="list-style-type: none"> Qtr 1-4 	
	1.6 Develop harmonised fisheries monitoring / data sharing protocols (FFA)	<ul style="list-style-type: none"> Develop harmonised regional database templates for the dissemination of MCS information, harmonized Vessel of Interests List, and rating index system to indicate surveillance priority of vessels 	<ul style="list-style-type: none"> Software demonstrated to FFA MCS Working Group 	<ul style="list-style-type: none"> Qtr 1-4 	
	1.7 Undertake compliance audits and IUU risk assessments (FFA)	<ul style="list-style-type: none"> No activities planned for Year 4 			
	1.8 Develop and implement methodologies to verify fisheries data (SPC-FFA)	<ul style="list-style-type: none"> No activities planned for Year 4 			
	1.9 Develop and trial new technologies, including satellite based technologies for the detection of IUU fishing activities	<ul style="list-style-type: none"> No activities planned for Year 4 			
Result 2: Enhanced Stock Assessment					
<ul style="list-style-type: none"> Establish the most comprehensive tagging dataset for tropical tunas in the WCPO for inclusion in regional stock assessments and analyses of population dynamics. 	2.1 Large-scale conventional and electronic tagging / biological studies	<ul style="list-style-type: none"> Implement tagging cruises Implement tag seeding program. Conduct data processing. Implemented tag recovery procedures including the establishment of sub-regional tag recovery 	<ul style="list-style-type: none"> 1 PNG tagging cruise completed. 1 central Pacific cruise completed. Tag reporting rate estimated. Database 100% up to date processing conducted. 6 sub-regional tag recovery officers 	<ul style="list-style-type: none"> Qtr1-2 Qtr1-3 Qtr3 Qtr1-4 Qtr1-2 	<ul style="list-style-type: none"> Establishment of sub-regional tag recovery officer a recommendation of MTR

	2.1 Large-scale conventional and electronic tagging / biological studies	officers.	established.	<ul style="list-style-type: none"> • Qtr1-2 • Qtr1-3 • Qtr3 • Qtr1-4 	<ul style="list-style-type: none"> • Establishment of sub-regional tag recovery officer a recommendation of MTR
	2.2 Analysis of tagging, biological and fishery oceanographic data	<ul style="list-style-type: none"> • Descriptive analyses of tagging data • Statistical analyses of conventional and electronic tags for yellowfin, skipjack and bigeye 	<ul style="list-style-type: none"> • 3 Sub regional reports documenting tagging activities provided to ACP countries via web-based access • 1 Report documenting analysis of population dynamics of yellowfin, skipjack and bigeye from conventional and electronic tags provided to WCPFC. 	<ul style="list-style-type: none"> • Qtr3-4 • Qtr3-4 	<ul style="list-style-type: none"> • Priority to report production as per recommendation of MTR
	2.3 Incorporate data / analytical results into stock assessment models	<ul style="list-style-type: none"> • Prepare tagging data for inclusion in 2011 stock assessments provided to WCPFC 	<ul style="list-style-type: none"> • Tagging data included in 2011 stock assessment as appropriate 	<ul style="list-style-type: none"> • Qtr2-3 	
Result 2: Enhanced Understanding of the Pelagic Ecosystem					
<ul style="list-style-type: none"> • Provide ACPs with infrastructure to evaluate tuna management policies in the context of current and future environmental variability at both the regional and EEZ scales. 	3.1 Ecosystem model development and enhancement	<ul style="list-style-type: none"> • No activities planned for Year 4 	<ul style="list-style-type: none"> • No activities planned for Year 4 		
	3.2 Use of models for research / management applications	<ul style="list-style-type: none"> • Report writing 	<ul style="list-style-type: none"> • 1 report evaluating time-area closures for tropical tuna management • 2 reports documenting EEZ scale oceanographic effects for KI and PNG. 	<ul style="list-style-type: none"> • Qtr1-2 • Qtr1-2 	<ul style="list-style-type: none"> • Priority to report production as per recommendation of MTR

OCT Component

Over the course of 2011 the focus will be on the following:

