



FISHERIES, AQUACULTURE AND MARINE ECOSYSTEMS DIVISION

ANNUAL REPORT

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SUMMARY

This report reviews the achievements of the Fisheries, Aquaculture and Marine Ecosystems (FAME) Division in 2012, and outlines work planned for 2013. It also summarises the achievement of strategic plan objectives, as measured by appropriate indicators.

The division has made good progress during 2012 in implementing the work programme. The achievement of higher-level objectives during the period 2010/2011 was analysed through a review of the strategic plan in 2012.

There have been a number of positive outcomes in fisheries across the region over the past 2–3 years that have been supported by SPC FAME services. For example, over the period from the start of the plan in 2010:

- ▶ More Pacific Islanders have jobs in the fisheries sector;
- ▶ The value of the region's tuna catch has increased substantially;
- ▶ More tuna is being caught by domestic fleets and less is being discarded;
- ▶ New enterprises are starting up to take advantage of sustainable opportunities in coastal fisheries;
- ▶ More countries and fish processing plants have received approval to export to demanding markets like the European Union.

Some new work areas have been developed in response to decisions by Heads of Fisheries. There is a growing emphasis on helping to understand and adapt to the impacts of climate change.

THE REPORT IS SUPPLEMENTED BY FIVE ANNEXES:

- I. FAME – 2012 Workplan objectives and achievements
- II. Notable activities in each member country or territory
- III. Publications
- IV. Meetings
- V. Mini-HOF outcomes

THE DIVISION



PURPOSE

This report reviews the achievements of the FAME Division in 2012 and outlines work planned for 2013. The Division conducted an internal mid-term review of its strategic plan during the year, the outcomes of which were presented to an informal meeting of Heads of Fisheries in June.



PRESENTATION

The division consists of two programmes: the Oceanic Fisheries Programme (OFP) and the Coastal Fisheries Programme (CFP). The Director's Office provides oversight and support for both programmes.

The goal of the division is **the sustainable management of the marine resources of the Pacific Islands region for economic growth, food security and environmental conservation.**

The goals of the coastal and oceanic programmes are respectively:

- ▶ coastal fisheries, nearshore fisheries and aquaculture in Pacific Island countries and territories (PICTs) are managed and developed sustainably; and
- ▶ fisheries exploiting the region's resources of tuna, billfish and related species are managed for economic and ecological sustainability using the best available scientific information.

PROGRESS TOWARDS ACHIEVING STRATEGIC PLAN OBJECTIVES





A mid-term review of the FAME strategic plan (2010–2013) was carried out early in the year to assess progress and decide if changes were needed. A number of minor changes were made to objectives and results to reflect new areas of work requested by members and for clarity. These were approved by Heads of Fisheries at their meeting in June. The review also examined the indicators that are proposed in the strategic plan and found that some of these are not really suitable. The revised objectives and indicators are used in this report.

The objective-oriented project planning approach used by FAME requires indicators at each level: overall goal, objectives and results. Note that these are not a complete measure of progress – there may be areas of FAME work that are not covered by an indicator. Nor are they necessarily driven entirely by work of the division; indeed, the targets for higher-level indicators will always need the support and efforts of other agencies, national governments and often the private sector to be achieved.

A statement of activities under each strategic plan objective and result area is provided as annex 1 to this report for 2012. This section therefore just highlights the goals and objectives of each programme, the progress as measured by indicators over recent years, and a summary of some key activities and outputs in the current year.

DIVISIONAL GOAL

The divisional goal identifies economic growth, food security and environmental conservation as the key areas targeted by marine resource management. We had originally planned to use the contribution of fisheries to gross domestic product as an indicator of economic growth; however, these data are only available from one-off surveys and not on a timely basis. An alternative – which reflects the concerns of many members with regard to creating more jobs – is the number of people formally employed in the tuna fisheries sector. This information is collected quarterly by the Forum Fisheries Agency (FFA) for its 15 island country members.

FORMAL EMPLOYMENT IN TUNA FISHERIES IN 15 FFA PICT MEMBERS

December 2009 – 12,700
December 2010 – 12,000
December 2011 – 13,500
December 2012 – 14,000

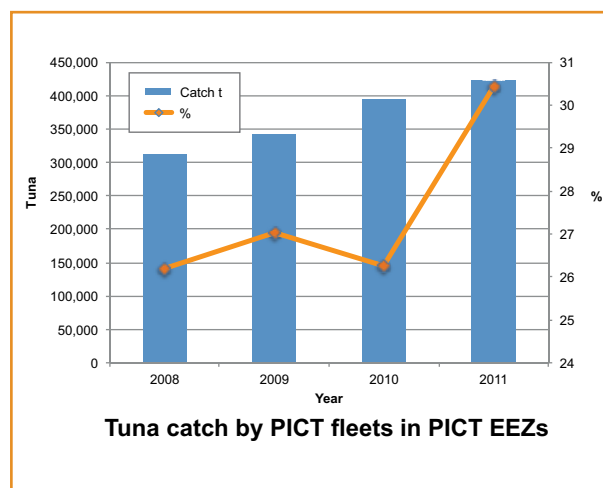
(At least 3000 new jobs foreseen in 2013 with new onshore processing)

Per capita fish consumption will be used as an indicator for food security. Baseline data are available from five countries that will be re-surveyed using household income and expenditure surveys before the end of 2013. These data are obviously incomplete for the overall region, but will give an indicator of trends in these countries.

OCEANIC FISHERIES PROGRAMME

The Oceanic Fisheries Programme aims to assist PICTs in securing optimum benefits from the region's tuna resources

by providing high-quality scientific advice. At the higher level, two measures are suggested as indicators of the success of regional efforts to derive economic benefits from the resource – the total catch value, and the volume and proportion of that catch taken by domestic fleets.



In terms of the more direct goal of OFP, to inform management of oceanic fisheries resources, the suggested indicator is whether or not the four main tuna species are being fished within sustainable limits. Between 2009 and 2011, three of the four species (skipjack, yellowfin and South Pacific albacore), accounting for 95% of the catch, continued to maintain stock levels well above those which give the maximum sustainable yield (MSY). However, the most recent assessments for these species indicate that current catch levels are now close to MSY, and therefore it is likely that these species are now being fished at close to their maximum potential. For the fourth species, bigeye tuna, the scientific advice in 2009 was to reduce fishing on

TOTAL CATCH VALUE OF FOUR MAIN TUNA SPECIES FROM THE WESTERN AND CENTRAL PACIFIC OCEAN AT THE POINT OF UNLOADING/TRANSHIPMENT FROM THE FISHING VESSEL IN US DOLLARS

2009 – USD 3.9 billion 2010 – USD 4.3 billion 2011 – USD 5.5 billion



this stock, and this was still necessary in 2011. OFP is working closely with the Western and Central Pacific Fisheries Commission (WCPFC), FFA and others to design

management measures that will ensure sustainable fisheries for all of these stocks.

BIGEYE TUNA – SCIENTIFIC ADVICE TO REDUCE FISHING MORTALITY

In 2009, a 34–50% reduction on the average fishing mortality between 2004 and 2007 was recommended; in 2011, a 32% reduction on 2006–2009 fishing mortality was still needed according to the best available assessments of the stock. A revised stock assessment will be submitted in 2014.

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.

A region-wide stock assessment was carried out for only one of the main tuna species in 2012 (albacore). An assessment of South Pacific striped marlin was also delivered. In terms of non-target species that are of concern, good progress was also made in the implementation of the shark research plan



and an assessment was completed for oceanic white-tip shark. Results indicated that this species is heavily impacted by fishing and stocks have been reduced to less than 10% of what would be expected in the absence of fishing. An assessment of silky shark was also initiated and will be completed in 2013. As in previous years, considerable effort was devoted to providing FFA and subregional groups with the scientific advice and support that they require, with a scientist working full-time on these initiatives, with support from other programme staff.

ACCEPTANCE OF STOCK ASSESSMENTS

Since the appointment of SPC as scientific services provider, all tuna stock assessment results have been fully accepted by the WCPFC Scientific Committee.

The application for a large part of the purse-seine fishery for skipjack in the Parties to the Nauru Agreement (PNA) waters to be certified as a sustainable fishery by the Marine Stewardship Council (MSC) was approved early in the year. This is the first major tuna fishery in the world to get MSC certification. A condition of the certification is the development of reference points and harvest control rules for the fishery – a central theme of wider efforts to improve tuna management in the region. OFP scientists have already presented some initial ideas to the Scientific Committee of WCPFC, and agreement was reached on limit reference points for all of the major tuna species. Later in the year, the Fiji longline fishery for albacore also received MSC certification – a first for a Pacific Island domestic tuna fishery.

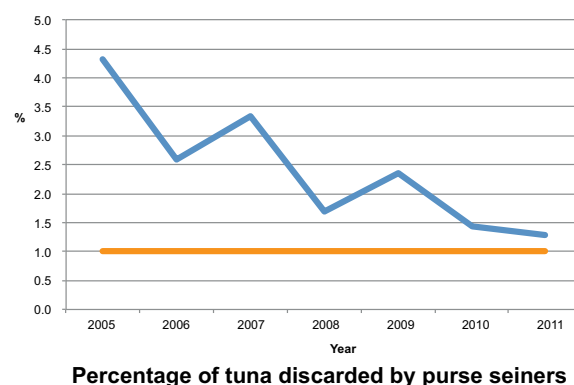
Support to countries at the national level was limited by funding and staffing gaps, and it was not possible to hold a stock assessment workshop for national tuna scientists during 2012. Nevertheless, some good progress was made with the country webpages, issue-specific national reports were prepared for eight countries on the impacts of the closure of fish aggregating devices (FADs) on their fisheries, and reports on interactions between small-scale and commercial tuna fisheries will be ready for seven countries

in early 2013. Working with FFA, FAME has continued to develop capacity for bio-economic modelling of fisheries to inform management, and this has proved valuable for setting limits on the number of longliners licensed to fish in the Fiji exclusive economic zone (EEZ).

