

**SCIENTIFIC COMMITTEE**

**NINTH REGULAR SESSION**

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**Record of the Scientific Committee’s Work Programme**

**WCPFC-SC9-2013/ GN-WP-05**

**Secretariat**

This is a standing document which needs to be updated as needed. The Secretariat added more information to the last version (Attachment H, SC8 Summary Report) for further review and refinement at SC9, using TRACK CHANGES function.

The purpose of this Record is to allocate a unique number to individual SC projects for future reference, to describe explicit terms of reference for any project contracts, and compile historical project activities. This will be a standing document for an annual update if needed. An Informal Small Group may meet in the margin of SC9 to review and update the contents in the following matrix with budget implications to be included if needed for review and recommendation to the Commission.

Category used in the matrix

DS – Data and Statistics

SA – Stock Assessment

EB – Ecosystem and Bycatch

MI – Management Issues

BI – Biology

FT – Fishing Technology

ME – (Assessment) Methods

**Record of the Scientific Committee’s Work Programme**

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| **Project number****(priority)** | **Category** | **Description** | **Status** |
| Project 1. (Priority = High)SPC-OFP services | DS | Title**Database management and control**DescriptionIncorporate data provided by Members, Cooperating Non-Members and Participating Territories (CCMs) under the Commission’s data provision policy into existing databases and facilitate access of Commission Secretariat staff to those data as appropriate.Tasks/TOR* Update databases and install at WCPFC headquarters
* Update Catch/Effort (CES) and Regional Observer Programme (ROP) database query software installed at WCPFC headquarters
* Provide WCPFC Staff training as required

History* The budget for SPC’s data management services were proposed at SC2 and endorsed by WCPFC3 (December 2006, $139K) and started in 2007as a SPC-OFP’s scientific service agreement (Annex I).
 | Active ongoing |
| Project 2. (Priority = High)SPC-OFP services  | DS | Title**Annual catch estimates**DescriptionCompile estimates of annual catches by species, gear type and flag, as specified in the procedures for Scientific Data to be Provided to the Commission and in support of the functions of the Commission and its subsidiary bodies.Tasks/TOR* Compile annual catch estimates of CCMs by species and gear
* In conjunction with WPEA Project, conduct catch estimation workshop and compile annual catch estimates for West Pacific East Asia (WPEA) countries.

History* SC1 reflected budget for the IPDCP and review for Vietnam’s tuna fisheries, some of which was endorsed by WCPFC2. Since then, the Commission continued to support IPDCP and WPEA Project.
* SPC (Mr Peter Williams) continued to involve in IPDCP and WPEA Project activities as an in-kind contribution. Travel cost was provided by the Project budget.
 | Active ongoing |
| Project 3. (Priority = High)SPC-OFP services | DS | Title**Estimates of other target and non-target catches**DescriptionFor catches for which estimates are not otherwise available, conduct statistical analyses to estimate catches, particularly in regard to a) purse-seine catches of bigeye, skipjack and yellowfin tuna, b) discards of target tuna species, and c) catches of non-target species.Tasks/TOR* Conduct analyses as described in the Description section and provide SC papers

History* Related with (c) above, SPC provided WCPFC-SC8-2012/EB-WP-18 (Estimation of catches and fate of edible bycatch species taken in the equatorial purse seine fishery, G. Pilling, S. Nichol, and S. Harley), based on SC7 recommendation in Para 457, SC7 Report.
* SC8 requested to continue this work (Para 450, SC8 Report).
 | Active ongoing |
| Project 4. (Priority = Medium)SPC-OFP services | DS | Title**Publication of Regional Tuna Bulletin**DescriptionProduce and publish on the Commission’s website two issues of the Regional Tuna Bulletin, containing estimates of monthly catch rates for WCPO fleets, based on the most recent data available.Tasks/TORHistory | Dis-continue |
| Project 5. (Priority = Medium)SPC-OFP services | DS | Title**Publication of Tuna Fishery Yearbook**DescriptionProduce and publish on the Commission’s website the Tuna Fishery Yearbook, containing annual catch estimates by gear type, flag and species.Tasks/TOR* Refer to Description section

History* Data from the previous year are presented in the current year’s document
 | Active ongoing |
| Project 6. (Priority = High)SPC-OFP services | DS | Title **Estimation of catch and effort data for assessed contribution and CMMs**DescriptionCompile estimates of catch and effort in support of the functions of the Commission and its subsidiary bodies, such as a) estimates of annual catches by vessel flag, EEZ, and archipelagic waters, for use in determining the catch component of the Commission’s assessed contributions; and b) estimates of catch and effort in support of conservation and management measures.Tasks/TOR* Estimate annual catches by vessel flag, EEZ, archipelagic waters, and IATTC/WCPFC overlap area for use in determining the catch component of the Commission’s assessed contributions
* Provide catch and effort data regarding the revision of relevant CMMs as requested

History* The estimates of catch and effort data and related analyses have been provided to the SC for review and to the Commission for the revision of relevant CMMs
 | Active ongoing |
| Project 7. (Priority = High)SPC-OFP services | DS | Title**Dissemination of public domain data**DescriptionDisseminate public domain catch, effort and size data on the Commission’s website at agreed level of resolution.Tasks/TOR* Refer to Description section

History* WCPFC website:

Home/Science and Scientific Data Functions/Tuna Fishery Data* [Status of the provision of data to the Commission](http://www.wcpfc.int/statprov):

<http://www.wcpfc.int/statprov> * [Public domain data](http://www.wcpfc.int/science-and-scientific-data-functions/public-domain-data):

<http://www.wcpfc.int/science-and-scientific-data-functions/public-domain-data> * [Coverage rates of tuna fishery data](http://www.spc.int/oceanfish/en/ofpsection/data-management/wcpfc/213/146-wcpo-tuna-fishery-data-coverage):

<http://www.spc.int/oceanfish/en/ofpsection/data-management/wcpfc/213/146-wcpo-tuna-fishery-data-coverage>  | Active ongoing |
| Project 8. (Priority = High)SPC-OFP servicesMove this to Project 15 | WPEA | Title**West Pacific East Asia Oceanic Fisheries Management Project**DescriptionThe objective of the project is to strengthen national capacities and international cooperation on priority transboundary concerns relating to the conservation and management of highly migratory fish stocks in the west Pacific Ocean and east Asia (Indonesia, Philippines and Vietnam). Refer to Project Document for details.Tasks/TOR* Participate in the work of data collection and annual catch estimation of the WPEA countries (Participate in the WPEA OFM Project)
* WPEAOFM has two overall components: i) monitoring, data enhancement and fishery assessment; and ii) policy, institutional strengthening and fishery management.

History* Originally started as the Indonesia and Philippines Data Collection Project (Projects 14) and compilation of information on the tuna fisheries of Vietnam.
* Implementation of the IPDCP (2004-2009)
* Implementation of the 1st phase of the WPEA OFM project (2010-2012)
* Refer to SC3-GN-WP-07 Report of the Steering Committee on IPDCP.
* WCPFC Secretariat and UNDP is working on Phase 2 of WPEAOFM
 | Active ongoing(The 1st phase of WPEA OFM finished in March 2012) |
| Project 9. (Priority = Medium)SPC-OFP services | DS | Title**Data format**DescriptionDevelop data standards for port sampling and observer programmes in association with WCPFC Secretariat.Tasks/TOR* Refer to Description section

History* Data standards have been adopted by the Commission
 | Completed  |
| Project 10. (Priority = High)SPC-OFP services | DS | Title**Data rules of the Commission**DescriptionAdvise the Executive Director regarding the development of a) Rules and Procedures for the Access to and Dissemination of Data, and b) the Information Security Policy.Tasks/TOR* Will require ongoing periodic monitoring as the information and data management policies and procedures of the Commission evolve.

