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Progress against the 2015/16 HoF9 work plan

FAME Secretariat

DIRECTOR'S OFFICE OBJECTIVES AND OUTPUTS

Results	2015–2016 planned activities	2015–2016 status
Objective 1. To develop and sustain effective relationships between the Division and its stakeholders		
1.1. Programme plans and activities that respond to the needs and priorities of members	1. Evaluate fisheries related development and management challenges and trends impacting members in areas and respond to the evolving needs and priorities of the SPC membership. 2. FAME annual work plan focuses and targets key activity areas at the national, sub-regional and regional levels. 3. Maintain strong links with member governments and territories, in particular fisheries ministers, permanent secretaries and/or director generals of fisheries ministries / departments of fisheries. 4. Facilitate Institutional strengthening appraisals for national fisheries institutions outlining gaps and opportunities for intervention. 5. In-country visit to geographically disadvantage small PICTs to appraise needs and priorities and impacts of FAME services. 6. Monitor the implementation of the FAME programmes and projects in consultation with member country relating to important evolving needs and priorities and donor partner requirements consistent with the SPC procedures. 7. Monitor and ensure that the implementation of the FAME division's strategic plan supports the SPC's corporate plan objectives and contribute to collective decisions at the executive level aimed at enhancing service delivery at the member country level. 8. Respond to *ad hoc* member country priority requests.	**KEY HIGHLIGHTS:** 1. Importance of the coastal fisheries highlighted at a regional and international meetings attended in 2015 and 2016, including the development and advocacy for the New Song for Coastal Fisheries strategy, and focus on the importance for provision of food security, employment, and livelihood to PICTs. 2. Annual work planning undertaken 3. Heads of Fisheries held in 2015. FAME inputs into SPC country reports prepared and presented to CRGA and available online. 4. No activities completed in 2015/16. 5. Ongoing project planning undertaken in association with small PICTs, including aquaculture development planning undertaken in [list countries] 6. Project monitoring and evaluation undertaken in line with project grant agreements and donor requirements. Internal evaluation undertaken on the FAME Information Section. Reporting on FAME core and programme funding provided through FAME's inputs into the annual 2015 SPC Results Report (available online). 7. FAME planning and reporting linked with new SPC-wide processes in 2016, including nesting the new FAME business plan under the SPC Corporate Strategic plan. New FAME projects begun in 2016, including MFAT funded coastal fisheries governance and aquaculture projects. FAME capacity strengthened through new MEL position in 2015. 8. Ad hoc member country requests addressed.
1.2. Effective working relationships maintained with SPC Divisions, other sub-regional, regional agencies, and donor partners	1. Proactive participation in broad multi-sectoral and cross-cutting initiatives, particularly in the areas of climate change, food security, gender and non- communicable diseases. 2. Maintain strong and good working relationships within FAME division sections and with other SPC divisions. 3. Strength liaison with regional (FFA, SPREP, USP, WCPFC, PIFS), sub-regional agencies (MSG, TVM, PNA), and regional NGOs on fisheries issues of importance and of common interest to PICTs. 4. Maintain strong links with development partners, members of the	**KEY HIGHLIGHTS:** 1. Regional and international participation in relevant multi-sectoral and cross-cutting issues. Increased integration and mainstreaming of gender and climate change across FAME programmes. 2. Increased collaboration with SPC Social Development Division, particularly in relation to work undertaken in gender mainstreaming and analysis in aquaculture 2015/16 3. SPC Chaired of the 2016 MSWG meetings, coordinated with other CROP agencies to provide advice and support Pacific input into SDGs

Results	2015–2016 planned activities	2015–2016 status
	Council of Regional Organisations in the Pacific (CROP) and other stakeholders. 5. Develop and pursue divisional, multi-sectoral and multi-agency funding proposals to support the achievement of the FAME's objectives and broader SPC goals. 6. Strong liaison with development partners to secure sustainable funding of work programme. 7. Respond to *ad hoc* meetings and requests for information that are aimed at enhancing and strengthening stakeholder relationships.	(particularly SDG14), provided advice for BBNJ and ABNJ developments, support provided to the Office of the Pacific Oceans Commissioner 4. See above 5. Multi-agency and multi-sectoral funding proposals pursued, particularly EDF-11 proposals funded by the EU, and MFAT funding proposals in cooperation with FFA and WCPFC 6. Strengthened relationships with donor partners, new donor relations, and greater donor engagement in project design and development 7. Ad hoc attendance at meetings and provision of information to enhance regional relationships and stakeholder engagement
Objective 2. To communicate and promote informed policy decisions and public awareness of marine resource issues and climate change in Pacific Island Countries and Territories (PICTs).		
2.1. Policy makers and the general public are better informed of fisheries resource issues, climate change impacts, the importance of fisheries and the need for management action	1. Materials to introduce fisheries into school curriculum developed/adapted to specific country needs. 2. Awareness materials or policy-related documents and briefs for PICTs to promote growth, sustainable management and development. 3. Production of awareness materials or policy-related documents. 4. Update / improvement of FAME and CFP websites.	**KEY HIGHLIGHTS:** 1. Teachers' Resource Kit on Fisheries for Vanuatu prepared for primary and secondary school teachers. Content includes learning exercises, learning outcomes and curriculum links. The kit includes a guide, 23 information sheets and 3 posters 2. i. Country-specific awareness materials, scientific reports, policies, plans, and other publications developed for 13 PICTS: - 2015: **American Samoa:** Poster on MPAs. **Kiribati:** 2 posters on marine resources for primary school kids, poster on deep bottom fish and updated version of a ciguatera brochure. **Marshall Islands:** Sea cucumber ID cards for surveillance and custom officers. **Niue:** Series of coconut crab illustrations for school children, poster on Coconut crabs. **Palau:** 2 fish posters. **Solomon Islands**: Baitfish ID cards. **Tokelau and Tuvalu**: Fishes of Tuvalu and Tokelau co-published by SPC and USP. - 2016: **Samoa:** Assessment of Samoa's Trochus (*Tectus niloticus*) Fishery: History, status and recommendations for management; **Tonga:** Demographic assessment of exploited coastal finfish species of Tongatapu; **Nauru:** Survey of reef invertebrate resources in the Republic of Nauru, May 2015; **Vanuatu:** Vanuatu national deep-bottom fish fishery management plan; Vanuatu Post TC Pam mangrove and seagrass mapping; poster Kostel wota laef blong

Results	2015–2016 planned activities	2015–2016 status
		Vanuatu; poster Solwota laef blong Vanuatu; **Niue:** Survey of reef resources at Beveridge reef and Niue. ii. Publications with only editing and publishing support for 4 PICTS: - 2015 – **Kiribati:** Sandfish farming manual and Kirimati integrated fisheries master plan. **Tuvalu:** Fisheries Department Work Plan. **Vanuatu:** Revised Tuna Management Plan, Plan of Action on Sharks, and Plan of action to combat IUU - 2016 – **Papua New Guinea**: A Roadmap for Coastal Fisheries and Marine Aquaculture for Papua New Guinea: 2016-17 for 2026; **Tuvalu:** Tuvalu Fisheries Department Corporate Plan 2017-2019 3. i. 9 regional information products (manuals, ID guides, posters): - 2015: Marine species identification manual for horizontal longline fishermen (Taiwanese/English version), EEZ map, PIRFO Observer Journal (English and French), fact sheet on marine food fish (hatchery based), Melanesian Spearhead Group roadmap for inshore fisheries management and sustainable development - 2015–2024 - 2016: Identification guide to the common coastal food fishes of the Pacific Islands; Whales, dolphins and sea birds ID cards for Pacific Islands Fisheries Observers; poster El Niño revisited: the influence of El Niño Southern Oscillation on the world's largest tuna fisheries; poster How do we observe and monitor artisanal tuna fisheries in the WCPO? ii. Two major regional publications: - Fisheries in the economies of Pacific Island countries and territories - Climate change and Pacific Island food systems 4. FAME Division and Coastal Fisheries Programme websites continually updated. New FAME-produced documents available for download through the FAME digital library - currently 10,429 documents available online, total downloads from the digital library in 2016 was 311,928.
2.2. Stakeholders in PICTs are fully informed of the results of SPC activities, and shared experience and knowledge across the region	1. FAME corporate documents and sector oriented policy briefs are laid out, printed and distributed. 2. Publication of SPC's Special Interest Group Information Bulletins and Fisheries Newsletter, related to important marine resource issues. 3. Production and distribution of updated version of SPC Fisheries Address Book. 4. Regular communication of FAME's achievements and activity results.	**KEY HIGHLIGHTS:** 1. No FAME Policy Briefs in 2015/16. Manual for the Tuna Stock Assessment Workshop produced. 2. i. SPC Fisheries Newsletters (6 issues): Issue #151 - September–December 2017; Issue #150 - May-August 2016; Issue #149 - January–April 2016; Issue #148 - September–December 2015; Issue #147 - May–August 2015; Issue #146 - January–April 2015 ii. Special Interest Bulletins (8 issues): Women in Fisheries (Issue#27 -

Results	2015–2016 planned activities	2015–2016 status
		December 2016; Issue #26 - December 2015); Traditional Marine Resource Management and Knowledge (Issue #37 – November 2016; Issue #36 – April 2016; Issue #35 - July 2015); Live Reef Fish (Issue #21 - June 2016); Beche-de-mer (Issue #36 - March 2016; Issue #35 - March 2015) 3. The Fisheries Address Book was produced in 2015 and 2016 with over 1,700 contacts updated 4. FAME results included in the 2015 SPC Results Report, reported at CRGA in 2015 and 2016, reported at HOF9 and project results communicated to donors and development partners. 5. In 2016, 93 articles or papers authored by FAME staff were published in peer reviewed or other significant regional publications.