Objective 2 – To provide high-quality fishery monitoring services, analysis services and capacity development to support the management of oceanic fisheries by regional, subregional and national fisheries management authorities.

This objective covers FAME's involvement in training of fisheries observers and other observer programme staff (debriefers who interview observers after each trip and check their reports, and observer trainers who will take over from SPC staff in due course), as well as support for other monitoring work such as the sampling of catches in port.

An important high-level role of observer programmes is the monitoring of the amount of fish discarded by commercial fishing vessels. The graph illustrates the success achieved in implementing a regional measure to bring down discards of tuna by purse-seine vessels, aimed at reducing fishing mortality and waste. For operational reasons it is not possible to eliminate discards entirely, but the target of 1% was nearly achieved in 2011, monitored by 100% observer coverage of the fishing vessels.



PEER REVIEW OF THE BIGEYE TUNA STOCK ASSESSMENT

The most recent (2011) stock assessment of bigeye tuna was reviewed by a panel of three independent experts in April/ May 2012 as part of a new process of quality control introduced by the WCPFC for scientific services. The assessment is an important driver of efforts to improve management of the region's fisheries. Bigeye tuna is the only one of the four major species assessed as experiencing overfishing. The bigeye tuna assessment is also perhaps the most challenging assessment in technical terms.

The report of the panel – Dr James Ianelli, Dr Mark Maunder and Dr André Punt – concluded that *'the stock assessment for bigeye tuna in western and central Pacific Ocean (WCPO) is based on state-of-the art methods and is analytically very thorough. The analysis of raw data, where available, is more comprehensive than is common for most assessment applications'*. The panel also made 27 key recommendations. These include improvements to the execution of the assessment, modifications to the MULTIFAN-CL model used, and renewed efforts to improve data inputs and resolve inconsistencies. Additional funding from WCPFC has been approved to implement these recommendations, and a new and improved assessment is now scheduled for delivery in 2014. The review also recommended continuation of the successful central Pacific programme of bigeye tuna tagging.





PAIRED GRAB AND SPILL SAMPLING TRIALS ONBOARD PURSE SEINERS

Estimates of the species composition and size distribution of the catches of the purse-seine fishery are fundamental to the assessments of the region's tuna stocks. Because logsheet data are often imprecise about the species mix, and because most purse-seine catches are transshipped and cannot be measured by sampling in port, these estimates rely mainly on data collected from samples by observers.

The current sampling method involves observers grabbing at random a sample of five fish from each brail. This is a practical method, given the need to avoid interfering too much with fishing operations and delaying the transfer of fish into the refrigerated holds. Unfortunately, analysis of the data collected shows that observers are unconsciously biased towards medium sized fish. In order to measure the extent of this bias, and develop better estimates of the true species composition and sizes of the catch, OFP has conducted a series of trials onboard purse-seine fishing boats. These compare the current grab sampling method with a system of spill sampling, in which a much larger sample of fish is spilled out of the brail into a special bin. Work continues on improving the analysis of observer data and to develop better sampling protocols based on the results of these trials.



During 2012, FAME's observer trainers ran 14 courses, with 173 qualified observers trained (a further 25 trainees were not issued certificates of competency). There has been a strong effort this year to train debriefers, with a total of 45 persons attending one of four courses. Four national staff have now completed the programme of work experience required for observer trainers, in addition to the team of five employed by FAME and based in Noumea, Suva and Pohnpei.

Research continued on improving the sampling methods used by observers to collect data on the size and species composition of tuna caught. Support was also provided for national programmes that sample catches at the point of landing, including a concerted effort to improve information

on the catches of small-scale tuna fishers. Training of officers to collect this information was completed in Nauru, Tuvalu and Cook Islands, and the project is also meeting the costs of a small number of staff in-country to continue this work.

Objective 3 – To provide high-quality data management services and capacity development to support the management of oceanic fisheries by regional, subregional and national fisheries management authorities.

The programme continued to tackle the huge volume of data entry and analysis needed to maintain an accurate picture of the region's oceanic fisheries. Hundreds of thousands of sheets of data, from fishing vessels, observers and port samplers, were entered and checked during 2012. A number of improvements to data entry systems and data audit were initiated during the year. Not only is this database essential for regional stock assessments but it also provides the means to feed information back to regional organisations and national authorities, with hundreds of queries handled during the year.

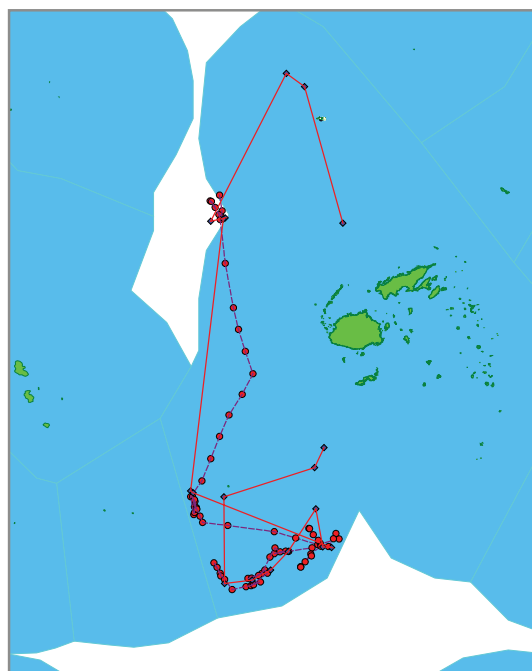
The system for management of data at the national level, TUFMAN, also continues to be refined, and OFP continues to install the upgraded systems in PICTs. TUFMAN training was conducted at the regional tuna data workshop and in-country in Cook Islands, Federated States of Micronesia (FSM), Marshall Islands, Papua New Guinea (PNG), Tokelau and Vanuatu. A dedicated regional TUFMAN training workshop will be held in Noumea in December. The new service of data audits, initiated in 2011, has continued to prove popular. In 2012 data and systems have been audited in Cook Islands, Marshall Islands, Solomon Islands and Vanuatu to identify gaps in data coverage. Staff have also worked closely with FFA to develop systems that help to identify illegal fishing, and provided IT support to regional fisheries surveillance exercises.



AUDITS OF NATIONAL TUNA FISHERIES DATA AND DATA SYSTEMS

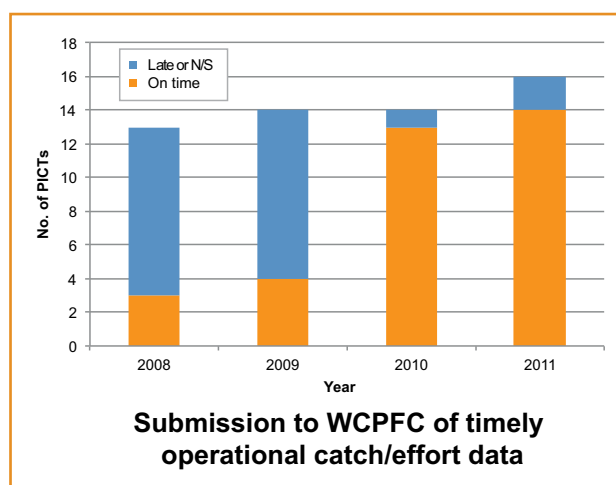
Audits are a formal, often periodic examination and check of data or procedures to verify their correctness. They are more commonly associated with the financial sector, but the same benefit can be gained by applying an audit to a national tuna fishery data collection system, a set of procedures used to manage tuna fishery data, or the quality of a database system used to process and store tuna fishery data.

Tuna data audits have proven particularly useful for checking the completeness and accuracy of catch and effort records, using data from different sources – logsheets, observer reports and the vessel monitoring system (VMS). A number of tools have been developed to allow this cross-checking to be automated. Recent audits have found substantial gaps in submission of logsheet data, which can be followed up with fishing companies by the national authorities. Errors in reporting or entry of data on vessel positions can also be quickly corrected. Overall this ensures that national and regional requirements for data are satisfied and assures the users of the data (e.g. fisheries managers and researchers) that they are dealing with quality, unbiased and representative data.



Comparison of the reported positions of a fishing vessel from logsheet data and the VMS record.

Building national capacity is an important part of work under this objective. The annual tuna data workshop is an important part of this process, with longer-term attachments to SPC provided for Solomon Islands, FSM and Tokelau, as well as follow-up by SPC staff during in-country visits. An indicator of the success of these efforts is the ability of PICTs to submit timely information on their fisheries to WCPFC in line with their obligations as members. This has improved markedly since 2009.



Objective 4 – To improve understanding of pelagic ecosystems in WCPFC.

The PNG tagging project successfully concluded its second year of operations, with fieldwork from January to March. Despite the reduced time for which the tagging vessel was available for charter, 39,925 tuna were tagged and released, comfortably exceeding the target of 30,000. A further central Pacific cruise was also carried out and added more than 6,000 bigeye tuna to the number of fish tagged. During the current programme of tagging operations up to the end of 2012, over 366,000 tuna have been tagged, and nearly 17% of tags have been returned. The recovery of the 50,000th tag during the year, with a special reward to the

finder, provided the opportunity to further raise awareness of the project. Two scientists are now working full-time on verification and ‘cleaning’ of the tag return data, analysis of growth rates based on tag recovery information, and the preparation of a series of national and subregional reports on the implications of the new information derived from the tagging programme. The main programme used by OFP for stock assessments, MULTIFAN-CL, has also been improved so as to make better use of the tagging data.