History* This has been in each annual work plan for many years. There has not been much year-to-year progress. It would be better to engage in this process only periodically (e.g. once every three years). Also need legal advice beyond the expertise of SPC.
 | Completed (retain as required for periodic inputs) |
| Project 11. (Priority = High)SPC-OFP services | DS | Title**Data gaps**DescriptionIdentify known data/information gaps in the current stock assessment, particularly in relation to operational level CPUE data.Tasks/TOR* Determine the status of CCM’s provision of scientific data to the Commission and produce SC papers on data gaps
* Rescue of historical commercial catch data from countries in the western Pacific Ocean, including Vietnam (ref. Project 15)

History* + A number of potential explanations for different data gaps were identified, including the time and resources required to access and collate historical records, the long voyage times for some distant-water longline fleets and the large and dispersed nature of small boat fleets in Indonesia and the Philippines.
	+ A number of members cited specific issues with the summary of data gaps presented in the paper and SPC-OFP undertook to revise the information accordingly in consultation with the relevant members.
	+ SPC continued to produce data gap related documents since SC1 (WCPFC-SC1-ST-IP-02) and SC8 produced WCPFC-SC8-2012/ST-WP-1 (Scientific data available to the WCPFC).
 | Active ongoing |
| Project 12. (Priority = High)SPC-OFP services | DS | Title**Data gaps – Development/maintenance of data gaps website**DescriptionWithin the next 12 months, deploy on WCPFC website a prototype computer programme that will allow gaps in data to be easily identified.Tasks/TORHistory* + ST-SWG priority.
	+ Undertaken in 2008 jointly with WCPFC Secretariat.
 | Ongoing~~Completed 2008~~ |
| Project 13. (Priority = High)SPC-OFP services | DS | Title**Data gaps – Data forms**DescriptionReview current unloadings data forms used in the region, and the proposed WCPFC transhipment reporting form, to determine their adequacy for scientific purposes.Tasks/TOR* Review of data forms

History* + ST-SWG priority.
 | Completed 2008 |
| Project 14. (Priority = High)Consolidate with Project 8 | DS | Title**Indonesia and Philippines Data Collection Project**DescriptionIndonesia and Philippines Data Collection Project (IPDCP) Tasks/TOR* IPDCP: Data collection from port sampling in Indonesia and the Philippines.

History* Refer to SC3-GN-WP-07 Report of the Steering Committee on IPDCP.
* 2004-2009: IPDCP activities in Indonesia and the Philippines.
* 2010-2012: WPEAOFM Project activities
* WCPFC Secretariat and UNDP is working on Phase 2 of WPEAOFM
 | ~~Active ongoing~~Completed |
| Project 15. (Priority = High)Move Project 08 to this row | WPEA | Title**West Pacific East Asia Oceanic Fisheries Management Project (WPEA)**DescriptionThe objective of the project is to strengthen national capacities and international cooperation on priority transboundary concerns relating to the conservation and management of highly migratory fish stocks in the west Pacific Ocean and east Asia (Indonesia, Philippines and Vietnam). Refer to Project Document for details.Tasks/TOR* Participate in the work of data collection and annual catch estimation of the WPEA countries (Participate in the WPEA OFM Project)
* WPEAOFM has two overall components: i) monitoring, data enhancement and fishery assessment; and ii) policy, institutional strengthening and fishery management.
* Specific project activities include:
* Recover historical tuna catch data in the WPEA countries
* Data collection from port sampling
* Maintenance of database
* Capacity building in data collection/management and stock assessment
* Strengthening policy, legal and institutional arrangements to fully comply with WCPFC requirements
* Review of tuna association activities
* Development of national tuna management plan

History* Originally started as the Indonesia and Philippines Data Collection Project (Projects 14) and compilation of information on the tuna fisheries of Vietnam.
* Implementation of the IPDCP (2004-2009)
* Implementation of the 1st phase of the WPEA OFM project (2010-2012)
* Refer to SC3-GN-WP-07 Report of the Steering Committee on IPDCP.
* WCPFC Secretariat and UNDP is working on Phase 2 of WPEAOFM

Note* The original TOR of Project 15 was to rescue historic tuna catch data, but now this activity is imbedded into WPEA Project under the same Project number 15. From now on, Project 8 will not be cited, instead, Project 15 will represent WPEA Project.
 | Active ongoing(Merged to Project ~~14~~08) |
| Project 16. (Priority = Medium)  | DS | Title**Commission’s publication and distribution of identification/training material for data collection**DescriptionPublication and distribution of Commission’s training and educational materials.Tasks/TOR* Development of training materials and the production of material to facilitate the identification of target and non-target species by fishermen, observers, and port samplers with the objective of improving data quality.

History* During 2007, additional guides were developed by the FT-SWG on longline and purse-seine bycatch species.

Comments:1. Work included the production of three identification guides for distinguishing yellowfin from bigeye tuna in three condition states (fresh, brine frozen, damaged) useful for the training of observers and port samplers. The guides were produced in English and have since been translated into seven languages for use by all tuna RFMOs. Additional photographic guides were produced to assist the identification of longline and purse seine non-target species. Expenditures under this Project were mainly used to fund the reproduction and distribution of these guides to various agencies and organizations for training purposes.
2. These guides are still available on the Commission website at no cost (Documents SC3-FT-IP-05, 06, 07 at <http://www.wcpfc.int/meetings/2007/3rd-regular-session-scientific-committee>) but funds for their printing and distribution in hard copy may be desirable in the future.
3. Recommend that this project be moved to a list of inactive but potentially useful projects.
 | Completed |
| Project 17. (Priority = High) | DS | Title**ROP – development of data fields**DescriptionDraft list of minimum data fields for the Regional Observer Programme be annotated with explanations of what each field is and why it is needed and detail describing the format (e.g. units of measure, codes) to be used when collecting each field.Tasks/TOR* As shown in the Description above.

History* ST-SWG priority.
* Undertaken by WCPFC Secretariat during 2008.
 | Completed  |
| Project 18. (Priority = High)  | DS | Title**Sampling size**DescriptionDetermine appropriate sample sizes for length-frequency sampling strategies.Tasks/TOR* Relates to all target species but yellowfin was identified as priority species.

History* SA-SWG priority
* Incorporate this project into Project 60
 | Inactive and Deleted  |
| Project 19. (Priority = High)  | DA | Title**ROP – development of data fields**DescriptionIdentification and description of operational characteristics of the major WCPO fleets and identification of important technical parameters for data collection.Tasks/TOR* Includes characterization of operational features at both vessel and set or operational levels useful for effort standardization and the evaluation of fishing efficiency, targeting and bycatch mitigation.
* Includes use of simple proxies and other means as tangible indicators of increasing fishing power (i.e. individual or fleet landings per annum, and/or estimates of the number of FADs deployed each year).
* Includes monitoring of operational features related to depths fished by longline hooks and depths of purse-seine nets.
* Includes monitoring and reporting on new developments in fishing gear and practices, fishing modes and related shore side developments as they relate to changes in fishing power.
* Supply time-depth recorders and hook timers to regional observer programs undertaken by SPC-OFP.

History* FT-SWG priority.
* WCPFC9 approved the inclusion of data fields into ROP data fields on i) the mass of added weight attached to branch lines, ii) distance between weight and hook (in meters), and iii) the fate (dead, alive or injured) and number of seabirds for each species in each of these categories and whether the seabirds were released alive or discarded dead.
 | Inactive  |
| Project 20. (Priority = Low)  | DS | Title**Measurement of fishing capacity**DescriptionExamine and review the technical aspects of capacity measurement and monitoring of fisheries within the WCPFC Convention Area.Tasks/TOR* This project may be undertaken by the TCC, but the FT-SWG TOR was modified in 2006 to accommodate capacity work.

