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REPORT ON THE PERFORMANCE OF THE COMMISSION'S SCIENCE SERVICE PROVIDER FOR 2008

**WCPFC5-2008/IP-09
2 December 2008**

Secretariat of the Pacific Community

ANNEX I Agreement for the Provision of Scientific Services to the Commission and Assistance to Members by the Secretariat of the Pacific Community

1. Period Covered by this Agreement

The period covered by this Agreement is 1 January 2008 to 31 December 2008.

2. Scientific Services to be Provided

The scientific services to be provided to the Commission by the SPC OFP during the period of this Agreement are as follows:

Description of Service	Outputs expected	Timing	Performance
<i>Data management, statistical analyses and related services</i>			
<i>Data management</i> i. (SC3 Project 1) Incorporate 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.	Databases updated with all data provided by CCMs.	January – December	This is an ongoing activity. All 2008 submissions of scientific data were checked and loaded prior to SC4. At this stage, WCPFC data are made available to Commission staff through the CES system but ad hoc summaries of data are also prepared when requested.
	Updated Catch and Effort Query System (CES) software installed at WCPFC headquarters and additional staff trained in its use.	by mutual agreement	Updates of the CES System and data are provided on a regular basis (4-6 months). The latest version was provided to the WCPFC in July 2008 and refresher training was provided to the WCPFC Science Manager in July 2008.
<i>Compilation of catch and effort estimates</i> ii. (SC3 Projects 2 and 6) Compile estimates of catch and effort in			SPC-OFP Science Services - continuing activity

support of the functions of the Commission and its subsidiary bodies, such as			
(a) estimates of annual catches by species, gear type and flag, as specified in the procedures for Scientific Data to be Provided to the Commission.	SC 4 working paper	11 July ¹	<ul style="list-style-type: none"> - P. Williams and P. Terawasi (FFA). 2008. Overview of tuna fisheries in the western and central Pacific Ocean, including economic conditions – 2007. WCPFC-SC4-GN-WP-1. - T. Lawson and P. Williams. 2008. Estimates of annual catches in the WCPFC Statistical Area. Secretariat of the Pacific Community, Noumea, New Caledonia. WCPFC-SC4-ST-IP-1 - P. Williams and T. Lawson. 2008. Scientific data available to the Western and Central Pacific Fisheries Commission. WCPFC-SC4-ST-IP-2
(b) estimates of annual catches by vessel flag, EEZ, and archipelagic waters, for use in determining the catch component (for 2005-2007) of the Commission's assessed contributions, and	Report of the annual catches to the Secretariat for calculation of 2009 assessed contributions	November	Prepared and provided to the Commission on 18 th September 2008
(c) estimates of catch and effort in support of Conservation and Management Measures	To assist with discussion at TCC4 and WCPFC5, summary data will be presented in both table and figure as undertaken during WCPFC3 and 4.	September	<ul style="list-style-type: none"> - Secretariat. Data relating to purse seine effort on the high seas and in the zones of non-PNA member CCMs. WCPFC-SC4-ST-WP-4 - Secretariat. Review of CCMs' Implementation of, and Compliance with, CMMs. WCPFC-TCC4-2008/10 - Secretariat. High Seas and non-PNA CMM Purse Seine

¹ Deadline of 11 July is conditional on provision on catch estimates by CCMs

			<p>Effort. WCPFC-TCC4-2008/13.</p> <ul style="list-style-type: none"> - Secretariat. Purse Seine Effort in the Zones of Non-PNA CCMs and on the High Seas. WCPFC-TCC4-2008/13 suppl.
<p><i>Statistical analyses for catch estimates</i></p> <p>iii. (SC3 Project 3) For catches for which estimates are not otherwise available, conduct statistical analyses to estimate catches, particularly in regard to</p> <p>(a) purse-seine catches of bigeye tuna,</p> <p>(b) discards of target tuna species, and</p> <p>(c) catches of non-target species.</p>	SC4 Working Paper.	11 July	<ul style="list-style-type: none"> - Lawson T. 2008. Factors affecting the use of species composition data collected by observers and port samplers from purse seiners in the western and central Pacific Ocean. WCPFC-SC4-ST-WP-3. - T. Lawson and P. Williams. 2008. Estimates of annual catches in the WCPFC Statistical Area. Secretariat of the Pacific Community, Noumea, New Caledonia. WCPFC-SC4-ST-IP-1
<p><i>Data standards and forms</i></p> <p>iv. (SC3 Project 9) Contribute to the development of draft data standards for observer programmes and port sampling in association with WCPFC Secretariat for subsequent consideration by CCMs</p>	Assist IWG2 and SC4 for refining observer data standards produced for IWG1;	11 July	<ul style="list-style-type: none"> - Peter Sharples provided a report to the Secretariat on the justification of the data standards proposed at SC3 and attended IWG2 to provide technical advice on observer data standards and other issues. Since IWG2 had already agreed on the scientific data standards, they were not considered at SC4.
	SC4 Working Paper on issues related to the estimation of purse seine species composition using observer and port sampling methodologies (paragraphs 283-284, SC3 Summary Report).	11 July	<ul style="list-style-type: none"> - Lawson T. 2008. Factors affecting the use of species composition data collected by observers and port samplers from purse seiners in the western and central Pacific Ocean. WCPFC-SC4-ST-WP-3.