An important output of this work area has been the development of alternative ecosystem-based models to supplement the single-species stock assessment model. Incorporating oceanographic data and information on productivity and food chains, these new models have applications ranging from more detailed analysis of tuna distribution to forecasting the impact of climate change, and form the key indicator for the work of this section.

TARGET FOR END 2013

SEAPODYM model is fully functional for all 4 major tuna species and incorporates tagging data; ECOPATH model functional and capable of reporting upon ecosystem status and fishery impacts on non-target species.

STATUS IN 2012

SEAPODYM functional for 3 out of 4 species plus swordfish; ECOPATH model functional and used with observer data for status indicators.

This objective also covers the work to improve knowledge of the basic biology of tuna and related species – growth rates, reproduction, and diet – through a programme of sampling and analysis. These parameters are used to improve the models used for stock assessment. An important publication highlighting the different growth rates of male and female albacore tuna was published during the year. Interesting findings on the diet of yellowfin tuna were also released, showing significant linkages with populations of reef fish.



FINDING OUT WHAT TUNA EAT

Understanding how tuna fit into the broader ecosystem requires a better understanding of their basic biology. Diet and food webs are an important part of this study, and have formed the basis of work by FAME for some years. Tuna stomachs, collected during tagging cruises and by fisheries observers on commercial vessels, are frozen and flown to Noumea, where their contents are carefully examined and identified. More than 8,000 stomachs have been examined in this way, and many more are waiting their turn in the laboratory freezers.

Results published in 2012 showed a strong reliance on juvenile reef fish in the diet of tuna. This was particularly true of smaller tuna foraging near the surface and those caught close to land. It was estimated that yellowfin tuna alone eat around 800,000 tonnes of prey originating from coral reefs each year.

COASTAL FISHERIES PROGRAMME

The Coastal Fisheries Programme aims to promote sustainable development and improved management of coastal fisheries resources.

Progress with economic development can be measured by **the number of new businesses established in areas where there are sustainable opportunities**. Currently the programme focuses on: the use of fish waste, sportfishing tourism, aquarium exports and aquaculture. New and successful businesses in all of these areas have received support from the programme since the beginning of 2010.

In terms of promoting improved management of coastal areas, the extent of locally marine managed areas (LMMAs) provides a useful quantitative measure. In 2009 it was estimated that

30,000 km² were under such arrangements in 14 PICTs south of the equator. Since then a number of new areas have been established, and total area can be tracked on a database – although reporting is incomplete and of course many LMMAs are established without any significant involvement of SPC.

Objective 1 – Assist governments and administrations in the development of scientifically informed and socially achievable coastal fisheries management policies and systems in line with the guiding principles of the Apia Policy.¹

The indicator for this objective is **the development of new management plans for significant fisheries that are under national control** (often export fisheries). In 2009 most PICTs had none; by mid-2012 SPC had assisted with 10 new or proposed management plans in 6 countries.

¹ The Pacific Islands Regional Coastal Fisheries Management Policy 2008–2013 ('the Apia Policy') was endorsed by the 4th Ministerial Forum Fisheries Committee (FFC) in 2008.



Sea cucumber fisheries were again a major focus of this work, with staff trained in field surveys in Solomon Islands, Samoa, Fiji and Tokelau and continuing survey work undertaken by the national authorities. Based on management advice developed by the programme, two more PICTs now have export moratoria in place (bringing the total to 6), while a new management plan has been approved in Marshall Islands (following surveys and training last year). Meanwhile, a major review of wealth lost due to imperfect management arrangements and the options to improve these (including fiscal and economic measures) and secure greater benefits for five countries was launched in the last quarter of the year. Institutional strengthening assistance to the fisheries departments in Palau and Vanuatu was commenced and will continue in collaboration with FFA.

Work on finfish resources included biological sampling workshops in Kiribati and Marshall Islands, and the trial of new data collection procedures in Tonga, Nauru and FSM (testing a new manual which can be used across the region for catch and market surveys). Analyses of the status of the aquarium trade were completed in six PICTs, and practical training on improved handling of aquarium fish delivered in two. Management plans for the aquarium export fishery were also developed in two countries.

This section also provides support for data management, supplying and installing micro-servers in four PICTs during the year as well as providing both formal and on-the-job training for national fisheries staff. Advice on legislation and policy is also provided – a new fisheries act became law in Marshall Islands, while a coastal fisheries policy for Samoa was completed for approval.

BETTER SURVEYS OF COASTAL FISHERIES

Coastal fisheries are estimated to make a greater contribution to gross domestic product than tuna in all except 2 PICTs and are crucial for food security, but many countries lack even the most basic information on production and participation in this sub-sector. To help fisheries administrations collect relevant information in a cost effective ways SPC has developed a new manual on market and creel surveys.

The manual provides a menu of different survey forms and methods that can be put together in different combinations to profile subsistence and small-scale commercial fishing activities according to local requirements. Trials of the new methodology and training of fisheries staff have now been carried out in Nauru, Tonga, Fiji and Federated States of Micronesia. This project complements two other FAME initiatives, which aim to improve fisheries data collection from (i) artisanal tuna fisheries and (ii) deepwater snapper fisheries in selected countries.





The climate change monitoring project completed the first round of surveys with field work and training of survey teams in FSM and PNG. Two of the project's young professionals completed their assignments and returned to Samoa and Fiji where they were immediately engaged in resource monitoring projects. Two more have been recruited for a second round of survey work, now expanded to include creel and market surveys and training in determining the age and growth of reef fish. In a related development, FAME staff are working closely with a number of pilot communities in four countries to develop practical climate change adaptation projects in the fisheries sector. In addition, climate change adaptation projects have commenced in Fiji and Tokelau under Australian funding.

Objective 2 – Provide a regional framework for sustainable aquaculture, in the areas of planning, research, development and trade, for Pacific Island governments, private enterprises and other stakeholders.

Progress in aquaculture development in the region is measured by **the value of annual aquaculture production**. This has unfortunately fallen dramatically, due to a collapse in the price and a subsequent decline in the production of black pearls in French Polynesia. There has also been a smaller decline in shrimp production in New Caledonia. Total production value for PICTs fell from USD 155 million in 2008 to USD 109 million in 2010. In contrast the last three years of Food and Agriculture Organization of the United Nations (FAO) statistics for the independent Pacific Island countries show a small increase from USD 7.6 million in 2008 to USD 10.4 million in 2010. SPC is working with FAO to improve the accuracy and completeness of aquaculture statistics from the region.

A major role of FAME under this objective is to facilitate aquaculture planning and help countries identify realistic opportunities for development. Missions to assist with aquaculture planning and the review of national strategies were undertaken in Nauru, Tonga (a national plan of action

for climate change), Vanuatu, Samoa and Fiji. A preliminary review of changes needed to aquaculture legislation was undertaken in Vanuatu. Coordination with other donors is also important, and FAME staff have taken the lead role in designing a project funded by the Australian Centre for International Agricultural Research (ACIAR) as well as providing technical input to four other ACIAR projects.

A second key area of work is in aquatic biosecurity. The identification of low-risk movements of aquaculture stock can facilitate the development of new enterprises in PICTs. A recent risk assessment for culture of the sea cucumber sandfish in Kiribati shows that this could be a suitable venture which is now likely to proceed. On the other hand, proper screening can avoid the risk of introducing serious diseases. Testing of supposedly disease free stock for freshwater prawn culture recently revealed two important viral diseases and prevented their introduction to Cook Islands, while further work is undertaken to assess the overall risk. Aquatic biosecurity issues are often similar to those of agricultural biosecurity, and FAME has worked with the SPC Land Resources Division to deliver training courses for quarantine officers in the North Pacific, and training in reporting required by the World Organisation for Animal Health (OIE). A joint FAO/SPC workshop to develop a regional framework for aquatic biosecurity was held in the first week of October.

FAME staff also provide a range of technical advice and 'hands-on' support with aquaculture research and development projects. During 2012 this has included commissioning a small hatchery at the University of PNG for trials of a native freshwater prawn strain for aquaculture; advising on a mariculture research and quarantine facility for the PNG National Fisheries Authority, building and operating a small aquaponics² demonstration unit in Fiji, and preparing funding proposals and costings for hatcheries to supply fish farmers in Samoa and Vanuatu. The section also provides direct support to the private sector, and four small and medium enterprises have recently been selected for direct assistance.

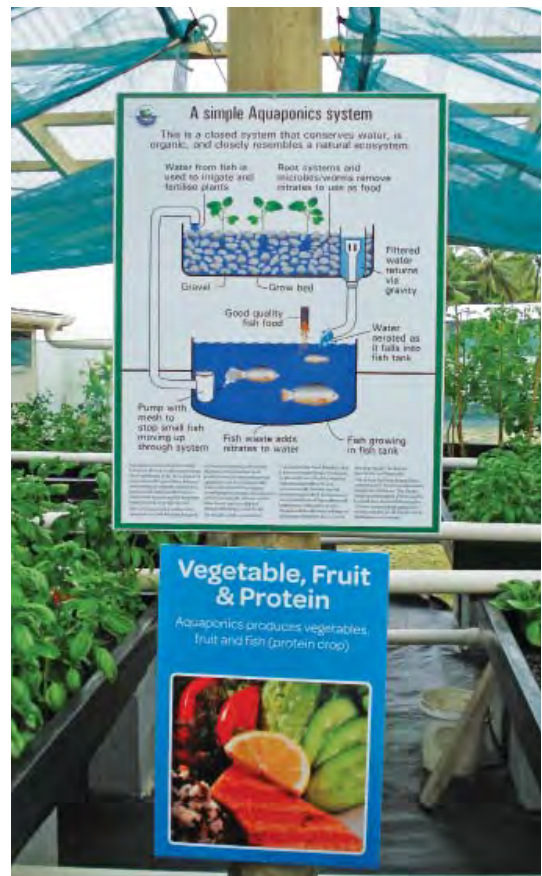
² Aquaponics describes a system that combines freshwater fish culture with growing vegetables or herbs. The plants take up waste from the fish as fertiliser and in so doing purify the water.