History* FT-SWG priority.

Comments: 1. FT-SWG no longer exists so no progress.
2. Recommend that this Project be moved to a list of inactive but potentially useful projects.
 | Inactive |
| Project 21. (Priority = Low)  | MI | Title**Socioeconomic influences on fishing behavior**DescriptionInvestigate and promote studies on socioeconomic influences on fishing strategies, spatio-temporal fishing patterns, and influences on effective fishing effort.Tasks/TOR* As noted in the Description section above

History* FT-SWG priority.

Comments: 1. FT-SWG no longer exists so no progress.
2. Recommend that this Project be moved to a list of inactive but potentially useful projects.
 | Inactive |
| Project 22. (Priority = High)SPC-OFP services | SA | Title**Stock assessment**DescriptionUndertake stock assessment for target and non-target species as requested by the Commission.Tasks/TOR* Refinement of data and data structure used for stock assessment.
* Quantification of changes in fishing efficiency due to changes in fishing gears and fish finding technologies – Medium Priority. (Used to model changes in selectivity over time required in MFCL assessment models - Cross-reference with Project 27 for non-OFP project work)
* Quantification of changes in longline selectivity due to changes in gear types and patterns of deployment – Medium Priority. (Used to model changes in selectivity over time required in MFCL assessment models. SPC-OFP services as time allows.)

History* Annual commitment.
* SC8 and WCPFC9 approved Project 69 (Improvement of MFCL) and Project 70 (Improvement of stock assessments in line with recommendations from the report of the peer review for the 2011 bigeye tuna stock assessment)
 | Active ongoing |
| Project 23. (Priority = High)SPC-OFP services | SA | Title**CPUE analysis**DescriptionUndertake standardization of longline catch and effort data, including where appropriate operational-level data, and the construction of indices of stock abundance for species of interest to the Commission.Tasks/TOR* There are many issues to explore relating to CPUE standardization. Need to develop a specific work programme on this with funding support.

History* Annual commitment
* Compare with Project 29
 | Active ongoing |
| Project 24. (Priority = Medium)SPC-OFP services | SA | Title**Indicator analysis**DescriptionDevelopment and reporting of stock indicators for those key species not formally assessed.Tasks/TOR* Conduct stock indicator analysis and formulate most-up-to-date management advice to Commission if stock assessment is not undertaken.

History* SC4-SA-WP-09 (Compendium of fisheries indicators for target tuna species)
* SC8-SA-WP-02 (A compendium of fisheries indicators for bigeye, skipjack, yellowfin, and south Pacific albacore tunas and south Pacific swordfish)
 | Active ongoing |
| Project 25. (Priority = High)SPC-OFP services | SA | Title**Sensitivity analysis**DescriptionContinued exploration of sensitivity of stock assessment outcomes to structural assumptions in models and data issues, including the comparison of various stock assessment models.Tasks/TOR* This work also includes the development of better diagnostics to more objectively determine plausible model structure.
* Work programme for 2008 included a comparison of MFCL, SS-2 and other stock assessment models for yellowfin or bigeye tuna.
* This will be more routinely incorporated into the assessments if it is felt to be informative.

History* ME-SWG priority.
 | Active ongoing |
| Project 26. (Priority = High)  | SA | Title**Stock assessment of South Pacific swordfish**DescriptionStock assessment of the SP swordfish.Tasks/TOR* Data compilation and stock assessment of South Pacific swordfish

HistorySA-SWG priority (NP swordfish belongs to ‘northern stocks’ and assessment by ISC)2006: Full stock assessment of swordfish in the southwest Pacific.2008: Full stock assessment.2011: Data collection and CPUE analysis.* In March 2012, WCPFC8 agreed to conduct swordfish stock assessment as requested by the European Union. SPC-OFP is undertaking this work and conducted CPUE analysis in 2012.
* Stock assessment will be finalized in 2013 for presentation at SC9
 | Active ongoing (periodic) |
| Project 27. (Priority = Medium)  | SA | Title**Changes in catchability**DescriptionInvestigation and quantification of changes in catchability of target and non-target species, including bycatch and incidental species, over time not included in the CPUE standardization.Tasks/TORMany factors, not reported in logbooks, influence catchability. The comparison of catch rates obtained by individual research projects where details of gear and fishing practices have been extensively documented may allow changes in catchability to be investigated and possibly quantified.HistorySA-SWG priority (cross-reference Project 23/22). | Inactive (links with other projects) |
| Project 28. (Priority = Medium)  | MI | Title**Harvest control rules**DescriptionDevelopment of procedures and decision rules (harvest control rules) to assist the interpretation of stock assessment results and the formulation of management recommendations.Tasks/TORDevelop harvest control rules for skipjack and south Pacific albacore tuna, including the most simplistic (e.g. constant catch and constant effort) for SC8 and one of the slightly more complex harvest control rules (e.g., state-dependent rules) for MOW, and compare their performance against some indicators of interest to fisheries managers.HistorySA-SWG priority. * SC8-MI-WP-03 (Introduction to harvest control rules for WCPO tuna fisheries).
 | Active ~~(Due for completion 2012)~~See Project 58 and 63 – 58: Evaluation of reference points and decision rules (harvest control rules)) 63: Identifying provision al decision rules |
| Project 29. (Priority = High)SPC-OFP services | SA | Title**Refinement of stock assessment models**Description[Further refinement of the stock assessment model, MFCL, including simulation testing of new developments as appropriate and refinement of models for CPUE standardization][Refinement of models for CPUE standardization]Tasks/TOR* Work programme for 2008 included designing a more efficient recruitment parameterization (High priority) and incorporation of length-based selectivity (Medium priority).
* There are a number of other matters that need to be addressed, including a long-term project to re-write the software to make it more transparent, better documented, and include new features (multi-sex, species, and stock options).

History* + ME-SWG and SA-SWG priority.
	+ SC5-SA-IP-07 (Update of recent developments in MULTIFAN-CL and related software for stock assessment)
	+ WCPFC9 approved Project 69 (Improvement of MultiFan Catch at Length). So MFCL part of this project can be moved to Project 69.

Comments* Compare with Project 23 (CPUE analysis)
 | Active ongoing – refer to Project 69 |
| Project 30. (Priority = Medium)SPC-OFP services | SA | Title**Recruitment analysis**DescriptionDevelopment of recruitment indices independent of the MFCL model, including the investigation of recruitment and oceanographic trends. Tasks/TOR* + Development of recruitment indices for incorporation into stock assessment models (e.g. for yellowfin tuna based on further investigation of the relationship between oceanography and recruitment estimates from MFCL) (Para 31.d, Attachment J, SC4 Report)
	+ Required to index recruitment in stock assessment models. Major advances made in 2007 need to be followed up and formally incorporated into assessments.

History* SA-SWG and ME-SWG priority
 | Deleted as requested by the SC4 |
| Project 31. (Priority = High)  | SA | Title**Models for CPUE standardization** DescriptionImprove existing, and explore alternative, models for standardization of effort and the construction of indices of stock abundance.* To improve existing fishing catch effort standardization models for construction of stock assessment indices for key tuna species in the WCPO (bigeye, yellowfin, skipjack and albacore) and to explore and develop alternative standardization models.