v. (SC3 Project 13) Review current unloading data forms used in the region, and the proposed WCPFC transshipment reporting form, to determine their adequacy for scientific purposes.	SC4 Working Paper.	11 July	- P. Williams. 2008. Review of the WCPFC transshipment reporting form for collection data for scientific purposes. WCPFC-SC4-ST-IP-4 .
<i>Rules and procedures</i> vi. (SC3 Project 10) On request, advise the Executive Director regarding the further development of Rules and Procedures for the Protection, Access to and Dissemination of Data and the Information Security Policy	Advice provided to the Executive Director on request.	January – December	On several occasions, advice on the RaP, particularly in regard to the issue of the three-vessel minimum, was provided to the Executive Director by John Hampton and Tim Lawson, and advice on the ISP was provided by Peter Williams.
<i>Data gaps</i> vii. (SC3 Project 12) Determine the status of the provision of scientific data to the Commission	Updates on the status of the provision of scientific data on the WCPFC website and a summary report provided to the Secretariat for consideration at TCC 4 and WCPFC 5; Continued refinement of the web-based utility to identify data gaps.	January-December	The WCPFC Data Provisions Database System was developed by SPC-OFP during 2008. This system is used to enter the provisions of WCPFC scientific data and highlight gaps through the assignment of a comprehensive set of data gaps categories. The system also caters for the generation of PDF reports which are regularly published on the WCPFC “Status of data provisions” web pages to inform WCPFC, CCMs and CNMs on the gaps in the provision of data. The SC4 information paper WCPFC-SC4-ST-IP-2 (Scientific data available to the Western and Central Pacific Fisheries Commission) provides a summary on the status of the provision of scientific data to the WCPFC, highlighting the most important data gaps.

<p>IPDCP</p> <p>viii. (SC3 Project 8) Participate in the Indonesia and Philippines Data Collection Project and the compilation of information on the tuna fisheries of Vietnam.</p>	<p>Technical support provided and documented in reports of relevant duty travels, meetings of the Steering Committee and IPDCP workshops. (Costs will be funded from the IPDCP budget);</p> <p>Advice provided to the Secretariat on request. All reports provided to the Secretariat.</p>	<p>January – December</p>	<ul style="list-style-type: none"> • P. Williams participated in the Steering Committee Meeting Monitoring and Assessment of Indonesia's Tuna Fisheries held in Jakarta, 27-28 May 2008 • P. Williams participated in the 2nd East Indonesia Tuna Fisheries Workshop held in Jakarta, 29th May 2008 • P. Williams participated in the 1st Philippines/WCPFC Tuna Statistics Review Meeting (2-3 June 2008) • SPC-OFP installed the TUFMAN database system in the Philippines (June 2008) and continued to support the system and data collection in the Philippines throughout 2008.
<p>Dissemination of data</p> <p>ix. (SC3 Project 4) Produce 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.</p>	<p>Posting on WCPFC website.</p>	<p>January and July</p>	<ul style="list-style-type: none"> - The two issues of the Regional Tuna Bulletin were posted on January 24 and August 4.
<p>x. (SC3 Project 5) Produce and publish on the Commission's website the Tuna Fishery Yearbook 2007, containing annual catch estimates by gear type, flag and species.</p>	<p>Posting on WCPFC website.</p>	<p>January – December</p>	<ul style="list-style-type: none"> - A draft of the 2007 Yearbook was submitted to SPC Publications for proofing on November 4 and will be posted on the WCPFC website when the proofing has been completed.
<p>xi. (SC3 Project 7) Disseminate</p>	<p>Posting on WCPFC website</p>	<p>January –</p>	<ul style="list-style-type: none"> - Public domain catch and effort data have not been posted on the WCPFC website because of issues