AQUAPONICS

Aquaponics is the term used to describe a system that combines freshwater aquaculture with hydroponics – the production of vegetables without using soil – in a recirculating system. The water used for aquaculture is enriched with nutrients from uneaten feed and the faeces of fish. This water is circulated to the roots of the plants which use the water and nutrients for growth. Water not taken up by the plants is effectively purified by the removal of nutrients and can be returned to the fish tank.

Most systems developed around the world have been for enthusiasts, who run them more as a hobby than a business. While the concept seems attractive for Pacific atoll islands (where poor soil limits vegetable production), in many of these locations the most commonly produced fish (tilapia) are not acceptable. The greatest opportunities would seem to be in locations where a local tourist/hotel trade demands a regular supply of salad vegetables, and a migrant worker population will buy tilapia.

In 2012, FAME staff built and operated a small trial/demonstration system in Suva, to test the technology for themselves, and also assisted in a display of hydroponics in Rarotonga for the Forum meeting. The next stage will be a fully-costed trial to determine if the technique is economically viable.



Objective 3 – Develop sustainable nearshore fisheries in PICTs to provide food security, livelihoods and economic growth.

While many coastal resources are heavily exploited, there are still opportunities for new fisheries and techniques which can contribute to food security and/or income for coastal communities as well as relieving pressure on more traditional fisheries. Trials were started in Marshall Islands

using a new technique of fishing for small pelagic fish; initial results showed some promise and a strong market demand for the catch, but further work is needed on the equipment and technique. Very good catches were achieved with a trial of fishing for deep-sea squid in New Caledonia, carried out with strong support of the national fisheries authorities; and a clear potential exists to develop a fishery for local and/or export markets. There are probably opportunities to develop this fishery in other PICTs at the same latitude.



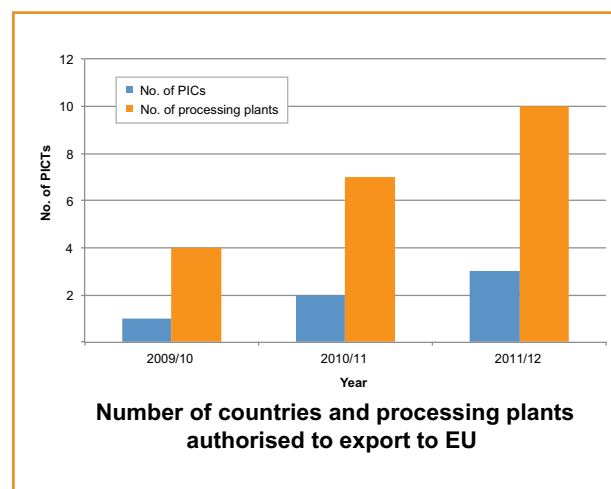
Ensuring that FADs are available to improve the efficiency of small-scale tuna fisheries is a key area of work under this objective. Practical training in FAD deployment was provided in four PICTs during the year, and at least two of these PICTs plan to continue to maintain and replace the FADs. Improved monitoring of FAD programmes is required to demonstrate the effectiveness and benefits of such programmes, and new systems have been developed and are now on trial in the field.

The indicator proposed for this work was the number of **PICTs with sustainable the FAD programmes in place**. In 2009 it was considered that only 4 had the necessary long-term funding and capacity. By early 2012 it was estimated that 10 PICTs had ongoing programmes, but it may still be too early to judge how many will maintain FAD deployments over an extended period.

Economic analysis has been provided for a proposed tuna jerky project in Tokelau and development of an aquarium export industry in Samoa. Training in financial appraisal and project design has been provided for fisheries officers in two countries, and two regional courses were also provided. Support for fishing associations has also continued, including a study on sustainable funding for associations and a range of

technical training delivered to association members (mainly for small-scale fishing and fish handling).

A range of training and technical assistance has been delivered to the authorities involved in certifying seafood exports to the European Union (EU) ('competent authorities') as well as private sector fish processors, mainly in Solomon Islands, Fiji, and PNG. As illustrated in the following table, this project, working closely with FFA and building on the efforts of national authorities, has helped to maintain growth in the countries and enterprises able to access the demanding EU market.



DEEP WATER SQUID FISHING TRIAL

A fishing trial for deepwater squid was carried out in New Caledonia, off the southwest of the main island, using the new government fisheries research vessel Amborella. SPC arranged for a masterfisherman from Okinawa, where this is a long-established fishery, to come and supervise the trials. Fishing with 500-metre lines in depths of 1,500–2,000 m, the trials caught two species of squid – the diamond-back, which averaged 18 kg in weight and is suitable for sashimi; and the neon flying squid, a smaller species averaging 4.6 kg and more suitable for cooking. In eight fishing days, a total of 70 squid weighing 785 kg were caught, suggesting that there is a viable resource.

This is a fishery which could be exploited by medium-sized commercial vessels with equipment for line fishing in deep water – for example it could provide an alternative target for deep-water snapper boats. The larger species is already exported to Japan from a number of countries, and the seasonal nature of the fishery may provide opportunities at a time when catches in the northern hemisphere are not available. In other cases there may be local markets.



DIRECTOR'S OFFICE

Objective 1 – To develop and sustain effective relationships between the division and its stakeholders.

Highlights under this objective included: the annual colloquium with FFA to agree on collaborative activities, including several joint projects; a one-day informal consultation with Heads of Fisheries and a SciCOFish steering committee meeting in June to provide guidance on the work programme; and participation in discussions on a new fisheries policy for Kiribati. Relations with all regional organisations involved in the management of tuna fisheries remained strong.

In the area of resource mobilisation, all of the projects foreseen in last year's report were approved, except for the French-funded restoration of ecosystem services against climate change unfavorable effects (RESCCUE) project, which was still in the design process in late 2012. The RESCCUE project will build on the results of the Coral Reef Initiatives for the Pacific (CRISP) project. Due to its multi-sectoral nature this project will not, in any case, be managed by FAME. Funding was secured from New Zealand for the purchase of fisheries services – a new modality following the withdrawal of New Zealand programme funding. A number of small and medium projects secured support during the year or were nearing approval. These featured new development

partners (World Bank and Pew), new arrangements (FAME will be the lead agency for an ACIAR aquaculture project for the first time) and new implementation arrangements (Australian-funded national climate change projects in Fiji and Tokelau will be implemented by FAME). As shown below, financial resources have been maintained at around 13 million CFP units per year, with the exception of 2010 when several major projects ended.

FINANCIAL RESOURCES FOR IMPLEMENTATION OF THE FAME WORK PROGRAMME BASED ON THE REVISED BUDGET FOR EACH YEAR:

2009	13,181,700 CFP units
2010	10,631,900 CFP units
2011	13,016,300 CFP units
2012	13,362,500 CFP units

Objective 2 – To promote informed policy decisions and public awareness of marine resource issues and climate change in the Pacific.

The Fisheries Information Unit continued to produce a range of high-quality publications, including the *SPC Fisheries Newsletter* and six annual special interest bulletins on topics ranging from sea safety to trochus. Other routine work included improvements and regular updating of the website, incorporation of new publications in the fully searchable

FISHERIES MATERIALS FOR SCHOOLS

Fishing is a way of life in many Pacific Island coastal communities – much more than in other parts of the world. Providing information on fisheries and the marine environment in schools has two benefits: it helps to raise awareness of marine resource issues and the impacts of climate change for the next generation of fishers, and it allows pupils to relate more to examples and projects on things which are familiar in their daily lives. However, special skills are required to develop material that is appropriate to different age groups, and the approval of national education authorities for this material to be used in the classroom.

In 2012 FAME developed a poster for use in primary schools in Kiribati showing the range of marine creatures found in the central Pacific. It will replace posters of African animals that are used at present. Discussions were also held with education specialists in Vanuatu and Cook Islands on developing materials for use in local schools. Resource materials for teachers and some practical project guides for children are planned.

digital library, and the 2012 Fisheries Address Book. The fact sheets for community workers on important groups of fish and invertebrates have been well received and the original handbook and 16 sheets have been supplemented with 7 more fact sheets. These have recently been translated into Portuguese for use in Timor Leste and have been requested by projects in Indonesia, the Philippines and Madagascar. The first step in producing educational materials for schools has also been taken with preparation of a poster for primary school children in Kiribati.

This objective was modified during the strategic plan review to include informing policy-makers, other stakeholders and the general public on the impacts of climate change on Pacific fisheries and developing adaptation strategies. Following the launch of the book *Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change*, SPC's Senior Fisheries Scientist (Climate Change) joined the Director's team for more effective coordination. A series of summaries of climate change impacts on each PICT was developed, as well as four short policy briefs. A four-day workshop on fisheries and climate change for senior fisheries staff, jointly funded with FAO, was held to raise awareness and develop plans for adaptation. This is being followed up by a series of in-country workshops to help develop national strategies and plans to address climate change in the fisheries sector.

Communications targets for the year have been achieved, with the appointment of a communications consultant to work with the division in late 2011. Media and communications training was provided for senior staff in early 2012, and by the end of the year eleven major stories had been launched. These were in addition to normal press releases, articles for *Islands Business*, and media interviews provided by staff to national media while on duty travel. Special articles were featured in the AusAID *Focus* magazine and CSIRO's *Ecos* publication.

The average uptake for each of the major stories was 14 different print or Web-based articles, covering an average of 4 PICTs and 4 other countries, and with at least one regional radio interview (and some TV coverage). Two stories were featured in the Sydney Morning Herald.