Tasks/TOR* + Includes tasks identified by the ME-SWG at SC3: the continued identification of factors that influence CPUE, understanding and quantification of the changes in catchability over time not included in the CPUE standardization models, and identification of alternative catchability trends for inclusion in stock assessment models, and the calculation of regional weighting factors.
	+ Specific tasks include:
* Identify the relative importance of factors which influence catch per unit effort (CPUE) in the major WCPO fisheries (longline and/or purse seine).
* Through the use of standardization models, quantify time-series variation in catchability for key tuna species for inclusion into WCPFC stock assessments.
* Develop alternative catchability trends for inclusion in stock assessment models.
* Review regional weighting factors currently used in the bigeye and yellowfin tuna assessments and identify potential improvements.
* Incorporate the Additional Information that you provided during communication with Research Sub-Committee into this study.

History* SA-SWG and ME-SWG priority.
* SC5-SA-WP-07 (Generalized linear Bayesian models for standardization of CPUE with incorporation of spatial-temporal variations)
 | Inactive |
| Project 32. (Priority = Medium)  | SA | Title**Incorporation of uncertainty in projections**DescriptionFurther consideration of how to reflect uncertainty in projections.Tasks/TORAs noted in the Description section aboveHistory* ME-SWG priority.
* Move to Project 28
 | Active ongoing (now Project 28) |
| Project 33. (Priority = ~~Medium~~) Low | SA | Title**Development of new stock assessment models and associated software**DescriptionDevelopment of new stock assessment models and associated software.Tasks/TORHistory* ME-SWG priority.
 | Inactive (links to project 60) |
| Project 34. (Priority = High)SPC-OFP services | SA | Title**Options for contributing to a reduction in fishing mortality for bigeye and yellowfin tuna, including FAD closure**DescriptionFurther review of spatio-temporal aspects of catches of juvenile bigeye and yellowfin tuna caught in association with FADs by updating the analysis presented in WCPFC3-2006-16. Refine the assessment of management options presented in the paper on the basis of the latest available fishery information.Tasks/TORResearch items to be considered over the three-year planning horizon:With new skipjack and bigeye tuna assessments and the 2007 yellowfin assessment, conduct multi-species management options analyses, including economic outcomes of options on each sector.Purse-seine fishery characterization – as a first step in developing an operational model of the fishery and more formal management strategy evaluation work.More spatial analysis – perhaps adopting the statistical approach of estimating latitude, longitude and seasonal effects on associated set (small juvenile) yellowfin and bigeye tuna catches.History* WCPFC3-2006/16 (Proposal in respect of paragraph 11 of CMM 2005-01)
 | Completed |
| Project 35. (Priority = High) | SA | Title**Refinement of bigeye parameters Pacific-wide: A comprehensive review and study of bigeye tuna reproductive biology**DescriptionTo further conduct biological analyses, to review sensitivity of the new parameters, and to strengthen the need toward the Pacific-wide study Tasks/TOR1. *Objective*: To obtain accurate scientific information on maturity, spawning locations, sex ratios, and fecundity for inclusion in stock assessments of bigeye tuna in the Pacific Ocean.
2. *Items to be considered as a joint research between IATTC and WCPFC*

Based on tagging studies to date, the movements of bigeye are geographically restricted. The limited amount of mixing across the Pacific Ocean can create differences in life history characteristics as a function of differences in oceanography and genetic structure. Therefore, obtaining size and age based estimates of bigeye reproductive characteristics from spatial strata across the Pacific Ocean would be useful for inclusion in bigeye stock assessments, since current estimates are based on inadequate spatial strata and limited sample sizes to have much confidence for inclusion in Pacific-wide assessments.History* Original proposal

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| --- | --- |
| Pilot study | Pacific-wide study |
| 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| 30,000 | 29,000 | 62,000 | 236,000 | 350,000 | 129,000 |

* Adjusted proposal, as of December 2012 (WCPFC9 budget)

|  |  |  |
| --- | --- | --- |
| Planning stage | Pilot study? | Pacific-wide study? |
| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| 15K | 30K | 30K | 31K | 55K | 70K | 75K | 75K |  |

* It is important to address some of the outstanding issues related to the biological parameters for bigeye, but we also need to ensure work is done on other species for which much less data are available. Hopefully, the priority species will identify themselves through the ecological risk assessment process. In the WCPO, we have a range of similar or even more critical issues related to yellowfin and albacore.
* SC8-SA-WP-03 (Bigeye tuna age and reproductive biology progress report)
* SC7-SA-WP-01([Bigeye tuna age, growth and reproductive biology progress report)](http://www.wcpfc.int/node/3657)
* SC6-BI-WP-01 (Bigeye tuna age, growth and reproductive biology progress report)
* SC4 recommended this study and WCPFC5 (2008) endorsed
* Sampling period: Oct 2009 – Jan 2010, present results to SC6 (2010)
* Sampling delayed and extended to Aug 2010.
* Lap analysis: Sep – Nov 2010
* Final report to WCPFC Secretariat in Dec 2010
* SC3 (2007) allocated budget for the feasibility study and produced document SC4-BI-WP-07.
 | Active (Due for completion 2016) |
| Project 36. (Priority = High) | SA | Title**Age and growth of the target tuna species**DescriptionThis can be part of Project 35 where biological samples for yellowfin and skipjack are also collected.Tasks /TOR* An initial project within this category is regional differences in growth from length-frequency data for yellowfin and bigeye.

History* Studies on age and growth have been priority of the Biology SWG.
 | Active (Part of project 35) |
| Project 37. (Priority = High) | EB | Title**Analysis of FAD impacts on trophic dynamics**DescriptionAnalysis of FAD impacts on trophic dynamicsTasks/TOR* **This work is required for a better understanding of the biological impacts of FADs.**

History* **Budget level**: USD 70,000 over two years (SPC and University of Hawaii proposal).
* SPC noted that the only progress on this is the collection of samples for isotope analyses and fatmeter for condition. Lab analyses have not been undertaken. SPC will host a PhD student from the University of South Hampton in 2013 who will address hypotheses on this topic but the results from this work will not be available until SC10 in 2014. We might want to grant an extension to this project.
* SC5-EB-IP-05 (Progress in the study of the pelagic ecosystem trophic dynamics)
* SCTB16 Working Paper YFT-7 (2003. The biology of FAD-associated tuna: Temporal dynamics of association and feeding ecology)
 | Active (Due for completion 2014) |
| Project 38. (Priority = Low) | SA | Title**Otolith microchemistry study**DescriptionRecent advances in extraction of microchemistry samples from fish otoliths provide the potential for observing regional water chemistry differentiation in the otoliths of pelagic species; hence a natural tag for estimating stock mixing and large-scale tuna movement.Tasks/TOR* Feasibility study to determine the effectiveness of otolith microchemistry to estimate stock mixing and large-scale tuna movement.

History* **Budget level: USD** 60,000 over one year (SPC and University of Hawaii proposal).
* Independent of WCPFC funding, David Itano (UH, now NMFS) has been involved in an otolith microchemistry project for stock discrimination of yellowfin and bigeye tuna in the central Pacific.
* SPC (Simon Nicol) has some ongoing otolith microchemistry with CSIRO for albacore.
 | Active  |
| Project 39. (Priority = High)  | SA | Title**Regional study of the stock structure and life-history characteristics of South Pacific albacore**DescriptionWCPFC4 (2007) endorsed funding to a 3-year project that was developed by Australia in conjunction with New Zealand, SPC-OFP and other CCMs. The project can directly address stock assessment needs for one of the principal target species in the WCPO and can be of direct benefit to a range of CCMs. It is targeted for final delivery to the Scientific Committee in August, 2011. The Commission’s funding of USD 25,000 in 2009 was a partial support to the first year of the whole project worth USD 500,000 over three years (Table 6 of the SC4 Summary Report). Tasks/TOR* Collect biological samples (otoliths, spines, gonads & muscle) from albacore caught in the southwest Pacific in cooperation with AFMA, SPC and MFish using the sub-sampling regime designed in the tactical project1.
* Determine length-weight conversion factors for albacore in the eastern tuna and billfish fishery
* Depending on successful age validation, determine the age of 2000 albacore and investigate age-related stock parameters including catch-at-age and regional/sexual differentiation in growth
* Determine reproductive-based stock parameters for South Pacific albacore including sex ratio statistics, maturity schedule(s), spawning fraction and batch fecundity (by size/age) using macroscopic and modern histological techniques
* Provide key population biological parameters on age, growth, maturity and fecundity to harvest strategy and stock assessment scientists