PROJECT ACTIVITY						
Result 1: Enhanced Oceanic Fishery Monitoring						
Performance and success indicators	Activity as per Contribution Agreement	Activities 2011	Results to be delivered – quantity, quality and time	2011 activity schedule	Comment	
<ul style="list-style-type: none"> Observer capacity and institutional infrastructure established so that P-OCTs can achieve 100% of national and regional observer and port sampling coverage and data collection requirements and standards. OCTs provided with an evaluation of the feasibility of applying existing satellite technologies for detecting IUU fishing activities. 	1.1 Observer/port sampling workshops	<ul style="list-style-type: none"> LL observer training course provided to FP. FP coordinator trained in biological sampling coordination and specimen handling. Attend Observer Coordinators Workshop Assessment of improvements in fishery monitoring information due to increased observer and port sampling coverage 	<ul style="list-style-type: none"> 1 LL observer training course provided to FP 100% capacity for biological sampling coordination by National coordinators Participation in Observer Coordinators workshop by FP and NC Report documenting the improvements in fishery monitoring information due to increased observer and port sampling coverage in NC and FP. 	<ul style="list-style-type: none"> Qtr1-2 Qtr1 Qtr1-3 Qtr1-2 	<ul style="list-style-type: none"> NC and FP coordinators to be supported until 30 June and finances reassessed to determine if support can continue to 31 December FP observers to attend LL course in Samoa Train Taiana in biological sampling in January Support attendance at Observer coordinators workshop for FP and NC. Recommendation of MTR for FP and NC Governments to continue data collection after cessation of SCIFISH. Report will provide information to assist this decision making. 	
	1.2 Training Attachments	No activities planned for Year 4				
	1.3 Operational Support for observer/port sampling programs	<ul style="list-style-type: none"> Observer and port sampling support for NC and FP 	<ul style="list-style-type: none"> Minimum of 5% LL observer coverage in FP and NC Minimum of 10% port sampling coverage in NC and FP 	<ul style="list-style-type: none"> Qtr1-3 Qtr1-3 	Recommendation of MTR to support observer and port sampling operation in NC and FP in Year 4 for as long as possible	
	1.4 Quality control of observer/port sampling data	No activities planned for Year 4				
	1.9 Develop and trial new technologies, including satellite based technologies for the detection of IUU	No activities planned for Year 4				See section 3.6

	fishing activities				
Result 2: Enhanced Stock Assessment					
<ul style="list-style-type: none"> Establish the most comprehensive tagging and biological parameter dataset for south Pacific albacore for inclusion in regional stock assessments and analyses of population dynamics. 	2.1 Large-scale conventional and electronic tagging / biological studies	<ul style="list-style-type: none"> Implement albacore tagging. Process data Implement tag recovery -Target sampling on LL vessels completed to fill gaps in gonad and otoliths spatial distribution. Undertake otoliths microchemistry analyses to estimate movement. Analyse muscle/organ isotope and diet to estimate movement. 	<ul style="list-style-type: none"> 1 Albacore tagging cruise completed. Gonad and otoliths sampling completed 30 otoliths analysed for microchemistry content 100 stomachs analysed for diet content and 100 muscle samples analysed for isotope composition. 	<ul style="list-style-type: none"> Qtr1-2 Qtr3 Qtr1-2 Qtr1-2 	<ul style="list-style-type: none"> Targeted sampling of LL vessel recommended by MTR Otolith microchemistry analyses recommended by MTR Muscle/organ isotope and diet analyses recommended by MTR
	2.2 Analysis of tagging, biological and fishery oceanographic data	<ul style="list-style-type: none"> Analysis of reproductive & growth biology of albacore Assess the feasibility of otolith microchemistry as to indirectly measure movement rates. Assess the feasibility of isotope diet mismatch method for estimating movement. 	<ul style="list-style-type: none"> 1 report documenting the reproductive & growth biology of albacore provided to WCPFC. 1 report on vertical movement. Proof of concept for otolith microchemistry as to indirectly measure movement rates provided to WCPFC. Proof of concept for isotope diet mismatch method for estimating movement provided to WCPFC. 	<ul style="list-style-type: none"> Qtr3 Qtr3-4 Qtr3-4 Qtr3-4 	<ul style="list-style-type: none"> Priority to report production as per recommendation of MTR
	2.3 Incorporate data / analytical results into stock assessment models	<ul style="list-style-type: none"> Provide reproductive ogive and growth curves estimated for inclusion in 2011 stock assessments provided to WCPFC 	<ul style="list-style-type: none"> Albacore reproductive ogive and growth curves included in 2011 stock assessment as appropriate. 	<ul style="list-style-type: none"> Qtr2-3 	
Result 3: Enhanced Understanding of the Pelagic Ecosystem					
Provide 100% P-OCTs with	3.1 Ecosystem model development and	<ul style="list-style-type: none"> No activities planned for Year 4 	<ul style="list-style-type: none"> No activities planned for Year 4 		

infrastructure to evaluate tuna management policies in the context of current and future environmental variability at both the regional and EEZ scales.	enhancement	<ul style="list-style-type: none"> No activities planned for Year 4 	<ul style="list-style-type: none"> No activities planned for Year 4 		
	3.2 Use of models for research / management applications	<ul style="list-style-type: none"> Report writing 	<ul style="list-style-type: none"> 2 report documenting EEZ scale oceanographic effects for South Pacific albacore. 	<ul style="list-style-type: none"> Qtr1-3 	Priority to report production as per recommendation of MTR