CORAL REEF INITIATIVES FOR THE PACIFIC (CRISP)

The CRISP programme ended in December 2011, with the project manager remaining at SPC to complete final reporting requirements and to facilitate the feasibility study for the follow-up RESCCUE project. One project initiated under CRISP, on developing the potential of post-larval



capture and culture for the aquarium trade, will continue until mid-2014. This will focus on areas of potential including the collection and rearing of giant clam larvae in French Polynesia and marine crustaceans in PNG. This project will be integrated into FAME's more general work in support of the aquarium export industry.

CROSS-CUTTING INITIATIVES

GENDER

A follow-up to the 2011 assessment of 'Gender in Oceanic and Coastal Fisheries Science and Management' was carried out. This focused on developing materials and a special training module for female fisheries observers; and the production of a brochure featuring role models of successful women working in the fisheries sector.

CLIMATE CHANGE

Staff from all FAME work areas were involved in the four-day workshop on fisheries and climate change, and continue to support SPC's multi-sectoral approach. Both programmes continue to implement specific projects in the climate change area, with a focus on predicting and monitoring impacts. The Coping with Climate Change in the Pacific Islands Region project is now supporting two staff positions (one each in OFP and CFP) to improve information on climate change impacts on oceanic fisheries and to help develop adaptations for coastal communities respectively. FAME is also just starting to



implement two national projects on climate change adaptation for the fisheries sector in Fiji and Tokelau.

OCEAN POLICY

FAME was again the convener of the Marine Sector Working Group (MSWG) in 2012. With a number of international events focusing on ocean issues, including Rio + 20, the launch of the World Bank's Global Partnership for Oceans and the Forum Leaders' meeting in particular, the group was busy providing briefing materials and commenting on draft text. The Secretary General of the Forum Secretariat spoke at these meetings and side events in his capacity as Ocean Commissioner. Major commitments to new large marine protected areas were announced by Cook Islands and New Caledonia.

FINANCE

The revised budget for the division for 2012 was 13,362,500 CFP units (equivalent to approximately USD 14 million at current exchange rates). The breakdown between the two programmes and the Director's Office is shown in Table 1.

Table 1: Revised expenditure budget of FAME for 2012 in CFP units

	Director	OFP	CFP	Division
Recurrent	363,400	914,200	1,218,400	2,496,000
Project	550,900	6,552,400	3,763,200	10,866,500
Total	914,300	7,466,600	4,981,600	13,362,500



Once again, recurrent funding was reduced as the division absorbed the balance of cuts in SPC programme funding imposed in 2011. As in previous years, additional project funding was secured, providing a small increase in total resources in CFP currency. Of course CFP has declined considerably in value against most major currencies.

STAFFING

As at 1 October, the Division has 84 staff (two fewer than the same time last year), of whom 33 are female (39%). The breakdown is shown in Table 2.

Table 2: Staffing of FAME as at October 2012

	Director's Office	OFP	CFP	Total
Professional	3	33	20	56
Technical	0	21	2	23
Administrative	1	2	2	5
Combined	4	56	24	84

Note that for consistency with the budget presentation the Fisheries Information Unit staff are listed under CFP, but will continue to work for both programmes and report to the Director.

Nineteen nationalities are now represented among the staff (plus persons originating from each of the three French territories), and 17 of the 56 internationally recruited posts are held by nationals of Pacific Island countries. The number of Pacific Island internationally recruited staff employed by the division has again increased since last year. As in previous years, technical staff are seconded to national

fisheries administrations in New Caledonia and French Polynesia, while the FAME projects meet the costs of staff employed through national fisheries administrations in a number of other countries on a short term basis. In 2012, three professional staff were based in the SPC Suva office, while one professional and three technical staff members worked from the Pohnpei office.

2013 WORK PROGRAMME AND BUDGET





The expected outputs of the division for 2013 – which can be achieved with the financial resources that have been secured – are summarised in the annual ‘green book’ budget, which is approved by CRGA. It is not always easy to separate the results of recurrent and project funding – many results require the input of resources from both, reflecting the alignment of projects with the strategic plan and a chronic shortage of recurrent funding.

These results are developed into a more detailed work plan in the first weeks of the year, which itself feeds into the performance appraisal system for staff. Both programmes used the Integrated Reporting and Information System (IRIS) in 2012, which allows more detailed work planning and reporting than was previously possible, and this will continue in 2013 for the whole division.

The main work areas and projects of the division are described in the report on 2012 results. During 2013, implementation of these programmes will of course continue. This section of the report will therefore focus on some new initiatives.



DIRECTOR'S OFFICE

HEADS OF FISHERIES

A full Heads of Fisheries meeting will be held in March 2013. With reduced reporting by divisions to CRGA, these sectoral meetings assume greater importance in evaluating and developing the work programme of the division. A survey of member satisfaction with services provided by FAME is due (the last one having been completed in early 2009). The current strategic plan period ends at the end of the year, and it is suggested that a rolling process of revision, updating and evaluation every two years will be more useful than developing a new plan.

EUROPEAN UNION FUNDING

An important part of the work of both programmes is funded by the EU SciCOFish project, which runs to the end of 2013. It is hoped that a mid-term evaluation of the project, due in early 2013, will confirm the success of the project, and encourage further support for SPC in general and the fisheries sector in particular.

CFP

COLLECTING BETTER INFORMATION ON COASTAL FISHERIES

Many PICTs lack basic information on the status of their coastal fisheries – a recent report concluded: ‘Estimating the production from coastal fisheries in about half of the Pacific island countries is largely guesswork. In very few Pacific island countries are the levels of coastal catches well known.’³ Several activities across CFP and OFP aim to address this problem:

- A new survey system for artisanal and subsistence fisheries has been trialled in four countries in 2012 – next year the manual will be finalised and the first full surveys undertaken.

- Collection of information on tuna catches by artisanal fishers has been stepped up, and this work is closely coordinated with analysis of the impact of FAD deployments.
- In support of improved deepwater snapper stock assessments, a strong push for improved data collection is in progress in four countries.

The data collected and lessons learned in these programmes will be coordinated to assist in giving countries the key information they need to understand changes and improve management of coastal resources.

CLOSER COLLABORATION IN MANAGING SEA CUCUMBER FISHERIES

Harvesting of sea cucumber (for export as *beche de mer*) has become the most problematic coastal fishery in many Pacific Island countries. In late 2012, SPC, with funding support from ACIAR, launched a major study on how to secure the potential wealth of this fishery through good management. During 2013, SPC will form a task force of fisheries officers from the main producer countries and international experts to share experience and ideas on how to develop and implement these new approaches. In several countries, increased attention to monitoring, control and surveillance of exports will need to be developed.

EXPLORING NEW OPPORTUNITIES FOR COASTAL FISHING

As mentioned earlier, the development of new or little-utilised coastal fisheries resources can both provide opportunities for coastal communities and help to relieve pressure on established fisheries. Such exploratory fishing is not always successful: a trial of fishing for spanner crabs in 2011 failed to catch any; but the recent trial of deep-water squid fishing indicated that a commercial resource exists in New Caledonia. Trials will now be extended to other countries at a similar latitude to determine if they also have potential to develop a fishery.

³ Gillett, R. 2010 – Fisheries in the economies of the Pacific island countries and territories, ADB.

OFP

STOCK ASSESSMENT

Work in this area in 2013 will continue towards a stock assessment for South Pacific swordfish. Although few Pacific Island vessels currently target this species, it has been identified as an area of potential for local fleets. There is concern that distant water vessels operating to the south of PICT zones may be depleting the resource before this opportunity can be realised. Due to the limited data, it is a technically challenging assessment.

REFERENCE POINTS

The development of formal management frameworks for the region's oceanic fisheries, including agreed management objectives, reference points and control rules, is now seen as a crucial step in developing sustainable management arrangements. It is a high work priority for WCPFC, FFA

and PNA (and is a condition of the MSC certification for the latter group). Initial work undertaken by OFP and presented at the WCPFC Scientific Committee was well received, and this will be further developed during 2013 with additional resources and a dedicated new position in the stock assessment team.

TAGGING OPERATIONS

2013 will see the final phase of field operations in the PNG large-scale tagging project. While this project has been successful in meeting its tag release targets, its smooth implementation is also a testimony to the growing competence of national staff to manage a complex project of this type. As the project moves more into analysis of the tagging data and consideration of management applications, it is hoped that PNG National Fisheries Authority staff will also have the opportunity to develop capacity in these areas.

2013 BUDGET

The 2013 expenditure is estimated as follows.