History* BI-SWG Priority.
* A proposal to undertake this work was developed by Australia and conjunction with New Zealand, SPC-OFP and other CCMs (e.g. New Caledonia, French Polynesia, FFA countries).
* **Total Budget**: AUD 820,000 over three years and the Commission supported USD 25,000 for 2008, 2009, and 2010 to CSIRO (Jessica Farley).
* This project was successfully finished and the final report was submitted to the Secretariat in July 2012, and posted on SC8’s website.
 | Completed |
| Project 40. (Priority = Medium)  | SA | Title**Life-history characteristics of non-target species** DescriptionLife-history characteristics of non-target species identified by the ERA as high risk.Tasks/TORConduct ERA.History* BI-SWG priority.
 | Completed 2010 |
| Project 41. (Priority = Medium)  | EB | Title**Development of a biological database for inclusion on the WCPFC website.** Tasks/TOR* + - 1. Development of a bycatch mitigation database for inclusion on the WCPFC website.

History* BI-SWG priority.
* The Commission contracted with SPC for the development of “Bycatch Mitigation Information System” (BMIS), which is annually updated with TCC’s budget.
	+ ~~Development of bycatch and bycatch mitigation database (currently BMIS is developed and managed by SPC, funded by TCC budget).~~
	+ If any use is to be made of this database, there would be considerable ongoing work required to populate the various database tables. Some of this, but not all, could be done under other OFP service items (bycatch estimation).
	+ There is also a concern that the additional components added on (e.g. ERA attributes, non-target catch estimates and species utilisation) probably weren't envisaged at the start and the work involved will go beyond the time/funds originally envisaged in the contract.
* ~~Some funding would need to be allocated in future budgets if this work is to be ongoing.~~
 | Active See Project 50 |
| Project 42. (Priority = High) | SA | Title**Pacific-wide tagging project.**Description* Main objectives are to obtain information on movement, stock structure, growth, mortality, behavior, habitat utilization, and vulnerability for use in stock assessments for yellowfin, bigeye and skipjack tunas.
* The Commission supports coordination fee for this project.

Tasks/TOR* Undertake a preliminary analysis of the vertical distribution of skipjack, yellowfin and bigeye tunas associated with FADs, as indicated by acoustic tagging data. This item is related to the analysis of data from the PNG Tagging Project and scientists from other CCMs will participate in this project. Future work will be in the context of Phase 2 tagging.
* Ongoing and newly funded research with sonic and archival tags in Hawaii, PNG and other areas. Ongoing. (Currently funded SPC-OFP and University of Hawaii projects).

History* Refer to GN WP-10 for the Phase 2 proposal of regional tuna tagging.
* Funding is a limiting factor for Pacific Ocean tuna tagging experiments and should be sought from a broad range of sources, including member and non-member countries with substantial financial interests in these fisheries, Global Environment Facility, and non-governmental organizations, particularly foundations interested in supporting scientifically based tuna conservation efforts.
* The budget required for a two-year pan-Pacific tagging project would be at least USD 9 million for conducting a wide coverage project in the WCPFC Convention Area alone. Approximately USD 2.4 million has been identified through SPC projects. To provide some additional perspective, the Indian Ocean Tuna Commission tagging project over three years in a much smaller area than the Pacific (or even the Convention Area) cost USD 19 million.
 | Active (Due for completion 2015)  |
| Project 43. (Priority = High) | EB | Title**Ecological risk analysis, including productivity-susceptibility analysis (2008-2010)**DescriptionSC3 (2007) recommended this study and approved by WCPFC4 (Dec. 2007) as a three-year project (2008-2010). After this, SC6 (2010) recommended Shark Research Plan and WCPFC7 (Dec 2010) approved the Plan for 2011-2012. WCPFC9 (Dec 2012) approved the revision of a 3-year MOU with SPC (Jan 2013-Dec2015) which includes Shark Research Plan.Tasks/TOR* Conducting multi-species productivity-susceptibility analyses (PSAs) and integrating national and regional scale risk assessment processes
* Identifying areas of spatial and temporal overlap of seabird and sea turtle interactions with tuna fisheries
* Estimating sea bird mortality

History* Ongoing ERA work programme submitted to SC3 and endorsed (cf. EB-WP-3). WCPFC4 (Dec. 2007) approved for ERA during 2008-2010.
* Includes USD 30,000 for identifying areas of spatial and temporal overlap of seabird and sea turtle interactions with tuna fisheries in the WCPO (ACAP).
* ERA budget of USD 130,000 was included in SPC-OFP science services budget in 2009 (SC5) which was approved at WCPFC6 (Dec. 2009) for use in 2010.
* WCPFC7 (Dec 2010) switched ERA to shark research:

WCPFC7 Report:*144. WCPFC7 approved the shark research plan and the reallocation of existing funds within the science services budget (USD 792,000 in 2012) to support shark assessments during 2011 and 2012.*  | Completed (ERA completed in 2010)See Project 48, 54, 68 |
| Project 44. (Priority = High) | EB | Title**Seabird and turtle education and extension of fishers (Promotion of mitigation methods to fishers).**DescriptionTasks/TORHistorySC9-EB-IP-04. Progress Report on the Development of a Seabird Identification Guide for use by tuna RFMOs | On-going ~~Completed 2012~~ |
| Project 45. (Priority = High) | EB | Title**Education and dissemination of information relating to turtle de-hooking devices.**HistorySC5-GN-WP-13 (WCPFC Guidelines for the Handling of Sea Turtles)SC5-GN-WP-14 (WCPFC Guidelines for the Handling of Sea Turtles - Graphics) | Completed 2012 |
| Project 46. (Priority = Medium) | EB | Title**Ecosystem modeling**DescriptionDevelopment/review of models, such as full development of an EcoSim model, for evaluation of fishery and environmental impacts on an ecosystem, including development of reference points.Tasks/TORRefer to Project 62History* Required modeling and assessing fishery impacts on ecosystems.
* This is separate from the ERA work. SPC-OFP will be undertaking work under SciFish project on continued development of SEAPODYM model and application to WCPO pelagic ecosystems.
 | Active Merge with Project 62?? |
| Project 47. (Priority = Medium)Low until enough observer coverage  | EB | Title**Turtle population assessments.**Tasks/TOR* + Three-year project to continue into 2009, involving collation of data eventually leading to quantitative assessments.
 | Inactive |
| Project 48. (Priority = Medium) | EB | Title **Survival of hooked and released seabirds**History* Will require sourcing external funding for satellite or archival tags.
 | InactiveSee Project 43, 54, 68 |
| Project 49. (Priority = Medium) | EB | Title**Turtle tagging and associated materials.**History* Will require sourcing external funding for satellite or archival tags. Conventional tags can probably be obtained at little or no cost from SPREP.
 | Inactive |
| Project 50. (Priority = Low) | EB | Title**Offal discards and haul-back mitigation studies.**DescriptionTo study the effects of offal discards and haul-backTasks/TORHistory (bullets below moved to Project 41)* + ~~Development of bycatch and bycatch mitigation database (currently BMIS is developed and managed by SPC, funded by TCC budget).~~
	+ ~~If any use is to be made of this database, there would be considerable ongoing work required to populate the various database tables. Some of this, but not all, could be done under other OFP service items (bycatch estimation).~~
	+ ~~There is also a concern that the additional components added on (e.g. ERA attributes, non-target catch estimates and species utilisation) probably weren't envisaged at the start and the work involved will go beyond the time/funds originally envisaged in the contract.~~
	+ ~~Some funding would need to be allocated in future budgets if this work is to be ongoing.~~
 | ~~Active~~Inactive~~ongoing (TCC funded BMIS; Remainder Inactive)~~ |
| Project 51. (Priority = High) | EB | Title**Extension services to member countries for within EEZ ERA**Description* ERA methods can value add to ecosystem approach to fisheries management approaches being adopted by WCPFC member countries for fisheries planning and management at the EEZ scale.
* The extension services will be capacity building of ERA skills within these countries.
 | Completed 2009 |
| Project 52. (Priority = High) SPC-OFP services | EB | Title**Implementation of Shark Research Plan**DescriptionSC6 (2010) recommended a Shark Research Plan and WCPFC7 (Dec 2010) approved the Plan for 2011-2012. WCPFC9 (Dec 2012) approved the revision of a 3-year MOU with SPC (Jan 2013-Dec2015) which includes implementation of the Shark Research Plan. WCPFC7 (Dec 2010) switched the budget portion for ERA included in the SPC’s science services to the implementation of the shark research plan (Para 144, WCPFC7 Report).Tasks/TOR* Refer to the Shark Research Plan.