COASTAL FISHERIES PROGRAMME OBJECTIVES AND OUTPUTS

Results	2015–2016 planned activities	2015–2016 status
Objective 1. To assist governments and administrations in the development of scientifically informed and socially achievable coastal fisheries management policies and systems in a changing environment.		
1.1. Assessment of the status of national coastal living marine resource, impacts on resources and habitat (local and climate change related), and the impact of existing management systems on resources, in order to inform management	1. Aquarium trade baseline assessments and monitoring reports / management arrangements including capacity development and attachment training in Noumea completed. 2. Finalise reports on the aquarium trade work against objectives for inclusion in the final report to the donor. 3. Finalise reports on the post larval capture and culture assessment work in French Polynesia. 4. Aquarium trade awareness / education / information materials developed and distributed. 5. Coastal fisheries creel and market survey manual printed and distributed along with the species identification cards for around 300 finfish species. 6. Undertake market and/or creel survey training in at least 4 PICTs. 7. Provide advice on sampling protocols to quantify impacts of fishing on resources and assist with data analysis. 8. Biological sampling work including genetics, reproduction, age and capacity development in part through attachment training to SPC for 10 species at least 4 PICTs. 9. Develop a species specific user guide for finfish biological sampling. 10. Undertake a workshop for 6 countries on otolith assessment and reading for aging fish, possibly in collaboration with IRD. 11. Finfish UVC survey assessment training completed in at least 2 PICTs. 12. In water invertebrate resources field assessment, capacity development (including attachments), data entry, analysis and reporting undertaken in at least 3 countries. 13. Coastal fisheries awareness / educational / information materials produced and distributed. 14. The production and publishing of at least 2 peer reviewed scientific papers. 15. SPC is represented at sub-regional, regional or international coastal fisheries science and/or management workshops or meetings. 16. If time and funding permits, conduct follow-up surveys (resource assessment, creel surveys and biological sampling, photo coral	**KEY HIGHLIGHTS:** **Aquarium trade:** • Baseline assessments and monitoring completed for Cook Islands, FSM, Fiji, French Polynesia, Kiribati, Marshall Islands, New Caledonia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu between 2013-15 • Post larval capture and culture assessments, export trials and reporting for invertebrates completed for French Polynesia • Information workshops organised and completed • Reports on: o Best practices for the collection, transport, holding and export of corals and fish in the aquarium trade o Commercial aquarium fish stock assessment in Pohnpei, FSM o Sustainability assessment of live rock trade from Tonga o A lagoonarium concept for Aitutaki o Rapid commercial aquarium fish surveys in Upolu, Samoa **Coastal ecosystem and fisheries data collection:** • Community coastal resource monitoring - Vanuatu (May 2016) • Mangrove and seagrass mapping and health assessments – Vanuatu (May 2016) • Biological sampling in Tonga (April 2016) - key coastal reef fish, including species identification, measuring and weighing using standardised approaches, otolith and gonad extraction and sex and maturity stage estimation • Coastal fisheries resource assessment – Niue (September 2016) - in-water finfish and invertebrate surveys • Sea cucumber assessment – Tonga (October 2016) - in-water assessment of population status of sea cucumbers and other important invertebrates. **Coastal ecosystems climate change monitoring:** • Maintenance of five coastal ecosystem climate change monitoring sites throughout 2016. The sites are located Majuro (Marshall Islands), Pohnpei

Results	2015–2016 planned activities	2015–2016 status
	quadrats etc.) and exchange temperature loggers at the 5 climate change pilot sites. 17. Undertake *ad hoc* requests as requested.	(FSM), Funafuti (Tuvalu), Abemama (Kiribati) and Manus (PNG). Preparation for another round of surveys confirmed for 2017. **Reports:** • Niue - coconut crab assessment, biological sampling report, creel and market survey results published, survey of reef resources at Beveridge reef and Niue • Samoa - Assessment of Samoa's Trochus (Tectus niloticus) • Tonga - marine invertebrate assessment report drafted, biological sampling report drafted, Demographic assessment of exploited coastal finfish species of Tongatapu • Nauru - Survey of reef invertebrate resources.
1.2. An appropriate mix of community-based approaches and national management arrangements developed in partnership with stakeholders, incorporating ecosystem- based principles, impacts of climate change, review of coastal fisheries legislation	1. Assistance and advice provided in national policy development, regulation/ legislation reviews / management arrangement in at least 8 PICTs. 2. Assistance in establishing / strengthening community-based ecosystem approach to fisheries management / ridge to reef / whole of island approaches in at least 8 PICTs. 3. Develop and strengthen effective partnerships with national / regional / international CBRM practitioners. 4. Adaptation activities including capacity development identified and implemented in collaboration with other CFP sections in at least 4 PICTs. 5. Advice provided for institutional strengthening studies in at least 2 PICTs. 6. Arrange and hold a regional workshop on the future of coastal/inshore fisheries management. 7. CFP/FAME is represented and input provided at sub-regional, regional or international meetings / workshops relating to coastal fisheries management. 8. Adaptation activities including capacity development identified and implemented in Kadavu, Fiji. 9. Undertake spat collection trials for clams in Tokelau including the purchase of any materials needed. 10. Write up the final report for the work in Kadavu, Fiji and Tokelau and provide this to the donor. 11. SPC represented at sub-regional, regional and international climate change and/or MPA workshops or meetings.	**KEY HIGHLIGHTS:** **'A New Song for Coastal Fisheries – Pathways to Change: The Noumea Strategy':** • The Strategy was developed by participants at a regional workshop on the future of coastal fisheries management held in March 2015. The workshop had over 100 participants from all 22 SPC member PICTs, four CROP agencies, donors, NGOs and other regional partners. The convening of a dedicated CEAFM workshop, with such broad-based participation, is in itself an indication of the increased profile of CEAFM across the Region. SPC provided the technical support for the workshop, with the workshop being funded by the Australian Government. **12 new coastal fisheries management measures adopted in 10 PICTs supported by SPC advice:** • Sea cucumber management measures in Marshall Islands, French Polynesia, Vanuatu, Kiribati, Solomon Islands, FSM (Pohnpei) and Samoa, with advice acted on in Tonga • Coconut crab management measures in Niue • Recreational bone fish management plan in Cook Islands • Aquarium fish management plan approved in Marshall Islands • Vanuatu National Deep- Bottom Fish Fishery management Plan • Vanuatu National Fisheries Sector Policy • Policies and plans completed and submitted to countries for approval and implementation: Fiji National Fisheries Policy 2017-2027 (Final draft submitted to Ministry of Fisheries 12.12.16) • Policies and plans in progress: Tonga Marine Aquarium Fishery Management Plan; Review of Samoa's coastal fisheries policy

Results	2015–2016 planned activities	2015–2016 status
	12. Undertake *ad hoc* requests as requested.	• **Monitoring, control and surveillance (MCS) training workshop conducted to support compliance with Marshall Islands sea cucumber regulations 2012**
1.3. Standard data management systems are developed in support of coastal fisheries and aquaculture monitoring and management	1. Develop and maintain a data base for aquaculture inventory and production. 2. Develop and maintain a database for FAD deployments and monitoring. 3. Develop and maintain a biological sampling database. 4. Develop and maintain a database on national regulations and management arrangements. 5. Upgrade and maintain RFID. 6. Upgrade the database for market and creel survey data and add any new modules as needed. 7. Upgrade the database for socioeconomic surveys and add any new modules as needed. 8. Develop solutions for using mobile devices (phones, tablets, etc.) for data collection with supporting databases. 9. Undertake database needs assessments in at least 4 PICTs and provide assistance and training as required. 10. Develop online database for coastal fisheries exports and provide training in its use. 11. Provide training on database development, the use of databases, including GIS applications for at least 3 PICTs. 12. Undertake Ad Hoc requests as requested.	**KEY HIGHLIGHTS:** **Development of new coastal fisheries and ecosystem data management tools:** • New web modules for: seagrass health survey & mapping; mangrove health survey & mapping; coconut crab surveys; shipment inspection (exports) • Upgrades or new versions of: the web module for coral photo quadrat surveys; creel & market database (including custom queries for Tonga); exports database; and, water quality database (for Cook Islands). **Coastal fisheries and ecosystem data management systems utilised by 10 PICTs to enter and manage their coastal data:** • Reef Fisheries Integrated Database (RFID)[1] utilised by Cook Islands, Fiji, Tonga and Vanuatu to enter and manage new data in 2016 • Socio-Economic Manual Companion Software (SEMCoS)[2] utilised by Kiribati to enter information from socio-economic surveys with ~1200 households in 2016 • Export data entered by Marshall Islands (aquarium fish and corals), French Polynesia (sea cucumber) and Solomon Islands • Coral survey data entered by Cook Islands and Vanuatu • Creel and market survey data entered by Kiribati, Samoa and Solomon Islands • Additional resource and ecosystem survey databases utilised by: French Polynesia (Giant Clam mariculture); Cook Islands (Coconut crab and water quality monitoring); Niue (invertebrates); Vanuatu (mangroves and seagrass).
Objective 2. To provide a regional framework for sustainable aquaculture, in the areas of planning, research, development and trade, for Pacific Island governments, communities, private enterprises and other stakeholders.		
2.1. Regional and national capacity for strategic policy, planning and administration is improved to establish	1. New / updated National Aquaculture Plan developed for 4 countries. 2. Programme mission on needs assessment undertaken in 4 PICTs. 3. Provided technical support for legislative advice on aquaculture and aquatic biosecurity. 4. Improved regional / sub-regional framework for aquaculture and aquatic biosecurity: - regional framework for aquaculture statistics	**KEY HIGHLIGHTS:** • National aquaculture development plan review has been completed for Fiji, Solomon Islands and Vanuatu. Vanuatu has developed a comprehensive coastal fisheries policy that covers aquaculture in 2016. Provided inputs to the review of aquaculture commodity prioritization for PNG.

[1] RFID is software developed by SPC for data entry and querying of survey data for socio-economic, fish and invertebrate surveys following the SPC methodology. Current version is available for download here.
[2] SEMCoS is software developed by SPC to accompany the manual 'Socioeconomics fisheries surveys in Pacific Islands: A manual for the collection of a minimum dataset' by Kronen et al. Current version is available for download here.

Results	2015–2016 planned activities	2015–2016 status
clear priorities and enable the aquaculture sector to meet current and future needs, with the guidance of the Regional Aquaculture Plan	developed and implemented; - regional framework for aquatic biosecurity developed and implemented. 5. Developed policy briefs on aquaculture emerging issues. 6. Developed factsheets on regional aquaculture commodities. 7. Assistance provided on institutional strengthening in countries. 8. Aquaculture portal updated with relevant materials and information on aquaculture and aquatic biosecurity. 9. Presentation and report from SPC at international aquaculture conferences / workshops. 10. Developed project proposals for new funding opportunities. 11. Undertake Ad Hoc requests as requested.	• A needs assessment for Micronesia (Nauru, FSM, Marshall Islands and Palau) was undertaken in 2016 as part of a sub-regional activity. This formed the basis of a new funding proposal in 2017. • A regional policy brief on eel fishery and management was developed to guide member countries on the potentials of eels. This was a result of a subregional meeting on eels attended by French Polynesia, Fiji and Samoa followed by an international eel research cruise in the Pacific which SPC participated. • New project approved through New Zealand on Sustainable Pacific Aquaculture Development for 5 years estimated at NZD $ 4.9 million.
2.2. Skills and knowledge base in PICTs is increased, so as to maximise the return on investments in aquaculture through innovative, profitable and sustainable approaches	1. Outcomes of SPC independent studies, conference and workshop proceedings are published. 2. Support to ACIAR Project to improve community based aquaculture in 4 PICTs in tilapia, freshwater prawns and sea cucumber (sandfish). 3. Support to ACIAR funded milkfish culture project in Solomon Islands. [Project wrap up and evaluation in 2015]. 4. Support to hatchery and ponds trials of the Eastern strain of *Macrobrachium spinipes* native to PNG (ACIAR and IACT projects): - workshop to deliver project results to investors and stakeholders; - strengthen capacity of UPNG and NFA to run prawn hatchery. 5. Market assistance provided for aquaculture products: - feasibility of mud-crab for exports from PICTs to NZ market (IACT) and development of risk standards; - undertake market surveys. 6. Feasibility of aquaponics undertaken in 2 PICTs. - On-going maintenance and operation of Aquaponic Facility in Suva (IACT and AusAID); - Economic assessment of aquaponics in RMI. 7. Strengthen national capacity in Pearl business training skills in 3 PICTS. 8. Strengthen national capacity on seaweed farming in 4 PICTs. 9. Strengthen national capacity on fish feed formulation. 10. Provided technical assistance on hatchery facilities in 6 PICTS. 11. Provided technical assistance on capture based aquaculture in 2 PICTs. 12. Provided technical assistance on stock enhancement through aquaculture intervention in 2 PICTs.	**KEY HIGHLIGHTS:** • 4 farm clusters supported in Fiji (2 tilapia clusters), Samoa (1 tilapia farm cluster) and Vanuatu (1 tilapia farm cluster). There is also evidence of significant knowledge spill-over from assisted farmers in clusters to other farmers outside of clusters • 2015 - Technical assistance provided to PNG to improve the quality of farmed kappayphycus seaweed, and improve cage based production of tilapia. Seaweed training conducted for Tonga in 2015 with follow up work in FSM and Kiribati. • 2015 - Fiji fisheries staff and aquaculture farmers trained in: aquaculture pond site selection, pond design and construction (26 participants); pearl business skills and research data collection; Fiji Fisheries staff trained on construction and operation of incubator based tilapia hatchery to improve seed supply to tilapia farmers. • Investment opportunity seminar conducted in PNG on freshwater prawns for instry stakeholders that encompassed transfer of knowledge and data collected from hatchery and grow-out trials on feasibility of new freshwater prawn species for aquaculture. • Technical assistance provided to Fiji commercial mud crab enterprise on equipment, progress to attain HACCP, production, operation and product improvement. Export pathway established and maintained for live mud crabs to the NZ market. • Samoa - Fisheries staff and community members trained in aquaculture site selection and the construction of fish cages for tilapia and mullet. Two cages constructed, deployed and successfully stocked with fish.