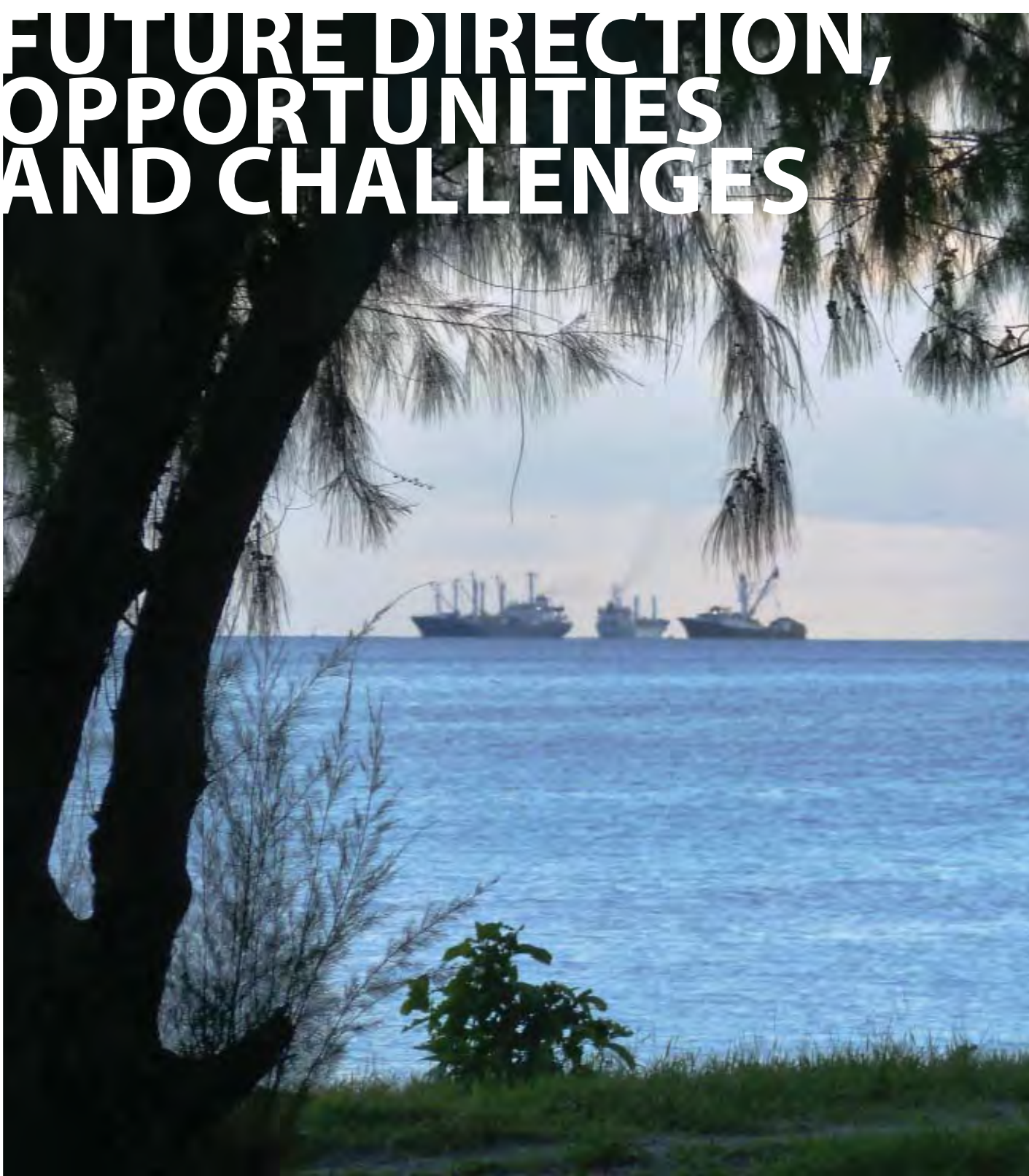
Table 3: Estimated expenditure budget of FAME for 2013 in CFP units

	Director	OFP	CFP	Division
Recurrent	366,600	1,146,700	1,408,000	2,921,300
Project	466,900	6,521,500	3,603,500	10,591,900
Total	833,500	7,668,200	5,011,500	13,513,200

The estimate shows an encouraging increase in recurrent funding, and SPC is in negotiations with partners to expand this type of support. Total resources are forecast to be slightly

more than 2012 overall, and some additional project funding may be secured during late 2012 or 2013.

FUTURE DIRECTION, OPPORTUNITIES AND CHALLENGES





This section identifies a number of projects that were under discussion with partners at the time the report was prepared.

FISHERIES TRAINING

SPC and FFA have been approached by the New Zealand Aid Programme to implement part of their fisheries training project for the region. While New Zealand-based courses will be managed through the scholarship programme, a number of activities call for training in-country. If negotiations are successful, SPC will be involved in delivering a number of practical 'hands-on' courses for fishers, small businesses and fisheries department staff over five years.

AQUACULTURE AND COMMUNITY-BASED FISHERIES MANAGEMENT

As mentioned above, FAME aquaculture staff have taken the lead in developing a project proposal to ACIAR to develop a number of promising aquaculture activities in Vanuatu, Fiji, Kiribati and Samoa. The project is linked to a community-based fisheries management (CBFM) project, for which the Worldfish Center will be the lead agency (but also with a role for SPC). An important part of the programme will be to link the two activities and examine how aquaculture can support CBFM by enhancing stocks or providing alternatives to capture fisheries. The overall programme is funded by the Australian Agency for International Development (AusAID) and aims to strengthen food security in some of the more vulnerable countries in the region.

TAGGING ANALYSIS AND CONTINUED BIGEYE TAGGING

As large-scale tagging activities wind down in 2013, continuing efforts will be needed for tag recovery. The huge task of cleaning the data is in progress but will need to continue, while analysis of the results and application to our understanding of the resource are only just beginning. OFP is hoping to secure resources from New Zealand for this work, as well as the continuation of a low level of tagging of bigeye tuna in the central Pacific (as recommended by the review of the bigeye stock assessment).

CONCLUSION





The Division has made good progress during 2012 in implementing the work programme. The review of achievement of higher-level objectives shows a number of promising trends in the region's fisheries. The Division was well supported by project funding in 2012 and this continues into 2013, but there are concerns about the ability to deliver a full work programme in subsequent years.

ANNEX I

FAME – 2012 WORKPLAN

OBJECTIVES AND ACHIEVEMENTS

DIVISION

Objective 1: Develop and sustain effective relationships between the Division and its stakeholders.

Results	2012 planned activities	Status at end of 2012
1.1 Programme plans and activities that respond to the needs and priorities of members	1. Complete internal review of strategic plan, prepare and approve report and revised plan.	1. Completed – revised objectives approved, revised indicators developed.
	2. Develop 2012 work programmes by March, with >80% implementation of activities during the year.	2. Work programme ready on schedule. 90% of activities in this plan (by number) have been completed.
	3. Hold mini (one-day) Heads of Fisheries meeting in Noumea in June, with discussion of strategic plan and work programmes; also SciCOFish steering committee.	3. Meetings held, see outcomes at http://www.spc.int/fame/doc/meetings/
	4. Effective participation by FAME in 4 JCS missions; JCS reports used as basis for activity planning in 2012.	4. Not done – no JCS missions were organised during 2012 by SPC; JCS activities and reporting completed.
	5. Regular visits to member fisheries departments for consultations; meet with all heads of fisheries on fringes of regional meetings; regular email communications.	5. Visits to Solomons & Kiribati and meetings with heads of fisheries at FFC and WCPFC meetings.
	6. Support development of institutional strengthening projects in at least 2 countries (in conjunction with FFA and AusAID).	6. Input provided to policy and institutional strengthening process in Kiribati; IS work in Palau was handled by CFP manager.
	7. Contribute to development of Oceanscape initiative, including gap analysis and funding proposals.	7. Consultancy to develop Oceanscape analysis launched in December – to be completed in early 2013.
	8. Complete FAME annual report for 2011 by April.	8. Annual report text ready in January for layout, translation, printing.
	9. Meet other divisional reporting requirements – to CRGA, donors and others.	9. CRGA report presented as planned; also coordinated multi-division paper and presentation on oceans.

1.2 Effective working relationships maintained with other regional agencies and development partners	1. Successfully complete FFA/SPC colloquium; undertake follow-up actions.	1. Colloquium held in Honiara in February, with good follow-up on issues discussed.
	2. Develop joint SPC/Worldfish/ACIAR project following discussions.	2. Phase 2 proposals for CBFM project (Worldfish lead agency) and Aquaculture (SPC lead) submitted.
	3. MSWG meets twice during the year and develops submissions to CROP Heads and Forum.	3. 3 MSWG meetings held and submissions on Oceans and other issues prepared for Forum and pre-Forum meetings.
	4. Meet reporting requirements on SciCOFish and other cross-programme projects, with timely disbursement of funds.	4. SciCOFish and AusAID food security project reports submitted on schedule and accepted.
	5. Discussions initiated on EDF10 regional top-up funds and possible programmatic approach to EU funding under EDF11.	5. Discussions continue – Director visited Brussels and participated in PACP meetings in Suva during the year.
	6. Improved collaboration with other divisions and agencies (FAO, CTI [Coral Triangle Initiative]) in implementing climate change projects.	6. CC adviser has been active in building and maintaining links with these and other agencies.
	7. Fisheries issues continue to be addressed in Food Secure Pacific strategy implementation.	7. Participation in Food Secure Working Group as required.
	8. Provide support for feasibility study of RESCCUE project, and proposal developed if this is favourable.	8. RESCCUE final design was approved by the FFEM committee in December, AFD decision postponed to Feb.
	9. Improved collaboration with other divisions and agencies in implementing climate change projects.	9. Collaboration developed through a number of climate change programmes that work across sectors.
	10. SPC leads discussions on fisheries/climate change research needs through the PACENET (Pacific Europe Network for Science and Technology) programme.	10. Senior staff participated in PACENET meeting and CC Adviser developed PACENET brief on fisheries.
	11. New SPC document management and management information (IRIS) system successfully rolled out in FAME.	11. IRIS successfully used by both programmes and showcased at CRGA. EDRMS roll out is on hold due to technical problems outside the control of FAME.

Objective 2: Promote informed policy decisions and public awareness of marine resource issues and climate change in the Pacific

Results	2012 planned activities	Status at end of 2012
2.1 Policy-makers and the general public are better informed of marine resource issues, climate change impacts, the importance of fisheries and the need for management action	1. FAME communication plan for the period is implemented in collaboration with Econnect, with any amendments that may be needed.	1. Implemented including media and communications training for senior staff – results summarised below.
	2. Information materials on careers for women in fisheries science prepared and disseminated.	2. Consultancy completed and report provided – brochure will be developed in 2013.
	3. At least four new SPC ‘policy briefs’ on key fisheries issues written and distributed.	3. Seven policy briefs – 4 on climate change and fisheries and 3 on other topics – produced during the year.