History* EB-SWG priority.
* Shark Research Plan was proposed at SC6 and adopted at WCPFC7.
* CMM 2006-05 (replaced by 2010-07) requested that shark stock assessments be undertaken for key shark species.
* Shark research plan was approved by WCPFC7.
* WCPFC Designated[[1]](#footnote-1) Key Shark Species

|  |  |  |
| --- | --- | --- |
| **Common Name** | **Scientific Name** | **Related actions and/or measures** |
| Blue shark\* | *Prionace glauca* | CMM 2008/06WCPFC Stock Assessment 2013 |
| Oceanic white tip\*  | *Carcharhinus longimanus* | CMM 2008/06WCPFC Stock Assessment 2012 |
| Shortfin mako shark\* | *Isurus oxyrinchus* | CMM 2008/06WCPFC Stock Assessment 2014 |
| Longfin mako shark\* | *Isurus paucus* | CMM 2008/06WCPFC Stock Assessment 2014 |
| Pelagic thresher shark\* | *Alopias pelagicus* | CMM 2008/06 |
| Bigeye thresher shark \* | *Alopias superciliosus* | CMM 2008/06 |
| Common thresher shark\*  | *Alopias vulpinus* | CMM 2008/06 |
| Silky shark\* | *Carcharhinus falciformis* | CMM 2009/04 |
| Porbeagle shark | *Lamna nasus* | CMM 2010/07(Reported south of 20 degs South) |
| Winghead hammerhead shark | *Eusphyra blochii* | CMM 2010/07 |
| Great hammerhead shark | *Sphyrna mokarran*  | CMM 2010/07 |
| Scalloped hammerhead shark | *Sphyrna lewini* | CMM 2010/07 |
| Smooth hammerhead shark | *Sphyrna zygaena* | CMM 2010/07 |
| Whale shark | *Rhincodon typus* | Adopted at WCPFC9 |
| \*Core key shark species that are the focus of the shark research plan |

* Shark stock assessment

|  |  |
| --- | --- |
| **Year** | **Assessed species** |
| 2012 | oceanic whitetip and silky shark (silky shark stock assessment was not accepted by SC8) |
| 2013 | Silky (revisit), NP blue shark, SP blue shark (CPUE only) |

 | Active ongoing  |
| Project 53. (Priority = Medium)  | EBllets below of offal discards adn  | Title**Investigation into fishing activities and catch composition of small vessels (e.g. longline vessels <24m)** Tasks/TOR* To create a better understanding of the catch and effort and operational activities of small high seas vessels so that appropriate management measures (e.g. sharks and seabirds) can be considered for these vessels.

History* + EB-SWG priority.
 | Inactive |
| Project 54. (Priority = Medium)  |  | Title**Bycatch mitigation study in longline fisheries**DescriptionReview scientific data to assess the inter-relationship between the effects of bycatch management measures using different longline gear types and mitigation measures on catches of turtle, shark and other target and non-target longline species.Tasks/TOR* Assess the impact of circle hooks, line weighting and other mitigation methods on the capture of target species, sea turtles, seabirds and sharks.

History* EB-SWG priority.
* Some work has been done in the Atlantic and we could assess that.
 | InactiveSee Project 43, 48, 68 |
| Project 55. (Priority = Medium)  | EB | Title**FAD impacts on juvenile tuna and non-target species**DescriptionUndertake studies on the behavior and distribution of target and non-target species around FADs, and on the various specifications and use of FADs and fishing gear in influencing purse-seine catches taken in association with FADs, with a view to identifying their impact in relation to mitigation measures to reduce catches of juvenile tuna and non-target species by purse-seine gear.Tasks/TOR1. Evaluate methods to reduce catches of small tuna, especially small bigeye tuna and other bycatch species taken by purse seine operations on floating objects.
2. Evaluation of methods shall examine pre-set avoidance of bycatch and options for safe releasing bycatch from the net and deck.
3. Research should be conducted onboard a tuna purse seine vessel whenever possible.
4. Evaluate various specifications and use of FADs and fishing gears in influencing purse seine catches taken in association with FADs.

History* FT-SWG priority.
* Includes seeking collaboration with industry to design of industry-associated studies related to selectivity and avoidance of small tunas and bycatch on floating objects. Assistance of the commission in promoting industry cooperation with in-kind contribution of vessel time is requested.
* PNG supported USD 25,000 for FAD Bycatch Mitigation Research and David Itano working with ISSF conducted this research (contracted in January 2011). Funds have been used as per the project proposal to support established FAD bycatch mitigation programmes as the funds were insufficient to mount a stand-alone project of effective scope. Funds to date have been used to support bycatch mitigation research sponsored by ISSF. This project will be fully reported to SC8 as funds will be fully expended to close the project in 2012.
* SC8 meeting documents on FAD study

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| SC8-EB-WP-11 | [Overview of the ISSF Bycatch Mitigation Research Cruise in the WCPO](http://www.wcpfc.int/doc/EB-WP-11/Overview-ISSF-Bycatch-Mitigation-Research-Cruise-WCPO) |
| SC8-EB-WP-12 | [The post-release condition of FAD associated silky sharks (Carcharhinus falciformis) caught in tuna purse seine gear. Rev 1](http://www.wcpfc.int/node/5499) |
| SC8-EB-WP-13 | [Behavior of target and non-target species on drifting FADs and when encircled by purse seine gear.](http://www.wcpfc.int/doc/EB-WP-13/Behavior-target-and-non-target-species-drifting-FADs-and-when-encircled-purse-seine-gea)  |
| SC8-EB-WP-15 | [Review of Japan’s approaches to reduce bycatch of juvenile bigeye tuna by purse seine on FADs in tropical area of the western and central Pacific Ocean.](http://www.wcpfc.int/doc/EB-WP-15/Review-Japan%E2%80%99s-approaches-reduce-bycatch-juvenile-bigeye-tuna-purse-seine-FADs-tropical) |
| SC8-EB-WP-16 | [Study on the methods to reduce the by-catch of juvenile Bigeye tuna in purse seine FADs operations Rev 1.](http://www.wcpfc.int/doc/EB-WP-16/Study-methods-reduce-catch-juvenile-Bigeye-tuna-purse-seine-FADs-operations) |
| SC8-EB-WP-17 | [Study on the methods to mitigate the bycatch of juvenile bigeye tuna by introducing Double-FADs with light stimulus for tuna purse seine fishery in the Western and Central Pacific Ocean](http://www.wcpfc.int/doc/EB-WP-17/Study-methods-mitigate-bycatch-juvenile-bigeye-tuna-introducing-Double-FADs-light-stimu) |