Results	2015–2016 planned activities	2015–2016 status
	13. Strengthen national capacity on scallop and lobster culture in 2 PICTs. 14. Strengthen national capacity in aquaculture extension services in 1 PICT. 15. Improve farming strategies for tilapia fish production in 5 PICTs. 16. Provided sub-regional training opportunities to improve capacity in: - Sea cucumber sandfish hatchery and nursery training; - Pond site selection and construction (with Uni of NSW); - Gender in aquaculture (with SPC HRD); - Aquaculture Extension training. 17. Improve production and efficiency through support for demonstration sites for farmer networks and clusters established in 5 PICTs. 18. Assistance provided to 4 Aquaculture Enterprises on product quality and standards e.g. seaweed, sponges. 19. Economic valuation of aquaculture commodities. 20. Evaluation of impacts of aquaculture trainings provided. 21. Maintain a watching brief on freshwater fisheries and opportunities for culture based fisheries. 22. Produce aquaculture training modules for 2 PICTs. 23. Provide supervision to postgraduate students. 24. Undertake *ad hoc* requests as requested.	• Palau - Technical assistance provided to improve production and export of giant clams. Sea cages were deployed and production started. • FSM - Follow up technical assistance provided to sea sponge enterprises on production, operation and product marketing for sponges. • 2015 - Scientific advice to identify freshwater indigenous prawn as a new aquaculture commodity in PNG. Assistance provided included establishing a pilot hatchery facility and conducted breeding trial and grow-out of the prawn larvae to market size of indigenous giant freshwater Macrobrachium prawns. Following positive results of the assessment, the Aquaculture team assisted PNG in hatchery set up, breeding and training. • Economic assessment on the feasibility of aquaponics undertaken in 2015 with on-going technical support provided to one commercial enterprise on aquaponics in Fiji in 2016 • Completed benchmarking for 3 most popular tilapia feed by conducting on-farm trial of floating feeds & samples collected for analysis. Interim report received covering growth data. • Hatchery & nursery trainings undertaken in Samoa (on tilapia), Vanuatu (prawns, tilapia and sea cucumber sandfish), PNG (freshwater prawns), Fiji (tilapia and freshwater prawns) and Kiribati (sea cucumber) in 2015 and 2016. • Improving production efficiency for farmer networks and clusters is progressing for Samoa, Fiji and Vanuatu on tilapia during 2015 to 2016 and this is continuing to 2017 • Hatchery training attachment provided to one national Aquaculture Technician from Nauru to Kiribati on milkfish farming in 2016. • 2016 - Aquaculture is part of post-disaster rehabilitation work in Vanuatu and Fiji: In collaboration with national governments, partner agencies and donors such as ACIAR, KfW and FAO, assistance was provided to Vanuatu and Fiji on rehabilitation work to re-establish government aquaculture infrastructure such as hatcheries and community-based aquaculture farms damaged in tropical cyclones Pam and Winston. • 2016 - First ever harvest of cage-cultured tilapia fish in Samoa – Article link: A floating-cage culture system was trialled at Lake Satoalepai in Savaii. The fish were raised by the Satoalepai Village fish farm committee, under the guidance of the Ministry of Agriculture and Fisheries staff in collaboration with SPC. The first culture cycle of this project produced a total of 380 kg of tilapia (about 1800 fish) • 2016 - First seeding of sandfish to restock overexploited sea cucumber in Kiribati – Article link: Since August 2015, SPC has assisted MFMRD staff

Results	2015–2016 planned activities	2015–2016 status
		spawn sandfish at the Tanaea hatchery for community-based farming trials. The first seeding in lagoon and pond settings was carried out in February 2016 in Tabuki village, North Tarawa and EcoFarm, South Tarawa. Six weeks post-release, observations indicated a high survival rate (>85%) and good growth for juvenile sandfish released in a lagoon pen, North Tarawa. • Provided technical assistance to New Caledonia on small scale hatchery setup for oyster including breeding and husbandry capacity building work in 2016. • Assisted Fiji with grass carp hatchery training where national fisheries staffs including extension officers were being trained in 2016. • Sub-regional training on sea cucumber (sandfish) hatchery including breeding and algae culture conducted in 2015 with participants from Cook Islands, Fiji, Kiribati, Solomon Islands and Vanuatu attended. • A sub-regional eel workshop conducted in Fiji in 2016 with participations from Samoa, Fiji, and French Polynesia including scientists from Japan. Proceeding of eel subregional workshop and a policy brief have been produced. • Training on pond site selection and construction involving extension services was conducted for two countries, Fiji in 2015 and Vanuatu in 2016. • Gender training in aquaculture was conducted in Fiji in 2015 followed by field work and evaluation of impacts of training in 2016. This is part of the ACIAR Community aquaculture project with further work to be done in Vanuatu, Samoa and Kiribati in 2017. • Three USP Masters students from Fiji and Solomon Islands were supervised during 2015-2016 period.
2.3. Science-based approaches to manage aquatic biosecurity risks are supported	1. Assessment of viral pathogens tests in prawns in PICTs. 2. Undertake 4 risk analyses for aquatic species / strain importation. 3. Provide technical support for OIE reporting in countries: national / sub- regional / regional. 4. Support implementation of sub-regional / regional biosecurity framework. 5. Technical support provided to 4 countries to strengthen equipment and infrastructure in aquatic biosecurity. 6. On-going advice to PICTs on aquatic species introduction and quarantine requirements. 7. Undertake ad hoc requests as requested.	**KEY HIGHLIGHTS:** • A regional aquatic biosecurity action plan has been drafted to assist in guiding the development and management of aquaculture in the Pacific • Import risk assessment analysis completed for French Polynesia, and an import risk assessment protocol is in development to assess imported frozen shrimp in 2016. Viral pathogen tests on imported shrimp were also being undertaken as part of this activity. • Provided technical assistance to New Caledonia to strengthen shrimp best practices.

Results	2015–2016 planned activities	2015–2016 status
Objective 3. To develop sustainable nearshore fisheries in PICTs to provide food security, livelihoods, economic growth and climate change adaptation.		
3.1. Subsistence, artisanal, sport and commercial fishing activities occur within the sustainable production level of the available fisheries resources	1. National technical and training assistance provided to strengthen FAD programmes in at least 5 PICTs (Solomon Islands, PNG, Chuuk-FSM in 2015). 2. Regional workshop in collaboration with WorldFish and ACIAR on lessons learned and nearshore FAD designs held in 2016, with a technical manual on nearshore FAD designs produced. 3. 2015 and 2016 practical safety, fishing and financial management course for Fisheries Officers conducted to improve fishing vessel operations and small boat safety practices. 4. National training in vessel operations and safety at sea completed to enhance fishing vessel operations and safety at sea practices in at least 2 PICTs (Tuvalu in 2015, Solomon Islands in 2016). 5. National Fisheries diversification projects implemented to transfer fishing effort from reef fish to more resilient marine resources in at least 3 PICTs (squid exploratory fishing, Tahiti, 2015; *bagan* project, Kiribati, 2015/16). 6. Assistance provided to develop or strengthen national sport fishing tourism to improve livelihoods through introduction of non-destructive fishing operations in at least 4 PICTs (assistance to PNG and New Caledonia continued in 2015). 7. Fisheries education project to introduce fisheries in school curricula in at least 2 PICTs (Vanuatu in 2015). 8. Development of new resource materials as required, including a technical manual on new nearshore FAD designs by 2016. 9. Collaboration with FAO on the implementation of the Voluntary Guidelines for Small Scale Fisheries (SSF). 10. Collaboration with FAO and SPC's Geoscience Division on the rolling out of FAO's training on DRM and emergency response in the fisheries sector. 11. Experimental nearshore FAD fishing project in Samoa to verify fish species and abundance both for resources management and small scale commercial fisheries rejuvenation objectives (DevFish*). 12. Management training on business diversification for sustainable small scale/artisanal enterprises in 2 PICTs (DevFish).	**KEY HIGHLIGHTS:** • In-country support provided to strengthen national FAD programmes in 7 PICTs (Solomon Islands, Papua New Guinea, FSM-Chuuk, Nauru, Fiji, Vanuatu, Tuvalu). Materials provided for the construction of nearshore FADs as part of post-disaster recovery and rehabilitation work in Vanuatu, Solomon Islands and Chuuk (1 and 10) • In June 2016 the first regional Expert Consultation on nearshore FADs was jointly organised by SPC and WorldFish - Article link: Participants from 11 PICTs shared experiences and learning, and collectively developed best practice principles to guide nearshore FAD deployments in the future; policy brief developed for HOF 10 and manual to be published in 2017 • 2015 and 2016 practical safety, fishing and financial management course for Fisheries Officers conducted in Santo, Vanuatu (23 officers from 13 PICTs trained) • Small-scale Fishing Operations (SFO) training with a focus on sea safety conducted in 3 PICTs (Solomon Islands, Tuvalu and Fiji) • Testing of 'bagan' fishing for small pelagics in Tarawa, Kiribati, implemented in collaboration with the Ministry of Fisheries and Marine Resources Development and co-funded by FFA; the project has been stopped following technical problems but bagan fishing will be trialed in Tonga in 2017. Exploratory fishing trials for diamond-back squid successfully conducted in French Polynesia using adapted gear for small boats - Link. Fishing trials for small pelagics using light attraction will be conducted in Fiji in June 2017 in collaboration with FAO. • Sport fishing development supported in New Caledonia and Papua New Guinea, with a data collection programme; training of local guides in Vanuatu planned for 2017. • Fisheries education project successfully implemented in Vanuatu in 2015/16, with kits of resource materials developed and distributed to all primary and secondary schools (French and English) . • Several resource materials developed including record keeping books for fish sellers and fish farmers, a DVD on sport fishing knots and two policy briefs; new FAD manual will be produced in 2017. • Collaboration with FAO is ongoing with joint projects in Fiji and Samoa • Inputs into post-disaster needs assessments (PDNA) provided in Chuuk, Vanuatu and Fiji: 2015 was the first time FAME was involved in PDNA work. CFP staff supported post-disaster assessments following TC Pam in Vanuatu, typhoon