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	4. 4-day workshop on climate change and fisheries held in Noumea.	4. Workshop successfully completed – report at http://www.spc.int/DigitalLibrary/Doc/FAME/Meetings/12_SPC_FAO_climate_workshop_outcomes.pdf
	5. 4 countries assisted with the preparation of climate change adaptation plans for the fisheries sector.	5. Workshops completed in Kiribati, Tuvalu and Fiji – Nauru postponed to Jan 2013.
	6. Awareness materials or policy-related documents are designed and produced for at least three countries or territories.	6. Materials produced for FSM (Kosrae State), Palau, Kiribati, Tuvalu and Samoa.
	7. All new FAME-produced documents are made available to the general public on SPC website	7. Digital library updated, newsletters and information bulletins all posted as produced.
	8. FAME and CFP websites are continually updated and improved.	8. Websites updated, OFP site also reviewed by consultant and made more user friendly.
	9. Regional media are regularly informed of regional marine resource issues, and FAME activities and outputs, through the provision of press releases, radio interviews and articles for newspapers/magazines.	9. 11 major stories developed during the year – picked up on average by 14 outlets covering 8 countries plus radio or TV.
	10. Most country visits by Director will include media releases or interviews.	10. Interviews provided for local media in Solomon Islands and Tonga – also from WCPFC meeting (regional coverage).
2.2 Stakeholders in PICTs are fully informed of the results of SPC activities, and shared experience and knowledge across the region	1. Publish 3 issues of the <i>SPC Fisheries Newsletter</i> in English and French in colour.	1. Newsletter issues 136,137,138 produced on schedule – French version of #138 delayed in translation.
	2. Publish 6 issues of SPC's special interest group information bulletins, related to important marine resource issues, in French and English.	2. 2 bulletins from late 2011 published and 4 new 2012 bulletins produced.
	3. Produce and distribute an updated version of the SPC Fisheries Address Book, which gives access to more than 1700 regional fishery-related contacts.	3. 2012 address book produced and circulated.
	4. Lay out, print and distribute 2011 FAME annual report and other documents required during the year.	4. Annual report laid out, printed and distributed.
	5. Produce an updated fully searchable digital library with all FAME publications available in digital format on a DVD, which is distributed throughout the region, and on SPC's website.	5. DVD not produced in 2012 – now done every two years or so as most users rely on internet version

	6. Document results of SPC activities in various media, such as the SPC website and the <i>SPC Fisheries Newsletter</i> .	6. Website and newsletter covered reports on work by all sections and major projects during the year.
	7. Make continued efforts to circulate materials currently held in storage to member countries, including for vocational training.	7. Distribution continued
	8. Implement project to develop materials to introduce fisheries into school curricula.	8. New poster for primary schools in Kiribati produced and printed – planning of new projects in Cook Islands and/or Vanuatu in 2013.

COASTAL FISHERIES PROGRAMME

Objective 1: *Assist governments and administrations in the development of scientifically informed and socially achievable coastal fisheries management policies and systems in line with guiding principles of the Apia Policy.*

Results	2012 planned activities	Status at end of 2012
1.1 Assessment of the status of national coastal living marine resource user groups, impact on resource, existing impact management systems, and the current status of the resources themselves, in order to inform management	1. Undertake at least 2 national workshops on finfish UVC methodologies or spawning aggregation survey techniques.	1. UVC finfish training completed in FSM, follow-up on Kiribati EIA – no other requests.
	2. Undertake at least 3 national workshops on invertebrate survey methodologies.	2. 4 completed in Fiji, Cook Islands, Palau and Tokelau, with follow-up attachments of national staff to analyse data progressing.
	3. Finalise and publish finfish UVC manual (by 3rd quarter).	3. Delayed – may be cancelled due to lack of demand.
	4. Finalise and publish an invertebrate survey manual (by 2nd quarter).	4. Delayed – text and diagrams almost finalized and will be completed in early 2013.
	5. Develop draft survey manuals for market and/or creel surveys.	5. Draft completed, trialled and amended based on experience.
	6. Field test the new market and/or creel survey methods in 2 countries and assess the methodology and conduct capacity building.	6. Field trials and training completed in 4 countries – Nauru, Tonga, FSM and Fiji.
	7. Set up biological monitoring programmes for finfish in 2 countries.	7. Programs established in Kiribati and Marshall Islands.
	8. Set up biological monitoring programmes for invertebrates in 2 countries.	8. Programme established in Tonga for sea cucumber.
	9. Expand export database module and promote it in three (new) countries, with national databases established.	9. Module developed for use in Marshall Islands and Fiji.
	10. Develop and test a database module for market and/or creel surveys (3rd–4th quarter).	10. Database module completed for most queries and ready for attachment training for officers who have been involved in surveys.
	11. Integrate current coastal fisheries management and monitoring document database into the new SPC document management system.	11. Roll-out of new SPC document management system postponed.
	12. Undertake at least two subregional workshops on basic database skills.	12. Subregional workshops conducted in Feb/Mar covering all 15 P-ACP countries.

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13. Install servers with software in at least 5 countries and provide initial in-country training	13. Servers and training provided in 7 countries – Tuvalu, Palau, Vanuatu, Marshall Islands, Timor Leste, Fiji and Cook Islands.
14. Provide attachment training (in Noumea or in country) on database operations for staff from at least 2 countries.	14. Attachment training provided for trainees from Fiji and Samoa.
15. Provide national data from monitoring training and subsequent surveys from at least 3 countries.	15. Data provided and backed up from Palau, Marshall Islands, Samoa.
16. Expand the current online training programme to include the identification of other species groups.	16. New LearnFishID module completed for sea cucumbers see http://www.spc.int/fame/en/projects/scicofish/activities/165-learnfishid
17. Provide attachment training (in Noumea or in country) on GIS use and operations for staff from at least 2 countries (when requested).	17. In-country training provided on GIS systems in Vanuatu and Cook Islands.
18. Improve and update existing fish and coral database to assess impacts of climate change.	18. Ongoing activity as additional data is collected and entered in database.
19. Identify and secure funding for ciguatera and algal bloom monitoring training and trials in 2 countries.	19. No specific funding identified with training in Tuvalu on monitoring for ciguatera.
20. Coordinate development of a regional ciguatera monitoring database	20. Delayed – need for more clarification on data to be collected and who to provide the data.
21. Produce ID cards or posters to support monitoring efforts.	21. Some information on crown of thorns starfish and poster on trochus.
22. Compile status reports for the aquarium industry and trade in 2 countries (categorising the fishery).	22. Ongoing activity in Kiribati, Vanuatu, Marshall Islands, Solomon Islands Cook Islands and French Polynesia.
23. Provide feasibility assessments and assistance for at least 2 countries that do not have an aquarium industry/trade.	23. Ongoing assistance with Nauru aquarium feasibility study and assistance provided to Samoa and Niue for possible industry establishment.
24. Respond to at least 2 ad hoc requests relating to resources or environmental monitoring.	24. Assistance provided to Tuvalu with the testing of fish samples for ciguatera and survey methodology advice provided to FSM on EIA for ship grounding.
25. Produce at least 7 information sheets to assist community-based management in the region.	25. Information sheets produced.

1.2 Assistance to members, in partnership with other stakeholders, in developing an appropriate mix of community-based approaches and national management arrangements, incorporation of ecosystem-based principles, and the review of coastal fisheries legislation	1. Undertake assessment of finfish monitoring and/or survey data for 2 countries and provide management advice.	1. No specific requests for finfish monitoring or surveys, however, working on market and creel surveys for finfish – no specific finfish management advice given.
	2. Undertake assessment of invertebrate survey and/or monitoring data for 3 countries and provide management advice.	2. Sea cucumber data assessed and management advice provided for Cook Islands, Samoa, Solomon Islands Fiji, and Vanuatu.
	3. Provide management advice and develop plans for specific fisheries in at least 4 countries.	3. Management advice plans provided for Kiribati with EIA report on sand mining, ongoing with bonefish fishery in Kiribati, and aquarium trade management advice for Marshall Islands, Cook Islands and French Polynesia.
	4. Review and develop legislation and regulations focusing on coastal fisheries for at least 3 countries, with the completion and endorsement of at least one piece of legislation or regulation.	4. Legislation/regulations assistance provided to Marshall Islands, Tuvalu and Kiribati.
1.3 Assistance to members in assessing impacts of climate change on marine environments and assisting coastal communities to respond effectively to climate change	1. Monitoring field work for effects of climate change in 2 countries [baseline assessment]	1. Baseline assessments completed for Pohnpei, FSM and Manus, PNG.
	2. Baseline monitoring for effects of climate change; baseline reports completed for 4 sites.	2. Baseline reports completed and/or revised for all 5 sites, Marshall Islands, FSM, PNG, Tuvalu and Kiribati.
	3. Install temperature loggers in 2 new sites.	3. Temperature data loggers installed in Samoa, Nauru, Palau, Tokelau, Fiji and Yap in FSM.
	4. Mentor and train at least 2 Pacific Island young professional working in the section in conducting different survey methodologies, data analysis and reporting.	4. Two Pacific Island young professionals (from Fiji and Tuvalu) completed their 12 month attachment with one new professional starting in September (from Fiji).
	5. Identify countries and sites within countries to establish pilot sites, develop a work plan and commence discussions with communities in all 8 sites.	5. Five countries identified to date, 10 sites identified (3 Nauru, 3 Yap State, FSM and 4 Samoa), and work plans underway in most sites.
	6. Undertake assessment of land- and marine-based resource use in consultation with SPC's Land Resources Division in 5 communities and identify factors adversely affecting the marine environment.	6. Assessments completed in most sites and this is covered in the forward planning for adaptation activities.
	7. Develop adaptation strategies through stakeholder consultations in at least 3 communities.	7. Adaptation strategies developed for all sites in Nauru and Yap, FSM.
	8. Coordinate the implementation of adaptation activities with at least 2 communities, including the development of community-based management arrangements and monitoring programmes.	8. Materials ordered for adaptation activities in Nauru and Yap, FSM. Community-based management arrangements reviewed in some locations in Samoa.
	9. Provide input and advice on incorporating climate change considerations into sector policies.	9. Input and advice provided on CC considerations into sector policies in Kiribati, Samoa and Nauru.
	10. Provide attachment training for compiling community-based management activities for CEAFFM (Community-based Ecosystem Approach to Fisheries Management).	10. Two attachment trainees from Yap to Noumea to work on CEAFFM for activities in Yap.