 | Active ~~(Due for completion 2012)~~ |
| Project 56. (Priority = Medium)  | EB | Title**Utilize underwater videos and other tools to characterize species, size composition and spatial distribution of tunas aggregating around floating objects.**DescriptionThe issue of bycatch and small tuna fishing mortality on floating objects has become a problem shared by every RFMO that deals with tropical tuna issues. In the WCPO the issue has been expanded to include concern over the increased take of juvenile yellowfin tuna on floating object sets. These issues were recognized during the Third Regular Session of the Scientific Committee to the Commission (13-24 August 2007, Honolulu, Hawaii). It was suggested that an inexpensive and practical means to visually verify the size and species of fish aggregated to floating objects should be investigated. The gear may be tested on Hawaii anchored FADs and used during the equatorial research cruises on moored oceanographic buoys of the TOGA/TAO array, drifting FADs and floating objects. No specific funding was requested to conduct these tests above hardware costs.Tasks/TORThe scope of work will draw on, amongst other research and activities:1. A comparison study of echo sounder and visual images to investigate the ability to selectively target desirable sizes and species;
2. A feasibility study or further research plan for the application of any findings from the comparison experiment above.
3. Compile recommendations on any inexpensive and practical means to mitigate the mortality of small tuna on floating objects

History* FT-SWG priority
* The unit used in the EPO by IATTC cost approximately USD 3,000. On advice from IATTC, it will likely be necessary that gear be suitable to depths of at least 100 m due to deeper thermocline and mixed layer depth in the WCPO. This will require greater pressure ratings and length of cables.
* This project was conducted by D. Itano for two years and project outputs were presented at SC meetings.
 | Completed |
| Project 57. (Priority = High)  | MI | Title**Limit reference points**DescriptionIdentifying provisional limit reference points for the key target species in the WCPFC Convention Area.Tasks/TOR* Identify candidate indicators (e.g. *Bcurrent/Bo*, *SB/SBMSY*) and related limit reference points (e.g. *Bcurrent/Bo,=X*, *SB/SBMSY=Y*), the specific information needs they meet, the data and information required to estimate them, the associated uncertainty of these estimates, and the relative strengths and weaknesses of using each type within a management framework.
* Using past assessments, evaluate the probabilities that related performance indictors exceed the values associated with candidate reference points.
* Evaluate the consequences of adopting particular limit reference points based on stochastic projections using the stock assessment models.
* Undertake a literature review or meta-analyses to provide insights into levels of depletion that may serve as appropriate limit reference points and other uncertain assessment parameters (e.g. steepness).
* Include the consideration of multi-specific effects on harvest control rules.

History* Several researches on reference points have been conducted by SC.
* SC8-MI-WP-01 (*Evaluation of stock status of south Pacific albacore, bigeye, skipjack, and yellowfin tunas and SWP striped marlin against potential limit reference points*)
 | Active ~~(Due for completion 2012)~~ |
| Project 58. (Priority = Medium)  | MI | Title**Evaluation of reference points and decision rules (harvest control rules).**DescriptionSC7 detailed three work areas to support the Commission’s establishment of reference points: 1) evaluating the LRPs; 2) identifying candidate TRPs; and 3) introducing the concept of harvest control rules to operationalize reference points in the WCPFC. Tasks/TOR* Undertake a formal evaluation (e.g. Management Strategy Evaluation and robustness of stock assessments) of reference points and decision rules to guide the long-term management of key target species in the WCPFC.

History* As of SC8, WCPFC-SC considered limit reference points, target reference points, and harvest control rules
* Develop harvest control rules for skipjack and south Pacific albacore tuna, including the most simplistic (e.g. constant catch and constant effort) for SC8 and one of the slightly more complex harvest control rules (e.g., state-dependent rules) for MOW, and compare their performance against some indicators of interest to fisheries managers.
* SC8-MI-WP-03 (Introduction to harvest control rules for WCPO tuna fisheries)
 | Active ~~(Due for completion 2012)~~See Project 28 and 63 |
| Project 59. (Priority = Medium) | EB | Title**Management strategy evaluation (MSE) for non-target and protected species using semi-quantitative models.**Tasks/TOR* ERA will identify species at risk from to the effects of fishing. For some of these species, the information available will be insufficient for a robust statistical stock assessment approach. However, a need to evaluate management options for these species will remain.

History | Inactive |
| Project 60. (Priority = High) | DS | Title**Collection and evaluation of purse-seine species composition data.**Description* Collection of fish weight data onboard longline and purse-seine vessels using “at sea” scales.
* Continued study into sampling regimes for size and species composition of purse-seine catches.
* Port sampling programmes to determine the accuracy of cannery receipts in Noro, Solomon Islands and possibly other ports.
* Collaboration with other tuna RFMOs to examine factors affecting the sampling of purse-seine species composition.

Tasks/TOR for 2013* Collect paired grab and spill samples from the WCPO purse-seine fishery and quantify the bias in species and size compositions determined from grab samples.
* Compare species compositions determined from i) logsheets, ii) grab samples, iii) spill samples, iv) cannery receipts, and v) port sampling of landing categories of catches delivered to the cannery at Noro, Solomon Islands and possibly other ports.
* Document spill sampling protocol.
* Develop procedures to correct historical catch and size data covering the WCPO purse-seine fishery for biases.

History* In April 2009 (to be presented at SC5 in 2009), USD 54,500 was contracted to fund the “Collection and Evaluation of Purse-Seine Species Composition Data”. In December 2009, USD 54,500 was budgeted and in 2010, USD 90,000 was endorsed to support this project.
* In December 2011, no further budget was allocated to this project but requested to submit a “[*Plan for Improvement of the Availability and Use of Purse Seine Catch Composition Data*”](http://www.wcpfc.int/doc/WCPFC8-2011-IP-06/Plan-Improvement-Availability-and-Use-Purse-Seine-Catch-Composition-Data) (WCPFC8-2011-IP/06). SC8 will consider budgetary implications of this Plan.
* 2013 = USD 75,000.

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| Proposed | Approved | Implemented |
| Early 2009: SPC submitted a proposal for funding support from the 2009 unobligated budget |  | Outputs:SC5-2009-ST-WP-03 |
| $54,500 by SC5 (2009) | By WCPFC6 for 2010 activity | Outputs:SC6-2010- ST-WP-02 |
| $60,000 by SC6 | By WCPFC7 for 2011 activity | Outputs:SC7-2011- ST-WP-03SC7-2011- ST-IP-02 |
| None  | $90,000 by WCPFC8 (Mar. 2012) for 2012 activity | Outputs:SC8-2012-ST-WP-02SC8-2012-ST-WP-03 |

 | Active (Due for completion 2013) |
| Project 61. (Priority = High)  | EB | Title**North Pacific striped marlin mitigation methods.**Tasks/TOR* Analyze catch rates with regard to gear and operational modifications, spatio-temporal and oceanographic considerations.
* Modeling to incorporate gear and spatio-temporal effects to identify potential factors contributing to striped marlin catch reductions in North Pacific longline fisheries.