Results	2015–2016 planned activities	2015–2016 status
	13. Support to 2 SMEs (provincial associations) to implement PNG's strategy on the utilisation of industrial fish wastes (DevFish). 14. Facilitate and complete the work on industrial training internship for food technologist students in PNG (DevFish). 15. Sea safety awareness workshop in Niue (DevFish). 16. Complete the work on regional crewing standards review on fishing vessels (DevFish). 17. Undertake ad hoc requests as requested.	Maysak in Chuuk and TC Winston in Fiji. Through collaboration and support from regional partners, including SPC, the Fiji Department of Fisheries was able to include fisheries in the TC Winston PDNA report for the first time3. • DevFish project completed in Samoa • Not completed; the DevFish project undertook other activities instead. • See under 3.3 - Nine students from the Papua New Guinea (PNG) University of Technology supported to undertake a 10-week industrial training internship with the four tuna processing and canning companies based in Lae and Madang. - Training workshop conducted for artisanal fishers and fishing charter operators on safety at sea and safe vessel operations, 20 emergency safety grab bags distributed. - Not completed. The DevFish project undertook other activities as listed under 17. - Thermal Processing and Regulatory Audit training for cannery, industry and national fish inspection personnel in PNG; trial and promotion of 4 stroke OBM engine with Funafuti Fishermen Association (Tuvalu); training of 24 Tuvalu fishers in outboard motor servicing and repairing; fish bags as an alternative to fish bins (eskies) trialed with Niue fishers; se safety grab bags distributed in PNG, Tuvalu, Niue, Vanuatu
3.2. Economic viability of fisheries investments is improved through analysis, evaluation and capacity development in financial skills	1. National economic assessment of fisheries, aquaculture or climate change adaptation projects/ businesses in at least 3 PICTs. 2. National FAD data collection systems established in at least 2 PICTs. 3. Economic and market assessment of Tonga deep-water line fishery, ongoing project support. 4. Regional training in financial management, economics, project management and governance conducted at NMIT (2015 and 2016). 5. Training courses in financial management, economics, project management and governance conducted in at least 4 PICTs. 6. National economic tourist surveys are established in at least 2 PICTs (Niue and Palau) through collaboration with SPC Statistics Section. 7. Publication of resource materials on fisheries economics as required. 8. Undertake *ad hoc* requests as requested.	**KEY HIGHLIGHTS:** 1. Cost-benefit analysis of the sea cucumber fishery in Fiji. Economic analysis of the Tongan deep water fishing industry. Investigation of interactions between artisanal and industrial vessels. Analysis on the economics of small-scale fishers supplying tuna to an industrial processing plant in Kiribati Link Preliminary economic valuation of sport fishing industry in New Caledonia Link 2. Data collection systems established in Vanuatu and for Chuuk (FSM) where the data is currently being analysed. 3. Review and assessment of economic and market modelling and reports for Tonga deep-water fishery. Project support ongoing to progress to phase2.

[3] Fiji's first PNDA report was for TC Evan, which hit Fiji in November 2013. The PDNA report published in March 2013 included no reports of damage the fishery sub-sector – Link

Results	2015–2016 planned activities	2015–2016 status
		4./5. Three economic and data analysis attachments to SPC for in 2016. 66 individuals trained in basic finance. More than 30 individuals trained in data collection. (Tonga, Vanuatu, FSM, Samoa) 6. Not completed, priority shifted 7. Various publications including above links. 8. Assistance provided to a range of other ad-hoc requests for support.
3.3. Optimum benefits from the resource are obtained through improved fish handling and value-adding	1. Fish waste utilisation promoted and facilitated in the region to improve livelihoods and the environment. 2. National fish waste utilisation projects supported to improve livelihoods and the environment in at least 2 PICTs (French Polynesia in 2015?). 3. National training in fish handling and safety for export markets completed in at least 2 PICTs (fish handling training in Kiribati in 2015; sensory evaluation training in PNG in March 2015). 4. Technical assistance and advice provided to National Competent Authorities/ Fisheries Administrations in at least 4 PICTs. 5. Technical assistance and advice provided to at least 4 fisheries private sector enterprises. 6. Regional Fish Inspectors Training provided to PICTs. 7. Regional thermal Process training for fish canning operations in May 2015. 8. National training courses conducted on seafood safety, quality, and value adding to meet requirements of export destinations in at least 2 PICTs. 9. Post-graduate diploma program on fisheries post-harvest introduced in 2016 at PNG University of Technology. 10. Technical advice in seafood safety and quality provided as requested. 11. Undertake ad hoc requests as requested.	**KEY HIGHLIGHTS:** 1. Support provided for small-medium enterprise development in PNG utilising fish waste from tuna processing. A strategy paper was developed and submitted 2. Financial assistance provided to producers of fish silage in French Polynesia and New Caledonia 3. National training workshops on seafood safety and tuna handling conducted in Samoa and Christmas Island (Kiribati) – 75 fishers and 34 fisheries staff trained; 80 fish inspectors trained in sensory evaluation of fish and seafood products 4. Competent Authorities in Fiji, Papua New Guinea, Solomon Islands, Kiribati and Vanuatu technically supported 5. Seafood enterprises in Fiji, Solomon Islands, Marshall Islands, and Papua New Guinea supported through training and technical assistance 6. Regional fish inspectors course delivered in collaboration with FFA 7. Regional thermal process training for fish canning operations delivered as part of DevFish2 project in Levuka, Fiji, in November 2015 (20 participants from Fiji, Papua New Guinea and Solomon Islands) 8. Training in HACCP, thermal processing and/or audit compliance delivered in Fiji, Papua New Guinea and Marshall Islands 9. Post-graduate course on fisheries post-harvest rolled out to PNG Unitech in 2015, with provision of laboratory equipment

OCEANIC FISHERIES PROGRAMME OBJECTIVES AND OUTPUTS

Results	2015–2016 planned activities	2015–2016 status
Objective 1. To provide high-quality scientific information and advice for regional and national fisheries management authorities on the status of, and fishery impacts on, stocks targeted or otherwise impacted by regional oceanic fisheries.		
1.1. Regional oceanic fisheries management policy and decision-making by WCPFC are informed by the best science-based stock assessment and advice	***Regional stock assessments*** 1. Conduct stock assessments for South Pacific albacore tuna and bigeye tuna in Pacific-wide context in 2015 and other assessments to be confirmed for 2016. 2. Provide advice on the likely impacts of recent and predicted future fishing levels on western Pacific stocks of bigeye, yellowfin, and skipjack tunas, including the potential performance of WCPFC conservation and management measures in 2015 and 2016. 3. Assess the possible impact of tropical skipjack catches on the abundance of skipjack at higher latitudes in 2015. 4. Provide advice on the likely status and recent trends in key shark species (as defined by WCPFC) in 2015 with other shark work to be confirmed for 2016. 5. Develop a research plan for WCPFC key shark species in 2015. 6. Provide advice on the likely impact of potential measures to mitigate fishery impacts on shark species of particular concern in 2015. 7. Produce the annual Tuna Fisheries Assessment Report in 2015 and 2016. ***Management objectives and harvest strategies*** 8. Convene a technical workshop on the scientific component of the framework for the evaluation of management strategies in 2015. 9. Develop simple harvest control rules for South Pacific albacore tuna. 10. Update economic information for the southern longline fishery in 2015 to inform further development of economic-based reference points for South Pacific albacore tuna in 2016. ***Stock assessment research and development*** 11. Construct and distribute software packages that allow others to	**KEY HIGHLIGHTS:** ***Regional stock assessments*** **Stock assessments submitted to the 11th and 12th WCPFC Scientific Committee:** • Stock assessment for south Pacific albacore tuna – Link • Stock assessment of skipjack tuna in the western and central Pacific Ocean - Link • Assessment of blue shark in the southwestern Pacific – Link **Status of the region's tuna fisheries submitted to the 12th Session of the WCPFC Scientific Committee:** • Analyses and advice provided to WCPFC members on the region's tuna fisheries, including: the region's tuna fisheries including economic conditions (link); estimates of annual catches in the WCPFC Statistical Area (link); estimates of purse seine catches by species (link); and, trends in the south Pacific albacore longline and troll fisheries (link). **Evaluation and advice on regional management measures:** • Analyses and advice provided to WCPFC on management issues, including: evaluation of the effectiveness of the tropical tuna conservation and managemen measure for rebuilding and reducing fishing mortality on bigeye tuna (link); biological and economic consequences of alternative fishery trajectories to achieving a candidate south Pacific albacore target reference point (link); biologically reasonable rebuilding timeframes for bigeye tuna (link); performance statistics and monitoring strategies for skipjack and South Pacific albacore (link); evaluation of candidate harvest control rules for the tropical skipjack purse seine fishery (link); preliminary evaluation of catch-based harvest control rules for Sout Pacific albacore tuna (link); relative impacts of FAD and free-school purse seine fishing on skipjack tuna stock status (link); and preliminary capacity utilization analysis of the WCPO purse seine fleet (link) ***Management objectives and harvest strategies*** • Workshop hosted with world experts in fisheries Management Strategy Evaluatio (28-30th June). Technical modelling approach developed to support harvest strategy development within the WCPFC and sub-regional groups such as the PNA Report to WCPFC – Link.

Results	2015–2016 planned activities	2015–2016 status
	undertake and present results using the regional stock assessments in 2015 and 2016. 12. Conduct analyses of operational longline catch per unit effort (CPUE), data in support of regional tuna stock assessments in 2015. 13. Develop alternative models to describe the fishing dynamics of purse seine vessels for the evaluation of management options in 2015. 14. Continue development, testing and documentation on the MULTIFAN-CL stock assessment software, with updated software and documentation posted on www.multifan-cl.org in 2015 and 2016.	• Report on the development of a harvest strategy for resource-limited deepwater snapper fisheries (publication link) ***Stock assessment research and development*** **New modelling approaches utilised for 2016 stock assessments and analyses:** • MULTIFAN-CL software available for download at www.multifan-cl.org and files for all assessment model runs are available on the SPC/OFP web page - link • Predicting skipjack tuna dynamics and effects of climate change using SEAPODYM with fishing and tagging data - Link • Developments in the MULTIFAN-CL software 2015-2016 - Link
1.2. FFA and sub-regional oceanic fisheries management initiatives are supported by the best science-based stock assessments and advice	***FFA support*** 1. Provide scientific support to the bioeconomic evaluation of management options in 2015 and 2016. 2. Provide scientific support to the evaluation of potential management options in 2015 and 2016. ***3.*** Provide scientific support to US Tuna Treaty consultations and negotiations in 2015 and 2016, as required. ***4.*** Communicate the information on management-related scientific work conducted for FFA in 2015 and 2016. ***PNA support*** 5. Provide scientific information to support the implementation of the purse seine and longline vessel days schemes (some of the work will occur at a national level under Result 1.3) in 2015 and 2016. 6. Evaluation of the impact of increasing vessel efficiency on management systems (effort creep) in 2015. 7. Continued development of robust Harvest Control Rules for the skipjack purse seine fishery — including bioeconomic considerations in 2015. 8. Provide scientific information and analyses to support the MSC certification in 2015 and 2016. 9. Bioeconomic analyses of optimal effort levels for purse seine and longline fisheries with an emphasis on improving returns through	**KEY HIGHLIGHTS:** ***FFA support*** • In collaboration with FFA, SPC provided bio-economic advice on the south Pacific albacore fishery to members of the Tokelau Arrangement. These analyses examined alternative approaches to achieving a 'target reference point' for the stock that would return South Pacific Islands' fisheries to profitability. This work informed FFA-member positions on a target reference point for south Pacific albacore, as proposed at WCPFC13. ***PNA support*** • Routine support with PNA data summaries and analyses provided throughout 2015 and 2016. • Country-specific analyses provided for Tuvalu, RMI and Solomon Islands. • Purse seine fishery analyses addressing vessel efficiency (link), effort creep (link), candidate harvest control rules (link), bioeconomic analyses of optimal effort levels and support for the PNA MSC certification provided. ***Sub-Committee for South Pacific Tuna and Billfish, Te Vaka Moana, and the Melanesian Spearhead Group*** • A range of national workshops, National Reports, workshop papers and specific analyses were provided to support the work of the Sub-Committee. Analyses of candidate target reference points and decision rules (link) for South Pacific albacore management informed decisions relating to the Tokelau Arrangement Catch Management Scheme.