public domain catch, effort and size data on the Commission's website at agreed level of resolution.	as data become available.	December	related to the three-vessel minimum.
<i>Stock assessment and related analytical services</i>			
<p><i>Stock assessment</i></p> <p>xiv. (SC3 Project 22) Undertake full stock assessment for target and non-target species as requested by the Commission (bigeye, SP albacore and skipjack in 2008), including:</p> <p>(i) Further refinement of data and data structure used for stock assessment;</p> <p>(ii) Quantification of changes in longline selectivity due to changes in gears 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 and this will take the form of a sensitivity analysis in the assessment, rather than a stand-alone analysis); and</p> <p>(iii) Advice and input, as requested and as time allows, to proposed southwest Pacific swordfish assessment to be</p>	SC 4 Working Papers.	11 July	<ul style="list-style-type: none"> - Langley, J. Hampton, P. Kleiber, S. Hoyle. 2008. Stock assessment of bigeye tuna in the western and central Pacific Ocean, including an analysis of management options. WCPFC-SC4-SA-WP-1 - A. Langley, J. Hampton. 2008. Stock assessment of skipjack tuna in the western and central Pacific Ocean. WCPFC-SC4-SA-WP-4 - S. Hoyle, A. Langley and J. Hampton. 2008. Stock assessment of albacore tuna in the south Pacific Ocean. WCPFC-SC4-SA-WP-8 - A. Langley and S. Hoyle. 2008. Report from the stock assessment preparatory workshop, Noumea, February 2008. WCPFC-SC4-SA-IP-5

undertaken by CCMs.			
<p><i>CPUE standardization</i></p> <p>xv. (SC3 Project 23) Undertake analyses of longline catch and effort data, including where appropriate operational-level data, to improve the standardisation of effort and the construction of indices of stock abundance for bigeye, yellowfin and South Pacific albacore tuna.</p>	SC 4 Working Papers, or incorporation into assessment documents.	11 July	<ul style="list-style-type: none"> - Incorporated into WCPFC-SC4-SA-WP-1, WCPFC-SC4-SA-WP-8, - B. Molony and K. Sisior. 2008. The use of principal components analyses to assist in selecting variables to include in a catch rate standardisations. WCPFC-SC4-ME-IP-1.
<p><i>Stock indicators of other species</i></p> <p>xvi. (SC3 Project 24) Development and reporting of stock indicators for those key species not formally assessed (yellowfin tuna in 2008)</p>	SC 4 Working Paper.	11 July	<ul style="list-style-type: none"> - J. Hampton and P. Williams. 2008. Compendium of fishery indicators for target tuna species. WCPFC-SC4-SA-WP-9.
<p><i>Sensitivity analysis</i></p> <p>xvii. (SC3 Project 25) Continued exploration of sensitivity of stock assessment outcomes to structural assumptions in models and data issues, including the comparison of various stock assessment models:</p> <ul style="list-style-type: none"> • includes the presentation of diagnostics to assess the most 	SC 4 Working Paper, or incorporation into assessment documents.	11 July	<ul style="list-style-type: none"> - Incorporated into WCPFC-SC4-SA-WP-1, WCPFC-SC4-SA-WP-4, WCPFC-SC4-SA-WP-7, and WCPFC-SC4-SA-WP-8 above. - A. Langley and R. Methot. 2008. A preliminary stock assessment of bigeye tuna in the western and central Pacific Ocean using stock synthesis 3 (SS3); a comparison with MULTIFAN-CL. WCPFC-SC4-SA-WP-2. - S. Hoyle, A. Langley and J. Hampton. 2008. General structural sensitivity analysis for the