HistorySC6-2010-EB-WP-01 ([Evaluation of longline mitigation to reduce catches of North Pacific striped marlin in the Hawaii-based tuna fishery](http://www.wcpfc.int/node/2920)) | Completed 2010 |
| Project 62. (Priority = Medium)  | EB | Title**SEAPODYM simulation modeling.**DescriptionEvaluation of fishery and environmental impacts on an ecosystem, including development of reference pointsTasks/TOR* Collaboration between Collecte Localisation Satellites, Space Oceanography Division and SPC-OFP.
* Development of a Pacific swordfish application.
* Simulation experiments to improve the model calibration for tuna species, using higher resolutions of fishing data and oceanic environmental data.
* Model calibration for albacore with a basin-scale application, including both north and south populations.
* Incorporation of conventional and archival tagging data in the model calibration.
* Projection of impact of global climate change on distribution and abundance of tuna stocks.

History* Required modeling and assessing fishery impacts on ecosystems.
* SPC-OFP will be undertaking work under SciFish project on continued development of SEAPODYM model and application to WCPO pelagic ecosystems.
* SC8-2012-EB-IP-06 (Project 62: SEAPODYM Working progress and applications to Pacific tuna and billfish populations and fisheries)
 | Active ~~ongoing see Project 46~~ |
| Project 63. (Priority = High) | MI | Title**Identifying provisional decision rules.**DescriptionTasks/TOR* For the key target species in the WCPFC, develop candidate harvest strategies (decision rules) based on present stock status.
* Define and/or quantify assessment uncertainty and articulate how this is to be incorporated within decision rules.

History* SC8-MI-WP-03 (Introduction to harvest control rules for WCPO tuna fisheries)
 | Active~~Completed~~ ~~2012 possible extension~~Merge with Project 28 (Harvest control rules) and Project 58 |
| Project 64. (Priority = High) | SA | Title**Stock assessment of Southwest Pacific striped marlin** DescriptionRevised stock assessment of southwest Pacific striped marlinTasks/TOR* A project to undertake this work is being developed by Australia in conjunction with New Zealand, SPC-OFP and other CCMs.
* This species is not one of the principal target species assessed by SPC-OFP but is an important target species for a number of CCMs. Australian and New Zealand scientists are proposing to undertake this work, and are seeking the Commission’s endorsement because the research will have broader regional benefits. Support from the Commission would help secure funds from funding sources from Australia and New Zealand.

History* 2011: Collation of South Pacific striped marlin data for a planned stock assessment in 2012 (USD 30,000), which is coordinated by S. Brower (New Zealand) – SC6 Report, Para. 514
* SC8-2012-SA-WP-05 (*Stock Assessment of Striped Marlin (Kajikia audax) in the Southwest Pacific Ocean*)
 | Completed 2012 |
| Project 65. (Priority = High) | SA | Title**Peer review of stock assessment.**DescriptionConduct independent peer reviewTasks/TORHistory* In 2012, a peer review was conducted on the 2011 bigeye stock assessment (SC8-2012-SA-WP-01)
* Include any others (e.g. Yellowfin Center of Independent Experts review).
 | Active ongoing |
| Project 66. (Priority = High) | MI | Title**Identification and evaluation of target reference points (TRPs)**DescriptionOne research conducted by SPC. TRPs are supposed to be determined by fishery managers and MOW will consider this issue.Tasks/TORIdentify specific TRPs by speciesHistory* SPC-OFP conducted the Commission’s consultancy in 2012 to identify and evaluate candidate target reference points for skipjack, including empirical reference points such as those based on CPUE as well possible target reference points derived from stock assessment models (SC8-2012-MI-WP-02)
 | ActiveOne research completed 2012 |
| Project 67. (Priority = High) | SA | Title**Range contraction of tropical tunas, sharks, and billfish** Description Tasks/TOR* Recognizing that biomass for most WCPO stocks is estimated to be at historical lows and concerns have been raised by non-tropical coastal states about declines in the abundance of tropical tuna species, this project seeks to:
	1. examine existing data to examine the spatial distribution of tropical tunas and related species is changing through time and with change is abundance;
	2. develop models that allow the simulation testing of alternative hypotheses about spatial distribution patterns including range contraction; and
	3. provide advice on the how the preservation of the spatial distribution of tropical species may impact on target and limit reference points.

History* This is a newly proposed project in 2012 and no funding is sought from WCPFC at this time.
 | Active (Due for completion 2015) |
| Project 68. (Priority = High - once there is sufficient observer coverage) | EB | Title**Estimation of seabird interaction, bycatch and mortality**DescriptionTasks/TOR* EB-SWG priority
* Subject to the requests by CMM 2007-04

History | Inactive See Project 43, 48, 54 |
| Project 69. (Priority = ) | SA | Title**Improvement of MultiFan Catch at Length**DescriptionAmong the recommendations to improve stock assessments for bigeye tuna in the WCPO identified by the Review Panel and SPC stock assessment scientists during the peer review of the 2011 Bigeye Tuna Stock Assessment, were some specifically for the model used, i.e. MFCL, as tabulated in Attachment F of the SC8 Summary Report. Tasks/TORThe work to be done is detailed and prioritised in Attachment A. The items that will receive attention in 2013 are shaded and the rest will be covered in 2014.HistorySC8 recommended a budget of $40k. WCPFC9 endorsed the recommendation of SC8 and agreed the proposed budget of $40k. |  |
| Project 70. (Priority = ) | SA | Title**Iimprovement of stock assessments in line with recommendations from the report of the Peer Review for the 2011 Bigeye Tuna Stock Assessment**DescriptionA number of improvements for stock assessments for bigeye tuna in the WCPO were identified by the Review Panel and SPC stock assessment scientists during the peer review of the 2011 Bigeye Tuna Stock Assessment. These recommendations were reviewed at SC8 and the findings of that review are tabulated in Attachment F of the SC8 Summary Report. Tasks/TORWork should proceed in line with the prioritization and timing indicated in the SC8 Summary Report Attachment F.HistorySC8 recommended that a budget of $160k p.a. for 3 years (2013-2015) and WCPFC9 agreed the proposed budget of $160,000 p.a. for 3 years. |  |

**Abbreviations used in the table**

ACAP = Agreement on the Conservation of Albatrosses and Petrels

BI-SWG = Biology Special Working Group

BMIS = Bycatch Mitigation Information System

CCM = Members, Cooperating Non-members and participating Territories

CMM = conservation and management measure

CPUE = catch per unit effort

CSIRO = Commonwealth Scientific and Industrial Research Organisation

EB-SWG = Ecosystems and Bycatch Mitigation Special Working Group

EEZ = exclusive economic zone

EPO = eastern Pacific Ocean

ERA = ecological risk assessment

FAD = fish aggregation device

FT-SWG = Fishing Technology Special Working Group

IATTC = Inter-American Tropical Tuna Commission

IPDCP = Indonesia and Philippines Data Collection Project

ISSF = International Sustainable Seafood Foundation

ME-SWG = Methods Special Working Group

MFCL = MULTIFAN-CL (a stock assessment modeling approach)

PNG = Papua New Guinea

RFMO = regional fisheries management organization

SA-SWG = Stock Assessment Special Working Group

SC = Scientific Committee of the Western and Central Pacific Fisheries Commission

SEAPODYM = spatial ecosystem and population dynamics model

SPC = Secretariat of the Pacific Community

SPC-OFP = Oceanic Fisheries Programme of the Secretariat of the Pacific Community

SPREP = Pacific Regional Environment Programme

ST-SWG = Data and Statistics Special Working Group

TCC = Technical and Compliance Committee of the Western and Central Pacific Fisheries Commission

TOR= terms of reference

USD = United States dollars

WCPFC = Western and Central Pacific Fisheries Commission

WCPO = western and central Pacific Ocean

WPEAOFM = West Pacific East Asia Oceanic Fisheries Management Project

1. For designation process refer to: <http://www.wcpfc.int/doc/SC-08/Process-Designating-WCPFC-Key-Shark-Species-Data-Provision-and-Assessment> [↑](#footnote-ref-1)