Results	2015–2016 planned activities	2015–2016 status
	more efficient fishing operators in 2015. ***Sub-Committee for South Pacific Tuna and Billfish, Te Vaka Moana, and the Melanesian Spearhead Group*** 10. Provide scientific information to support of the implementation of the Tokelau agreement (some of the work will occur at a national level under Result 1.3.) in 2015 and 2016. 11. Summarise recent trends in the southern longline fishery including all species of economic value in 2015 and 2016. 12. Further develop potential economic-based reference points for south Pacific albacore, including the development of harvest controls rules in 2015 and 2016. 13. Provide scientific information on potential impacts of tropical tuna catches on the abundance of tropical tuna species from higher latitudes (range contraction) in 2015.	• South Pacific albacore fishery characterisations prepared and presented to Tokelau Arrangement meetings and WCPFC (link). • A preliminary evaluation of catch-based harvest control rules for south Pacific albacore was presented to the Sub-Committee and WCPFC SC (link).
1.3. National tuna oceanic fisheries policy and decision-making by SPC MEMBERS are informed by the best science-based stock assessments and advice	***National webpages*** 1. Update and enhance secure national web pages containing information of fishery trends and stock status information in 2015 and 2016 ***Issue Specific National Reports (ISNRs)*** 2. Analyses of the impacts of FAD closures and related measures, including bioeconomic considerations, for the Federated States of Micronesia, Kiribati, Nauru, Marshall Island, Papua New Guinea, Solomon Islands, Tuvalu, Tokelau, and the Cook Islands in 2015 and 2016. 3. Characterisation of longline fisheries including key species, recent trends, seasonal and oceanographic drivers, and economic considerations. To be undertaken for at least eight members in 2015. 4. At least two series of ISNRs to be undertaken in 2016. ***Support for National Tuna Management planning*** 5. Bioeconomic analysis of the longline fisheries in New Caledonia and French Polynesia in 2015. 6. Provide technical support to national tuna management planning in at least four member countries (including support for the MSC processes if required) in 2015 and 2016.	**KEY HIGHLIGHTS:** ***Issue Specific National Reports (ISNRs)*** • OFP scientists worked with the NGO Environmental Defence Fund to develop national-level bio-economic longline analysis tools designed to allow national fisheries managers and scientists examine potential biological and economic consequences of different fishing effort levels within their EEZ and increase the information they have available when making national policy decisions. • National reports detailing analyses of the impacts of FAD closures, longline fishery trends, spatial patterns of longline fishing within EEZ, spatial patterns of purse seine fishing and environmental influences, and the national implications of regional tuna stock status were completed and provided to members. • National reports on tuna longline fisheries bycatch provided to 4 countries (Tonga, Vanuatu, Cook Islands, Palau). ***Support for National Tuna Management planning*** • National bioeconomic analyses of longline fisheries were conducted for Fiji, French Polynesia, Solomon Islands and Vanuatu, and were influential in the setting of catch and/or effort limits. This work led to the development, in collaboration with the Environmental Defense Fund, of an analytical platform in Excel that can be used in a consistent way across countries and as a training tool. • Technical support to national tuna management planning was provided to French Polynesia, Fiji, Samoa, Solomon Islands, Marshall Islands, PNG and Tuvalu.

Results	2015–2016 planned activities	2015–2016 status
	7. Respond to ad hoc requests for scientific information and analyses in support of national tuna management planning in 2015 and 2016.	
1.4. Enhanced capacity of SPC MEMBERS to interpret stock assessment information and advice	1. Complete attachments of fishery officers for at least two countries in conjunction with ISNRs (see above) in 2015 and 2016. 2. Conduct a Stock Assessment training Workshop (SAW) to improve the understanding and utilization of regional stock assessment results and related analyses in 2015 and 2016. 3. Support of member participation at regional meetings, including contributing to briefing material and talking points (primarily led by FFA) in 2015 and 2016.	**KEY HIGHLIGHTS:** • Attachments from Tuvalu and Marshall Islands conducted during 2015. A planned Junior Professional one-year attachment was delayed to 2017 due to funding issues. • SAWs were conducted in 2015 and 2016, including an advance workshop in 2016. A workshop on 'data analysis in R' was condicted for TVM members in 2016. • Routine support was provided to FFA workshops in advance of all WCPFC sessions in 2015 and 2016.
Objective 2. To provide high-quality fishery monitoring services, analysis services and capacity development to support the management of oceanic fisheries by regional, sub-regional and national fisheries management authorities.		
2.1. WCPFC is provided with efficient and cost-effective fishery monitoring and analytical services to support regional oceanic fisheries	***Purse-seine species and size composition*** 1. Maintain the *s_master* purse-seine catch and effort database system. 2. Provide estimates of purse-seine catch composition by species and size, based on observer grab samples corrected for selectivity bias and spill samples. 3. Prepare purse-seine data for and conduct analyses in support of WCPFC- related work of other OFP sections, as requested. 4. Analyse the Madang observer data and port samples collected in 2014 (pending provision of required data by the PNG National Fisheries Authority). ***Non-target species*** 5. Maintain the *nt_master* non-target species catch and effort database system. 6. Update estimates of annual catches of key shark species in the WCPFC Statistical Area based on observer data. 7. Estimate annual catches of other non-target species in the WCPFC Statistical Area based on observer data. 8. Prepare non-target species data for and conduct analyses in support of WCPFC-related work of other OFP sections, as requested.	**KEY HIGHLIGHTS:** • Routine estimation of purse seine species composition and bycatch by purse seine and longline fisheries conducted and database updates implemented. • Data from the Madang observer data and port samples collected in 2014 were located in 2016 and loaded into the relevant SPC databases. Analysis deferred to 2017. • A summary of non-target species observer catch data was developed in 2016 and submitted to WCPFC Scientific Committee – link. • A summary of work to date on spill/grab sampling to better estimate purse-seine species and size composition and a work plan for future studies in this area were submitted to WCPFC Scientific Committee and adopted in 2016 – link.

Results	2015–2016 planned activities	2015–2016 status
	Technical support to the WCPFC Secretariat 9. Provide advice on fishery monitoring issues to WCPFC, as requested.	
2.2. Enhanced national oceanic fishery monitoring by SPC MEMBERS to meet national and international obligations	***Regional and national support for tuna fishery monitoring*** 1. Develop and update MOUs with members for the provision of technical support and funding of sampling programmes and related positions. 2. Develop resource materials for tuna fishery monitoring, including an artisanal fishery monitoring guide and presentation materials for countries and other stakeholders to run artisanal tuna workshops. 3. Provide callipers and data collection forms to members, as requested and, where appropriate, with reimbursement. 4. Document the status of tuna fishery monitoring systems within member countries and territories. 5. Support the development of TUFMAN Artisanal Fisheries Database (TUFART). 6. Develop procedures for reviewing data collection systems as part of auditing of national tuna fishery monitoring. 7. Conduct a review of the needs and requirements for a standardised Small- Scale Vessel Registration System (pending Japan Trust Fund funding). ***Regional and national support for PIRFO programmes*** 8. Conduct an inter-sessional meeting of the SPC-FFA Tuna Fishery Data Collection Committee (DCC) and/or liaise via email to address matters that may arise prior to DCC–11 in 2016. 9. Provide technical advice in support of Pacific Island Regional Observer (PIRFO) programmes, as required. 10. Further develop the PIRFO standards for observers, debriefers, trainers, assessors and frontline managers. 11. Develop other regional standards for PIRFO programmes, including e- reporting and e-monitoring, in collaboration with other regional agencies.	**KEY HIGHLIGHTS:** ***Regional and national support for tuna fishery monitoring*** • Developed a strategy for the DCC (Link), implemented Terms of Reference for the DCC, held two mini DCC meetings, and a full DCC meeting in late 2016 (Link). • MOUs updated and/or developed for Niue, Samoa, Kiribati, Tuvalu, Cook Islands and Vanuatu. • An artisanal fishery monitoring guide developed and available for distribution, and artisanal fisheries monitoring workshops held in Niue, Tuvalu, Kiribati and support for implementation in Tokelau and Cook Islands. • Forms and calipers provided as requested across the region, with an emphasis on assuring quality and design of materials supplied. • Reviews of the status of tuna fishery monitoring systems continue with members through the Tuna data Workshop and detailed reviews completed for FSM and Solomon Islands. • TUFART development support through technical advice. • Procedures for reviewing data collection systems as part of self-auditing and regional quality assurance of national tuna fishery monitoring completed for port sampling and artisanal fisheries monitoring. • Review of the needs and requirements for a standardised Small- Scale Vessel Registration System completed – link. ***Regional and national support for PIRFO programmes*** • In 2015, the PIRFO training and certification framework grew to include Frontline Manager standards. This now completes the professional career pathway for fisheries observer programmes, with standards going from observers, to debriefers, to trainer and assessors, and now frontline managers. • Among SPC members there are now approximately 800 active observers, 130 certified and 50 trainee debriefers, and 13 national observer trainers. • In 2016 the PIRFO Observer programme became financially sustainable: As of 1 July 2016 the amount required for the programme was being fully cost recovered through a levy in the annual vessel registration fee. Sustainable regional financing secures the continuation of regional coordination of training, technical and quality assurance support for national fisheries agencies, further development of PIRFO training standards, regional collection of biological