<p>appropriate model structure(s);</p> <ul style="list-style-type: none"> includes a comparison of MFCL and SS-2 stock assessment models for bigeye tuna² 			<p>bigeye tuna stock assessment. WCPFC-SC4-SA-WP-3.</p> <ul style="list-style-type: none"> - S. Hoyle and S. Nicol. 2008. Sensitivity of the bigeye tuna stock assessment to alternative biological and reproductive assumptions. WCPFC-SC4-ME-WP-1. - S. Hoyle. 2008. Adjusted biological parameters and spawning biomass calculations for albacore tuna in the south Pacific, and their implications for stock assessments. WCPFC-SC4-ME-WP-2. - S. Hoyle and P. Sharples. 2008. Length frequency sampling data and its influence on the south Pacific albacore stock assessment. WCPFC-SC4-ST-IP-3.
<p><i>Recruitment indices</i></p> <p>xviii. (SC3 Project 30)</p> <p>Development of recruitment indices independent of the MFCL model, including the investigation of recruitment and oceanographic trends³.</p>	<p>Report on estimating environmental impacts on yellowfin tuna recruitment (Working Paper or Information Paper).</p>	<p>11 July</p>	<p>See footnote 3 below. No work undertaken .</p>
<p><i>Model refinement</i></p> <p>xix. (SC3 Project 29) Further refinement of the stock assessment software, MULTIFAN-CL, including simulation testing of new</p>	<p>Updated stock assessment modeling software and documentation posted on the MULTIFAN-CL website (also linked from WCPFC).</p>	<p>11 July</p>	<ul style="list-style-type: none"> - Some of the improvements to MFCL are covered in the A. Langley and S. Hoyle. 2008. Report from the stock assessment preparatory workshop, Noumea, February 2008. WCPFC-SC4-SA-IP-5 - Updated version of the executables used in the

² The MFCL-SS2 comparison for bigeye depends on SS2 being enhanced to enable the inclusion of weight frequency data in the assessment within the time-frame for undertaking the bigeye assessment.

³ The completion of 'SC3 Project 30' will require comprehensive and regular egg and larval surveys, or other types of survey to estimate recruitment indices independent of the stock assessment. Since there is no capability at SPC-OFP, the SPC-OFP's input to this Project will be limited.

<p>developments as appropriate</p> <ul style="list-style-type: none"> • Designing a more efficient recruitment parameterization (High priority) and incorporation of length-based selectivity (Medium priority) • Any 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, stock options) 	<p>SC 4 Working Paper, including any future research plan for the refinement of assessment models.</p>		<p>assessments were posted on the WCPFC website (http://www.multifan-cl.org/) prior to SC5.</p> <ul style="list-style-type: none"> - Work will be ongoing and a MFCL workshop is scheduled for 2 two weeks over January-February 2009 and any changes to the software will be documented in a paper to SC5 and the new executables will be put on the MFCL and OFP websites
<p>Management</p> <p>xx. (SC3 Project 34) Further review of spatio-temporal aspects of catches of juvenile bigeye and yellowfin tuna caught in association with fish aggregating devices (FADs) by updating the analysis presented in SC3-SA-SWG/WP-04. Refine the assessment of management options presented in the paper SC3-SA-SWG/WP-03 on the basis of the latest available fishery information, in consultation with the Secretariat for the selection of management options.</p>	<p>Provide advice to the Secretariat intersessionally; Working Paper for WCPFC5.</p>	<p>January-December</p>	<ul style="list-style-type: none"> - Aside from WCPFC-SC4- ST-WP-3, no specific activities were undertaken with respect to juvenile tuna spatio-temporal distributions. Work is planned for early 2009 in conjunction with a continuation of the research reported in WCPFC-SC4- ST-WP-3. - Considerable work was undertaken in support of evaluation of management options with respect to Drafts of the BET/YFT CMM. - J. Hampton, and S Harley. 2008. Predicted impact of potential management options on stock status and catches of bigeye, skipjack and yellowfin tunas in the western and central Pacific Ocean WCPFC-TCC4-2008-14 suppl. -
Research services			