Results	2015–2016 planned activities	2015–2016 status
	12. Further develop the Longline and Purse Seine Observer Guides, and other training materials, such as species identification cards for sharks (pending Japan Trust Fund funding). 13. Implement a re-design of the PIRFO website. 14. Support the implementation of spill sampling by purse-seine observers in PIRFO programmes, as requested. ***National support for port sampling programmes*** 15. Review longline port sampling programmes and resolve any data quality issues that may be identified. 16. Advise members regarding the termination of port sampling of purse-seine transhipments, where such programmes still exist.	samples, regional fisheries monitoring and the provision of technical advice by SPC and FFA. • Further developed the observer forms to meet WCPFC Minimum Data standards at a mini DCC meeting in 2016 with new forms adopted at the full DCC meeting in late 2016 (Link). • Provided technical support for PIRFO with Certification management Committee meetings and ROCW meetings. • In 2016 the PIRFO Observer Standards were substantively reviewed, significantly revised and updated. This includes elective specialist standards for e-reporting and e-monitoring. • A species of special interest pocket ID guide and a purse seine species ID guide were developed and all guides distributed through observer trainings. The longline Observer Guide has been developed and the Purse Seine Observer Guide is being reviewed for release. ***National support for port sampling programmes*** • Ongoing review of longline port sampling programmes with audits of Marshall Islands and Solomon Islands conducted. • Advice provided to members on the termination of port sampling of purse-seine transhipments. Note that such sampling continues in Marshall Islands and PNG due to specific national requirements.
2.3. Enhanced capacity of SPC MEMBERS in fisheries monitoring, data management and data use	***Capacity building for tuna fishery monitoring*** 1. Provide technical support for tuna fishery monitoring through in-country visits to FSM, Nauru, Tonga, Tuvalu, and other members, as requested. 2. Visit other members to assess the requirements for capacity building for fishery monitoring. 3. Assist with the regional Tuna Data Workshop and conduct other workshops as the need arises and funding permits, such as gender-related training and the training of WCPFC-funded port coordinators 4. Host fishery monitoring training attachments, as requested. ***Capacity building for PIRFO programmes*** 5. Conduct an Introduction to Frontline Management Workshop. 6. Organise the Regional Observer Coordinators Workshop (ROCW-15 and ROCW-16).	***Capacity building for tuna fishery monitoring*** • Technical support for tuna fishery monitoring through in-country visits provided to FSM, Marshall Islands, Kiribati and Niue, Tonga and Tuvalu. Note that increasingly such support is provided through the Tuna Data Workshop. • Substantive support provided for annual Tuna Data Workshops and training of port coordinators completed in FSM and Kiribati. • Hosted fisheries monitoring attachment for Niue. ***Capacity building for PIRFO programmes*** • Frontline Management training workshops were held in 2015 and 2016, and a mentoring process has been established with mixed uptake. • ROCW-15 and ROCW-16 were held in Noumea and Honiara, respectively. • National observer training workshops were conducted in Marshall Islands, Tuvalu, Fiji, Solomon Islands, Kiribati and Tonga. Sub-regional workshops

Results	2015–2016 planned activities	2015–2016 status
	7. Coordinate the training of observers, debriefers, trainers, assessors and frontline managers, based on the training schedule to be established at ROCW, with increased usage of newly-certified observer trainers and debriefers, and including gender-related training (with input from the SPC Human Development Programme). 8. Conduct an Observer Trainers Workshop.	were conducted in 2015 and 2016. • Debriefer Training Workshops were held in Solomon Islands, Tuvalu, FSM, Marshall Islands, Fiji, Kiribati and PNG. • The Third Observer Trainer and Assessors Workshop was held in Oct 2016. The second Debriefer Assessors training workshop was also held in 2016 and qualified a further 12 Debriefer Assessors to assist with national trainee Debriefer certification.
Objective 3. To provide high-quality data management services and capacity development to support the management of oceanic fisheries by regional, sub-regional and national fisheries management authorities.		
3.1. WCPFC is provided with efficient and cost-effective data management services to support regional oceanic fisheries	***Compile and manage WCPFC databases*** 1. Compile, quality check and manage the WCPFC databases (Annual catch estimates, Aggregated catch and effort data, Catch and effort by EEZ, Operational (logsheet) data, Aggregate Size composition data). 2. Document the methodology used to generate catch and effort estimates in the aggregated and EEZ databases. 3. Conduct a study to determine the potential for purse seine cannery receipt data for the work of the WCPFC. ***Routine papers for WCPFC meetings*** 4. Scientific data provided to the Commission. 5. Annual catch estimates for the WCPFC Area. 6. Overview of WCPFC tuna fisheries including economic conditions. 7. Recent changes in scientific data provided for stock assessments. 8. Status of Regional Observer Programme (ROP) Data Management. ***Data dissemination*** 9. Produce and publish on the commission's website the Tuna Fishery Yearbook (2014) and (2015), containing annual catch estimates by gear type, flag and species. 10. Maintain relevant web pages on the WCPFC website, e.g. data provision tables, ROP data provisions. 11. Disseminate data to members and others according to the WCPFC rules and procedures.	**KEY HIGHLIGHTS:** ***Compile and manage WCPFC databases*** • All routine data management tasks completed. • The purse seine cannery study was completed and a detailed report provided to ISSF (the donor). A summary report was presented to SC12 (link). ***Routine papers for WCPFC meetings*** • All required papers provided, .e.g. in 2016: - Scientific data - link - Annual catch estimates - link - Overview of tuna fisheries - link - Status of ROP data management - link ***Data dissemination*** • All routine tasks completed. Latest versions available. - WCPFC Tuna Fishery Yearbook - link - WCPFC Data Catalogue - link - WCPFC Public Domain data - link ***Regional Observer Programme Data Management*** • 6,162 observer trips entered and/or uploaded to the observer database TUBS in 2015 and 2016. • Summary of ROP data management work available here

Results	2015–2016 planned activities	2015–2016 status
	12. Prepare and publish public domain data on the WCPFC website. ***Regional Observer Programme Data Management*** 13. Entry, quality control and management of the WCPFC ROP data, including development of data loaders for non-standard data and ongoing support of WCFPC Secretariat and Fiji data entry teams. 14. Provide advice on ROP data management issues, including WCPFC Scientific Committee and Technical and Compliance Committee papers, as required. 15. Provide various *ad hoc* ROP data summaries, as required. ***Technical support to the WCPFC Secretariat*** 16. Provide advice on data-related procedures of the commission, e.g. rules and procedures for the protection, access to and dissemination of non-public domain data and information compiled by the commission; and "scientific data to be provided to the commission". 17. Prepare data summaries for the evaluation of conservation and management measures (CMMs). 18. Prepare catch data summaries to determine WCPFC member budget contributions. 19. Provide monthly updates of tuna fishery database systems. 20. Make available and provide training to Secretariat staff in using online web reporting tools for WCPFC catch/effort logbook and observer data. 21. Establish policy and resource requirements for potential data management capacity development in non-SPC, WCFPC member countries (e.g. China). ***Technical support to the Western Pacific East Asia Oceanic Fisheries Management Project (WPEA-OFMP)*** 22. Convene national annual catch estimates and data review workshops in Indonesia, Philippines and Vietnam, as required. 23. Update latest data management software and provide training in Indonesia, Philippines and Vietnam.	***Technical support to the WCPFC Secretariat*** • All routine tasks completed. For e.g. – Latest CMM data summary – link – Latest catch data summary for WCPFC budget calculation provided in Sept 2016. • A Chinese scientist was hosted at SPC headquarters in 2016, developing compatible data management systems to be used in the management and reporting of Chinese data to WCPFC. ***Technical support to the Western Pacific East Asia Oceanic Fisheries Management Project (WPEA-OFMP)*** • Support was provided for six national annual catch estimation workshops and three national data collection and management system audits. • Provision of database systems and support to Philippines and Vietnam to manage their fishery data (logsheets, port sampling and observer data). • Complete data from Philippines and Vietnam were imported into WCPFC databases; Indonesia provided annual catch estimates and size data only. Logsheet data provision by Indonesia needs to be secured.

Results	2015–2016 planned activities	2015–2016 status
	24. Review databases and conduct data collection and management system audits in Indonesia, Vietnam and Philippines. 25. Import WPEA-OFMP data into WCPFC databases for use in 2015 and 2016 stock assessments.	
3.2. The oceanic fisheries management initiatives of FFA and other sub-regional fisheries organisations are supported by efficient and cost-effective data management services	***Provision and receipt of data and database systems*** 1. Provide access on the OFP web site to download the latest Catch and Effort System (CES) data system incorporating logsheet data, catch by EEZ and public domain data to the FFA Secretariat, PNA Office and the Te Vaka Moana (TVM) Secretariat. 2. Continue work to improve estimates in the EEZ database, including monthly time stratification, stratification by set type for purse seine, inclusion of longline effort; improve estimates of raising factors using VMS-Logsheet reconciliation data. 3. Provide training on OFP database products (CES and online web reporting tools) to staff of FFA, PNA Office, and TVM office, as required. 4. Provide support for the Tuna Observer Database System (TUBS) used to enter US Treaty observer data at FFA. Receive and import US Treaty observer data from FFA. 5. Receive and entry of FSM Arrangement observer data on behalf of PNA Office. 6. Receive, enter and import US Treaty and FSM Arrangement logsheet data. 7. Receive and import iFIMS eLOGBOOK and eOBSERVER data. 8. Receive and import PNA iFIMS FAD tracking data. 9. Receive and import VMS data. 10. Receive and import FFA vessel register data. 11. Receive and import regional licensing data. 12. Receive and import Observer Programme management (OPM) observer trip data. 13. Review data exchange protocols for SPC/FFA Colloquium (e.g. the inclusion of OPM data to SPC).	**KEY HIGHLIGHTS:** ***Provision and receipt of data and database systems*** • All CES databases updated and distributed according to plan, via a secure download on the SPC/OFP web pages. Over the coming years, the CES system will be redeveloped and enhanced. • Training provided to FFA staff on use of SPC data products, including installation of the observer data management system TUBS, which is now in routine use at FFA. • Routine entry of logsheet and observer data from members and PNA Office has proceeded reasonably efficiently, although there have been the usual delays in receipt of full observer data from some members. • Following the agreement of PNA members (with the exception of Kiribati) and the PNA Office, the first receipts of purse seine logsheet data reported to iFIMS occurred late in 2016. Following the resolution of some minor data quality issues, such data will soon be routinely uploaded to TUFMAN-2, greatly increasing the timeliness of data availability for stock assessment and other work. • The first provision of iFIMS FAD tracking data for the 2016 calendar year has been received, and preliminary analyses undertaken. • The provision of routine data from FFA (VMS, vessel register, licencing) has proceeded efficiently and as according to the agreed data exchange protocol; however, there are ongoing problems in the availability of OPM observer trip data, which has complicated follow up on observer data submission. ***Provision reports and data summaries*** • Routine reports and numerous data summaries have been provided on request throughout 2015-2016. ***Joint database initiatives*** • Largely ongoing work that is on-track. • Regular collaboration between SPC, FFA and PNAO technical staff including

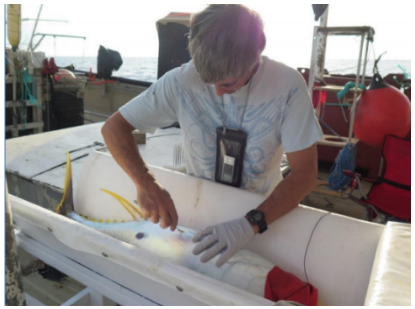
Results	2015–2016 planned activities	2015–2016 status
	14. Establish formal data sharing and exchange protocols with the PNA office and their member countries, particularly with the advent of E-Reporting and E-Monitoring. ***Provision of reports and data summaries*** 15. Provide routine papers for US Treaty Annual Consultation. 16. Provide data summaries and reports for the PNA purse seine vessel days scheme. 17. Provide data summaries and reports for the PNA longline vessel days scheme. 18. Provide data summaries and reports for TVM initiatives. 19. Provide data summaries for FFA and PNAO in advance of WCPFC sessions, as required. ***Joint database initiatives*** 20. Liaise with FFA in regards to the development and implementation of national IMS systems. 21. Establish reference table standards between SPC and FFA. 22. Liaise with FFA to conduct an audit of the observer data they enter. 23. Provide advice related to the PNA Fisheries Management Information System (FMIS) initiative, as required. ***Contribute to regional MCS work to detect Illegal, Unregulated or Unreported (IUU) fishing*** 24. Conduct analyses to detect patterns in IUU fishing, as directed. 25. Contribute to study to quantify the level of IUU fishing in the region.	participation at the Regional IMS workshop and other regional and sub-regional fora. • Integration between systems supported by SPC and FFA with seamless and secure data transfers established for the benefit of member countries. Data from PNAO system starting to flow into the SPC-developed TUFMAN-2 system for the benefit of member countries. ***Contribute to regional MCS work to detect Illegal, Unregulated or Unreported (IUU) fishing*** • Data and other inputs for a collaborative FFA/SPC study to estimate fishing signatures from VMS data were provided during the course of 2015-2016. • Extensive data summaries were provided to FFA contractors MRAG for a study to quantify the extent of IUU fishing in regional tuna fisheries.
3.3. Enhanced national oceanic fishery data management by SPC MEMBER COUNTRIES to meet national requirements and international	***Data processing services*** 1. Manage, register, enter and verify data provided by SPC members: a. Logsheet data; b. Port Sampling data; c. Observer data. 2. Import data provided by SPC members in electronic form: a. Logsheet data; b. Port Sampling data;	**KEY HIGHLIGHTS:** ***Data processing services*** **Regional oceanic fisheries data processed and available to PICTs through SPC data management support services:** • Purse seine and longline logsheet data processed for Cook Islands, FSM, Kiribati, Marshall Islands, New Caledonia, Nauru, French Polynesia, PNG, Palau, Solomon Islands, Tokelau, Tonga, Tuvalu, and FFA. Port sampling data processed Cook Islands, French Polynesia, Palau and Tonga. Unloadings data processed for Cook Islands, FSM and Palau

Results	2015–2016 planned activities	2015–2016 status
obligations	c. Observer data. 3. Provide technical support for data scanning in SPC member countries. 4. Progress the migration of legacy Visual FoxPro database systems into systems using MS SQL SERVER databases. ***E-Reporting and E-Monitoring initiatives*** 5. Automatic upload of purse seine e-reporting data (logbook and observer) from the iFIMS system and SPC's e-reporting initiatives into national and regional databases. 6. Continue trials of purse seine eTUNALOG and on-board data entry of purse-seine observer data (FSM and RMI), as required. 7. Development and trials (leading to implementation) of the LONGLINE eTUNALOG in the domestic longline fisheries of at least three members (including automatic upload into national TUFMAN and a reporting system for the fishing company). 8. Development of a tablet app for trials in longline observer data collection in the domestic longline fisheries of at least two members. 9. Support for the integration of e-reporting data (logbooks and unloadings) into TUFMAN under the proposed Cook Islands Quota management System. 10. Establishment and support of National E-Reporting Officers in at least four member country offices (2015). 11. Standardised data fields (with validation information) to be made available to member countries using third-party e-reporting / e-monitoring service providers. 12. Develop a policy for the extent OFP becomes involved in e-reporting and e-monitoring development and OFP relationship with member countries and third-party ER and EM services providers. 13. Develop a plan to ensure OFP have long-term resources to support e-reporting and e-monitoring. 14. Progress and final Reports to the International Seafood Sustainability Foundation (ISSF) on the e-reporting and e-monitoring project.	• In 2016, 1,709 observer trips were processed by SPC from Cook Islands, Fiji, Kiribati, Marshall Islands, New Caledonia, Nauru, French Polynesia, PNG, Palau, Solomon Islands and Tuvalu, and the regional arrangements of FSM Arrangement and US Treaty. • SPC no longer processes data with the legacy database system (VFP) and logbook data processing has mostly transitioned from SPC to member countries under the new TUFMAN-2 system (using MS SQL SERVER database). ***E-Reporting and E-Monitoring initiatives*** **Improved e-reporting mechanisms in seven PICTs through SPC support:** • Solomon Islands, Fiji and RMI are working on national legislation to support the change to E-Reporting for fishing vessel logsheets • New Caledonia, Fiji, Cook Islands, Samoa and Tonga are trialling longline fishing vessel logsheet E-Reporting • Solomon Islands, FSM and Marshall Islands established national E-Reporting Officer positions with support from SPC. **WCPFC13 decision to standardise e-reported operational catch & effort data:** • The Commission adopted the standards, specifications and procedures for Electronic Reporting in the WCPFC, which presently include E-reporting standards for operational catch and effort data (see Attachment T in link). ***Provision of database systems*** **TUFMAN-2 was being used by 16 PICTs by the end of 2016** • In 2015 and 2016 TUFMAN-2 was installed and utilised in 16 PICTs (Cook Islands, Fiji, Marshall Islands, French Polynesia, FSM, New Caledonia, Nauru, Niue, Palau, PNG, Solomon Islands, Samoa, Tonga, Tokelau, Tuvalu and Vanuatu) with staff trained on how to utilise the system. **New app developed to improve small scale oceanic fisheries data collection:** • *Tails* smart phone / tablet application developed for artisanal data collection and management. Made available via the Google Play store in August 2016. *Tails* used in five PICTs (Nauru, Samoa, Tokelau, Tuvalu and Vanuatu), with fisheries staff trained in Tokelau, Tuvalu & Vanuatu. As at end 2016, data from 1882 fishing trips had been entered using *Tails*, compared to 3082 entered from paper forms. **New web-reporting tool developed - Dorado**

Results	2015–2016 planned activities	2015–2016 status
	Provision of database systems 15. Trial the new TUFMAN-2 system in two member countries (provisionally Cook Islands and RMI) during 2015. 16. At least EIGHT countries using the new TUFMAN-2 by the end of 2016. 17. TUFMAN-2 fully integrated into national Information Management Systems (with FFA collaboration) by the end of 2016. 18. Continue ongoing development of the TUFMAN-2 system. 19. Continue development, support and maintenance of other data systems used by member countries, including: a. The new CES reporting tool; b. Online TUFMAN reporting tool; c. Online TUBS (observer) reporting tool; d. Online eRECAP (logbook coverage) reporting tool; e. TUFMAN Artisanal Fisheries Database (TUF-ART), including new reports to estimate catch and effort. 20. National installations of TUBS (observer database system) in Cook Islands, Vanuatu, Kiribati, Samoa, French Polynesia, with training and ongoing support (2015/2016). Ongoing support to existing installations (Tonga, Fiji, PNG). 21. Maintenance of the Master Observer Trip list, incorporating national observer trip placement information. 22. Establishment of MASTER REFERENCE TABLES via the CLOUD facilitates the standardisation of vessel, port and other reference data throughout the region. 23. Develop, maintain and disseminate an in-country hardware/software minimum standards document. ***Improving data quality and coverage*** 24. Develop standard procedures and systems to identify data quality control problems/gaps and follow up with countries regarding submission of missing data (TUFMAN-2 and TUBS data). 25. Conduct in-country and remote national TUFMAN-2 data audits	• The Dorado web-based reporting system was developed in 2015. This tool covers reporting of logsheet, port sampling, unloadings and observer data. ***Improving data quality and coverage*** **Standardising data acquisition of the region's tuna fisheries:** • A review and update of the regional SPC/FFA data collection committee (DCC) forms for logsheets, observer and port sampling data was undertaken through workshops in Nov and Dec 2016. Formal adoption to occur in 2017 • Advice provided to WCPFC leading to E-Reporting standards for operational catch and effort data fields (see below) • Draft WCPFC E-Reporting standards for observer data fields (cleared by SPC Members but yet to be adopted by WCPFC) • Draft Regional E-Monitoring standards for the collection of observer data in the longline fishery. These were developed through an SPC-organised international workshop in early June to draft the standards. These draft standards were used in E-Monitoring trials in Fiji and Palau during 2016 and reported to the WCPFC EREM WG2 meeting – link.

Results	2015–2016 planned activities	2015–2016 status
	(initially, FSM and RMI). 26. Conduct in-country and remote national OBSERVER data audits (Fiji, PNG, Tonga and others with TUBS installations). 27. Continue to enhance OFP DATA ENTRY Helpdesk to identify and rectify problems. ***Online data Summaries*** 28. Enhance the SPC/OFP in-country web pages and provide training to national fisheries officers in accessing these web pages.	
3.4. Enhanced capacity of SPC MEMBER COUNTRIES in oceanic fishery data management and data use	***Capacity development*** 1. Conduct the Ninth and Tenth Annual Tuna Data Workshops (April 2015 and April 2016). 2. Conduct the Regional TUFMAN-2 Workshop (2016). 3. In collaboration with OFP Fisheries Monitoring Section, conduct national tuna data workshops in two member countries. 4. In collaboration with OFP Fisheries Monitoring Section, conduct national artisanal fisheries data workshops in two member countries. 5. Train national tuna fishery data management staff in the use of national database systems during in-country visits. a. TUFMAN-2 — Cook Islands and RMI during 2015; six other countries during 2016; b. TUBs — Cook Islands, Vanuatu, Kiribati, Samoa, French Polynesia during 2015/2016. 6. Develop training resources for TUFMAN-2 and TUF-ART. 7. Host training attachments in data management principals and database systems for fisheries officers from four countries. 8. Continue to expand the OFP HELP DESK to provide technical support to member countries. 9. Structured training courses and resource material related to data management have been developed and are available to members via the OFP web site. 10. Update the PIRFO Observer web site to provide more information to	**KEY HIGHLIGHTS:** ***Capacity development*** • Development of a regional data management online community (Helpdesk) using the networking system 'Slack' for TUFMAN-2 users to interact with one another, and post and respond to questions. As at 31 December 2016 there were 100 members, with a high level of activity (about 2,000 messages per week). • Training in data management and the latest national database products (primarily TUFMAN-2 and the DORADO web reporting) was accomplished through training workshops within each country (at least one visit to 16 countries), the regional Tuna Data Workshops (TDW9 and TDW10), SPC training attachments (see below) and presentations at FFA-hosted workshops (e.g. the Regional IMS workshops). • Training attachments here hosted for fisheries staff from Samoa, Tuvalu, Nauru, Fiji, Niue ***WCPFC reporting obligations*** • All SPC members provided Part 1 reports on-time to WCPFC in 2015 and 2016. • WCPFC CMM reporting obligations using scientific data is a specific output for each SPC member country from the TDW.