xxi. (SC3 Project 11) Identify known data / information gaps in the current stock assessment, particularly in relation to operational level CPUE data as a partial contribution to the new project 'A study on the Causes of Data Gaps'	Participate in the 'Causes of Data Gaps' study as appropriate.		<ul style="list-style-type: none"> - SPC-OFP set up the web pages showing the historical provisions of scientific data to the WCPFC which was the main input used in the study on the "Causes of data gaps". P. Williams also provided other background material as input for the study through email messages and telephone discussions.
xxii. (SC3 Project 43) In association with other qualified organizations or CCM research agencies with a view to securing a broad-based consultation, continue implementation of the multi-year ERA, including PSA, for WCPO tuna fisheries. Provide additional detailed analysis of high risk spp. From PSA analysis. [USD 130,000]	National-scale analyses and training in ERA for SIDS (FSM, Nauru, Niue, Kiribati, PNG); Sub-regional analysis of western tropical Pacific; Assistance to other WCPFC members (USA, NZ) in developing national ERAs; Implementation report submitted to the Secretariat and Working Paper for EB-SWG and SC4.	11 July	<ul style="list-style-type: none"> - D. Kirby. 2008. Ecological Risk Assessment (ERA) Progress Report (2007/8) & Work Plan (2008/9). WCPFC-SC4-EB-WP-1. - B. Molony. 2008. Fisheries biology and ecology of highly migratory species that commonly interact with industrialised longline and purse seine fisheries in the western and central Pacific Ocean. WCPFC-SC4-EB-IP-6. - A two-day workshop conducted in June 2008 in conjunction with the 2008 Stock Assessment Workshops. Twenty –one attendees from PICTs and one FFA employee attended.
xxiii. (SC3 Project 42) Coordinating on-going management and development of the Pacific Tuna Tagging Programme [USD 10,000]	Convene a PTTP Steering Committee meeting and provide a Status Report to SC4	11 July	<ul style="list-style-type: none"> - Meeting of steering Committee convened during WCPFC-SC4 - PTTP Steering Committee. 2008. Report of the PTTP Steering Committee. WCPFC-SC4-GN-WP-7. - D. Itano. 2008. PTTP Summary Report – Phase 2 (Central Pacific) Cruise 1: 5 May – 3 June 2008. WCPFC-SC4-GN-IP-2. - B. Leroy, B. Kumasi, A. Lewis, D. Itano, T. Usu, J. Hampton, S. Nicol. 2008. PTTP summary report: review Phase 1. WCPFC-SC4-GN-IP-3.

			- J. Hampton, S. Nicol, B. Leroy, B. Kumasi, A. Lewis, D. Itano. 2008. PTP operational plans 2008-09. WCPFC-SC4-GN-IP-4.
xxiv. (SC Project 35) Participate in a study with the IATTC and CCMs to prepare a pan-Pacific research proposal on bigeye tuna reproductive biology to obtain accurate scientific information on maturity, spawning locations, sex ratios, and fecundity for inclusion in stock assessments of bigeye (including yellowfin and albacore) tuna in the Pacific Ocean.	Contribute to a project proposal developed for SC4 consideration.	11 July	- S.Nicol, S. Hoyle, B. Molony, D. Itano, K. Schaefer, A. Aires-Da-Silva, C-L Sun, H. Honda, M. Maunder, A. Langley, V. Allain, A. Williams, P. Williams, J. Hampton. 2008. A comprehensive review and proposed investigation of the age, growth, and reproductive biology of bigeye tuna in the Pacific Ocean. WCPFC-SC4-BI-WP-7.
<i>Other advisory and technical services</i>			
xxv. Provide advice, as requested, on scientific aspects of the design and implementation of the Commission's vessel monitoring system and regional observer programme.		January – December	<p>Included ...</p> <ul style="list-style-type: none"> • Peter Sharples provided a report to the Secretariat on the justification of the data standards proposed at SC3 and attended IWG2 to provide technical advice on observer data standards and other issues. • Ad hoc advice provided to the ROP on the current status and issues relating to observer data management (P.Williams) • Preparation and provision of a paper on issues related to the estimation of observer coverage (P. Williams) • Preparation and provision of a paper on the cost estimates for future ROP data

			management. (P.Williams)
xxvi. On request, provide advice to the Secretariat during the planning and implementation of the 'Independent Review of the Commission's Science Structure and Functions' scheduled for completion in the second quarter of 2009.		January – December	- All OFP staff attending SC4 were interviewed individually or collectively by the review team leader Dr. Graeme Parkes. Senior OFP staff provided feedback on a draft of the review report.
xxvii. Provide advice or input of any relevant information, as requested, to the Scoping Study relating to the management strategy evaluation and the application of reference points to the management of WCPO tuna fisheries.		January – December	- No formal OFP input to this project was sought, but senior OFP staff participated in informal email correspondence with the Secretariat and Campbell Davies (CSIRO) on the planning of the follow-up paper on this topic (WCPFC5-2008-12)
xxviii. Assist with the maintenance of the WCPFC web site, in particular the posting of documents for meetings of the Commission and its subsidiary bodies.		January – December	- Maintenance of the WCPFC website was conducted throughout the year by Emmanuel Schneider.