Results	2015–2016 planned activities	2015–2016 status
	manage national observer programmes. 11. Assist members improve their fisheries IT infrastructure, including: a. Provision of new scanners where required; b. Provision of new network servers where required. ***WCPFC reporting obligations*** 12. Develop training materials to enhance the capacity of member countries to produce data summaries to satisfy their WCPFC Reporting obligations. 13. Assist countries prepare Part 1 National Reports for WCPFC SC. 14. Provision of ad hoc national support through provision of data summaries and advice during WCPFC meetings.	
Objective 4. To improve understanding of pelagic ecosystems in the western and central Pacific Ocean.		
4.1. Enhanced data on the biological characteristics of oceanic species and their environment are available to support stock assessment and ecosystem-based fisheries management	***Tuna tagging*** 1. At least one tuna tagging campaign in the central Pacific for the provision of data for stock assessment. 2. Continued development and application of methods to improve tag return data quality. 3. Tag recovery support including on catcher vessel, transhipment, unloading and cannery locations, tag seeding and related analyses. 4. Continued development and maintenance of web accessible tagging databases and information. 5. Analyses arising from the Pacific Tuna Tagging programme (PTTP) published in science peer reviewed literature. a. Yellowfin and bigeye vertical movement; b. Potential FAD effects; c. Yellowfin, bigeye and skipjack horizontal movement; d. Artisanal FAD interactions. 6. Tagging data incorporated into Pacific wide bigeye stock assessments, including Inter-American Tropical Tuna Commission (IATTC) data and other tropical tuna stock assessments as requested.	**KEY HIGHLIGHTS:** **Scientific research cruises:** • 11th Central Pacific Tuna Tagging Cruise – link - part 1, link - part 2 With 11th PTTP cruise, the Central Pacific component of the programme has now tagged and released approximately 40,000 tuna, mostly bigeye (90%). Overall the PTTP has tagged and released more than 400,000 tunas. The 11th cruise was the first time that a purse seine fishing company (Tri-Marine group) collaborated in this scientific research, providing a young scientist for the cruise. It was also the first time in this area of the Pacific that a significant number of tagged fish (>2,000) were released in association with drifting FADs. • 12th Central Pacific tuna tagging cruise – link, Link FN article Industry collaboration was also a fewture of CP12 in 2016, with more tuna fishing companies participating in research. The result has been that SPC have been able to access locations for drifting FADs, as well as reduce costs and increase quality from tagging cruises, contributing valuable data given potential impact of dFADs on sustainability of tuna stocks. • SPC FAME scientists participate in Japanese research cruise on tuna food webs, and on freshwater eel larval migrations - Link

Results	2015–2016 planned activities	2015–2016 status
	Life history and trophic dynamics 7. Ongoing maintenance and development of the Regional Biological Sampling Tissue Bank for life history and trophic analyses to support stock and ecosystem assessment, marine spatial planning, biodiversity and climate change monitoring. a. 4th Nectalis cruise implemented to monitor south Pacific ecosystem structure; b. Preliminary planning for ecosystem monitoring cruises for 2017–2020; c. Maintain and develop BioDaSys. 8. Analyses of otoliths for estimating population dynamics and life history parameters. a. Bigeye growth for use in Pacific wide bigeye stock assessment. b. Bigeye and yellowfin growth, maturity ogives and reproductive potential for use in WCPO stock assessments and ecosystem models. c. Spatial variation in age, growth and reproductive biology of *Etelis carbunculus, E. coruscans, E. marshii*, *Pristipomoides filamentosus* and *Paracaesio kusakarii* to identify stock structure and parameters to develop indicators for applying management procedures. 9. Apply chemistry and molecular techniques to discriminate stock, trophic and ecosystem dynamics. a. Stock discrimination/management units for deepwater snapper based on chemistry, molecular and otolith shape analyses. b. Analyses of isotopes and amino acids to estimate ISOscapes of the Pacific to assess ecosystem and tuna stock structures.	• EssaisChalut – a trial scientific cruise on micronekton nets conducted in New Caledonia EEZ in collaboration with IRD. • Nectalis 4 - the fourth cruise of a series of scientific cruises conducted in New Caledonia EEZ in collaboration with IRD - Link • Nectalis 5 - the fifth of a series of scientific cruises conducted in New Caledonia EEZ in collaboration with IRD - Link • Samoa EEZ - The scientific cruise was organized by NOAA. The cruise track went around Savai'i and Upolu.  **Tissue bank:** • SPC/OFP, with base funding from WCPFC, has established a 'tuna tissue bank' comprising biological samples of tuna, billfish and key bycatch species sampled from scientific cruises and observed fishing operations. The tissue bank is available to researchers to support scientific research, according to access protocols agreed by WCPFC (SC12 Report, Attachment I). Available to Pacific Island researchers is particularly encouraged. Tissue bank samples can be viewed at link. • Bigeye otoliths and gonads analyzed and results available to provide revised estimates of age, growth and maturity for stock assessments in 2017. • A range of studies underway to discriminate stock structure, and explore tropic and ecosystem dynamics are underway. • A range of papers and technical guidelines prepared describing the biology, genetics, distribution and management procedures for deepwater snapper fisheries – link.
4.2. Appropriate ecosystem models and analyses are	1. Continued development of the Spatial Ecosystem and Population Dynamics Model (SEAPODYM) to understand tuna — climate dynamics:	**KEY HIGHLIGHTS:** • In collaboration with partners CLS, the SEAPODYM model continued to be enhanced during 2015 and 2016. Major advances included comprehensive

Results	2015–2016 planned activities	2015–2016 status
available to inform ecosystem-based fisheries management	a. yellowfin model exploration; b. examination of influence of environmental variability on purse seine fishery management. 2. Information on current and emerging issues in ecosystem based fisheries management — development of indicators and management procedures for *Etelis coruscans, E. carbunculus* and *E. marshii* for application by Tonga, Vanuatu, Samoa, New Caledonia and Papua New Guinea. 3. Application of Ecopath with EcoSim to simulate trophic changes associated with different tuna harvest scenarios. 4. Conduct a peer review of warmpool ecopath model. 5. Analyses to link skipjack, yellowfin and bigeye movement with diet and fish condition.	inclusion of tagging data into optimised models, and the development of a preliminary yellowfin model - link • Provided Ecopath reports to PNG, FSM, Marshall Islands, Solomon Islands, Nauru, Tuvalu, Kiribati specifically and a paper on Monitoring the pelagic ecosystem effects of different levels of fishing effort on the western Pacific Ocean Warm Pool is available – link • A paper describing the Warmpool Ecopath model submitted to peer-review journal. • A leaflet describing the national Ecopath modelling implications provided to PNG.
4.3. Improved knowledge of the impacts of climate change on oceanic ecosystems to inform adaptation	1. Analyses on the impact of climate change on tuna resources and pelagic ecosystem: - First yellowfin tuna climate change simulation. 2. Analyses on the impacts of ocean acidification on tuna larval survival and growth completed: - Vulnerability analyses of pelagic species.	**KEY HIGHLIGHTS:** • Approaches to incorporating results of yellowfin tuna ocean acidification tank experiments in SEAPODYM considered by international expert workshop in early 2016. Preliminary approaches to undertaking the analyses reported to WCPFC in 2016 – link. • Additional experiments on yellowtail kingfish planned for early 2017 to better inform modelling approaches. Vulnerability analyses of pelagic species underway. • Participation in the Pacific Ocean Acidification workshop organized by SPREP, and continuing engagement in the regional project steering committee. • Participation in Oceania 21 summit on sustainable development (New Caledonia, 2015) to inform on climate change and Pacific fisheries.
4.4. Regional oceanic fisheries policy and decision-making by WCPFC is informed by science- based information and advice on ecosystem issues	1. Provide technical and scientific support for the Ecosystem and Bycatch theme of WCPFC: a. bycatch Monitoring Information System (BMIS) development and maintenance; b. bycatch mitigation analyses for sharks and turtles using available observer data.	**KEY HIGHLIGHTS:** • 2015 - Ecosystems and bycatch analyses provided to WCPFC included: Draft Shark Research Plan: 2016-2020 (link); Monte Carlo simulation modelling of possible measures to reduce impacts of longlining on oceanic whitetip and silky sharks (link); Analysis of stock status and related indicators for key shark species of the WCPFC (link); Analysis of sea turtle mitigation measure effectiveness in tuna longline fisheries (link); Proposal for a Bycatch Data Exchange Protocol (BDEP) amongst the t-RFMOs (link); Monitoring the pelagic ecosystem effects of different levels of fishing effort on the WPO warm pool (link)

Results	2015–2016 planned activities	2015–2016 status
		• 2016 - Predicting skipjack tuna dynamics and effects of climate change using SEAPODYM with fishing and tagging data (link); Ecosystem indicators: moving forward to design and testing (link); Analysis of tag seeding data and reporting rates (link); Monte Carlo simulation modelling of purse seine catches of silky and oceanic white tip sharks (link); potential implications of the choice of longline mitigation approach allowed within CMM 2014-05 (link); Review of available information on non-key shark species including mobulids and fisheries interactions (link); Results from the First Workshop on Joint Analysis of Sea Turtle Mitigation Effectiveness (link); Trial Application of the BDEP Template for Summarizing Bycatch Data (link); and, Results from the Second Workshop on Joint Analysis of Sea Turtle Mitigation Effectiveness (link). • Substantive redevelopment of the BMIS website and associated database completed with beta-site in testing in late 2016. All references up to date in the associated database.
4.5. FFA's ecosystem-based fisheries management initiatives are supported by the best scientific information and advice	1. Support for FFA Ecosystem Approach to Fisheries Management (EAFM) initiatives and regional plans of action provided on request.	1. Planned activities completed
4.6. Ecosystem-based management of oceanic fisheries by SPC members is supported by the best scientific information and advice	1. SEAPODYM profiles of optimal catch and tuna residency for Papua New Guinea and Solomon Islands. 2. Update of National SEAPODYM climate profiles including the addition of yellowfin profiles. 3. Maintain and develop web-based databases (TagDager, BioDaSys, SEAPODYM) for SPC member access. 4. Conduct training and capacity building in ecosystem monitoring and analysis. a. Continue supervision of national post graduate students. b. Provide SEAPODYM training as requested to National counterparts. c. Provide annual SEAPODYM training at stock assessment workshops. 5. Web-based outreach and communication of results: ASH a. deepwater snapper biology fact sheets; b. deepwater Snapper Management fact sheets; c. purse-seine bycatch characterisations.	**KEY HIGHLIGHTS:** • The BioDaSys website has undergone a substantive redevelopment with additional functionality added to support the developing WCPFC Tuna Tissue bank. Beta testing began in late 2016. • A review of SEAPODYM was conducted in 2016 and a work plan for future developments reported to WCPFC Scientific Committee – link . • Training of a range of students and volunteers for lab activities. • Provided public conferences on tuna fisheries and tuna biology (New Caledonia 2015, 2016). • Training provided on ecosystem and bycatch (Stock assessment workshop 2015, 2016). • Deepwater snapper fact sheets developed and published – link.

Appendix A – FAME 2016 publications list

Publication in peer reviewed journals

Gilman, E., **Allain, V**., Collette, B., **Hampton, J.**, Lehodey, P., 2016. Effects of ocean warming on pelagic tunas, a review, in: Laffoley, D., Baxter, J. (Eds.), Explaining Ocean Warming: Causes, Scale, Effects and Consequences. IUCN - International Union for the Conservation of Nature, Gland, Switzerland, pp. 254–270.

Allain, V., Pilling, G.M., Williams, P.G., Harley, S., Nicol, S., Hampton, J., 2016. Overview of tuna fisheries, stock status and management framework in the Western and Central Pacific Ocean, in: Fache, E., Pauwels, S. (Eds.), Fisheries in the Pacific. The Challenges of Governance and Sustainability. pacific-credo Publications, Marseille, France, pp. 19–48.

Olson, R.J., Young, J.W., Ménard, F., Potier, M., **Allain, V.**, Goñi, N., Logan, J.M., Galván-Magaña, F., 2016. Chapter Four - Bioenergetics, Trophic Ecology, and Niche Separation of Tunas, in: Curry, B.E. (Ed.), Advances in Marine Biology. Academic Press, pp. 199–344.

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