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Objective 2: Provide a regional framework for sustainable aquaculture, in the areas of planning, research, development and trade, for Pacific Island governments, private enterprises and other stakeholders.

Results	2012 planned activities	Status at end of 2012
2.1 Improved regional and national capacity for strategic policy, planning and administration to establish clear priorities and enable the aquaculture sector to meet current and future needs, with the guidance of the SPC aquaculture action plan 2007	1. Provide assistance on completion, development and review of national aquaculture plans in 5 countries: Nauru, Fiji, Cook Islands, Samoa and FSM.	1. National Aquaculture Plans completed for Cook Islands and Samoa. Nauru (final draft stage), Vanuatu (draft completed), FSM (delayed to 2013).
	2. Develop policy briefs on outcome of regional aquaculture assessments studies.	2. Produced policy brief on mariculture.
	3. Finalise review of SPC regional aquaculture strategy.	3. Completed SPC Regional Aquaculture Strategy.
	4. Carry out an Aquaculture Programme mission trips needs assessment for north Pacific countries.	4. Undertook Programme Mission to Kiribati, Samoa, Fiji and Vanuatu (to develop new ACIAR Community Aquaculture Project); to FSM, American Samoa and Timor Leste on needs assessments.
	5. Initiate development of an SPC aquaculture database.	5. SPC/FAO Regional Aquatic Biosecurity & Aquaculture Statistics workshop outcome in Oct 2012 that reviewed data gaps but based on the FAO regional aquaculture database.
	6. Maintain aquaculture portal up to date with statistics, market notices and Aquaculture Section activities.	6. Aquaculture Portal is updated and is an ongoing activity.
	7. Participate in regional and subregional aquaculture conferences and workshops: FAO-COFI (FAO Committee on Fisheries), NACA (Network of Aquaculture Centres in Asia-Pacific), Australasian Aquaculture Conference and MSG (Melanesian Spearhead Group).	7. SPC Aquaculture Section Staff participated in FAO-COFI, NACA and Australasian Aquaculture Conference.
	8. Develop a framework of collaboration in aquaculture for MSG members.	8. Final draft MOU produced on Coastal Fisheries and Aquaculture collaboration for MSG members.
	9. Provide aquaculture legislative support to three Pacific Island countries.	9. Aquaculture decree of Fiji awaiting approval. First consultation done for Vanuatu on aquaculture legislation with activity extending to 2013.
	10. Collaborate with subregional, regional and partner organisations on cooperation in aquaculture development and management.	10. Collaborated with FAO (on development of aquatic biosecurity regional strategy), NACA (on Grouper hatchery training for Guam), JICA (on sub-regional milkfish training in Vitawa, Fiji).

<p>2.2 Increased skills and knowledge base in the SPC region and its member countries and territories, so as to maximise the return on investments in aquaculture through innovative, profitable and sustainable approaches</p>	1. Ensure outcomes of SPC independent studies, conference and workshop proceedings are finalised and published.	1. Produced SPC mariculture study 'Opportunities for the Development of the Pacific Islands Mariculture Sector', Proceedings of Tahiti 2010 Aquaculture Conference.
	2. Collaborate with Worldfish in implementing ACIAR-funded milkfish culture project in Solomon Islands.	2. Completed 1 year of ACIAR milkfish culture project in Solomon Islands: site selection confirmed for Guadalcanal, Gizo and Malaita. Milkfish fry seasonality assessed in the three sites.
	3. Develop national capacity through providing supervision to 3 Pacific Island students on country-specific projects (e.g. three Solomon Islands students under the ACIAR-funded milkfish culture project in Solomon Islands).	3. Two (2) Solomon Islands National postgraduate students currently attached (with potential for a third postgraduate student) and supervised by SPC under ACIAR/WorldFish Milkfish Culture Project.
	4. Collaborate with IFREMER (French Research Institute for Exploitation of the Sea) in a joint project for aquaculture feeds from tuna fish meal in New Caledonia, Fiji Islands and PNG.	4. Feed research study with IFREMER completed with feed ingredients from Fiji being assessed.
	5. Maintain a watching brief on freshwater fisheries and opportunities for culture-based fisheries.	5. Maintaining a watching brief on freshwater fisheries and opportunities for culture based fisheries is an ongoing activity targeting mainly Melanesia.
	6. Develop regional (key commodities) and national (e.g. New Caledonia) specific fact sheets on aquaculture commodities.	6. Regional commodity fact sheets completed for GIFT tilapia, red tilapia and barramundi. National country specific factsheet on giant clams completed for New Caledonia.
	7. Provide technical assistance to the shrimp industry in New Caledonia.	7. Provided 3 country specific training on shrimp hatchery aquatic biosecurity to 3 local hatcheries in New Caledonia: Mara, EOD and EORI.
	8. Provide technical assistance and support to Phase II Grace of the Sea Project in Vanuatu, funded by the Japan International Cooperation Agency (JICA).	8. Three year project started in 2012. Sites in Vanuatu for the Phase II Project selected. An MOU between SPC/JICA developed.
	9. Provide technical assistance to sandfish (broodstock management, breeding strategies, larval rearing, nursery techniques and grow-out approaches) and seaweed trials in Kiribati.	9. Technical assistance provided to Kiribati mariculture hatchery on sea cucumber sandfish culture. Assistance on seaweed culture trials delayed to 2013.
	10. Provide technical assistance for establishment of mariculture hatchery facilities in 3 countries (e.g. New Caledonia, Samoa and PNG).	10. Technical assistance on hatchery development to PNG (Nago Is mariculture hatchery), Samoa (technical design of new hatchery completed and construction to begin in 2013) and New Caledonia (finfish hatchery in Nord Province completed).
	11. Provide technical assistance for hatchery and pond trials of the Eastern strain of <i>Macrobrachium rosenbergii</i> native to PNG under the ACIAR and Increasing Agricultural Commodity Trade (IACT) projects.	11. Macrobrachium hatchery construction has been completed. Sourcing and identification of broodstock from the wild have commenced in late 2012.
	12. Provide technical assistance, expert consultation and development assistance to identified projects under IACT.	12. Expressions of Interests (EOI) called (<i>SPC Fisheries Newsletter</i> # 137) and completed and country visits conducted in 2012 to identify potential projects.
	13. Provide technical assistance to scallop and lobster projects in New Caledonia.	13. Ongoing support with private sector to improving capture of juvenile lobster and scallop and growth assessment using various diet types (<i>SPC Fisheries Newsletter</i> # 138).

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	14. Provide training to PICTs via subregional workshops in seaweed farming, fish broodstock management, fish-feeds formulation and production, and milkfish capture-based culture.	14. Two Subregional trainings provided: milkfish culture in Vitawa, Fiji (<i>SPC Fisheries Newsletter</i> # 137) and on seaweed culture in Lombok Indonesia.
	15. Construct and operate a prototype aquaponics unit at SPC Suva as a demonstration of new and innovative techniques that conserve and recycle water.	15. Prototype aquaponic unit constructed at SPC Suva and in operation as a training facility.
	16. Facilitate attachment training for up to two member countries: French Polynesia (disease and diagnosis training in US) and Samoa (freshwater aquaculture training in Fiji).	16. Training attachments facilitated for: 1 French Polynesia Fisheries Officer for training on shrimp disease diagnostics in US, 1 Solomon Islands Aquaculture Officer and 1 Samoa Aquaculture Officer for training on freshwater aquaculture in Wuxi, China.
2.3 Competent authorities established and/or supported, using science-based approaches to manage aquatic biosecurity risks and to facilitate trade	1. Provide desktop advice on introductions and quarantine requirements on aquaculture where needed.	1. Ongoing advice provided on species introduction and quarantine requirements when needed.
	2. Undertake risk analysis for sandfish introduction in Kiribati and cobia introduction in PNG.	2. Risk analysis and report produced for sea cucumber sandfish introduction completed for Kiribati and on cobia for PNG.
	3. Hold regional workshop to assist PICTs on OIE reporting of live aquatics exports to EU.	3. Co-funded regional workshop to assist PICTs on OIE disease reporting in June 2012.
	4. Update aquaculture portal with trade statistics (official and provisional).	4. Ongoing activity on updating aquaculture portal.
	5. Provide assistance to two Pacific Island countries on aquatic biosecurity (Vanuatu and PNG).	5. Site visit to Vanuatu to develop aquatic biosecurity facility for new freshwater station in Port Vila, and assistance provided on completing aquatic biosecurity facility for Nago Island Mariculture facility in PNG.
	6. Provide support for development of a Micronesia subregional biosecurity framework.	6. Micronesia biosecurity policy framework developed and in near final stage.
	7. Provide country-specific training on diagnosis and management of health problems in aquaculture in two countries (Kiribati and Fiji).	7. Specific training provided to Fiji and Kiribati on sea cucumber sandfish culture and husbandry management at hatchery.
	8. Hold a mini-workshop to develop SPC regional biosecurity framework.	8. An SPC/FAO joint regional workshop on aquatic biosecurity and aquaculture statistics held to produce a draft regional strategy on aquatic biosecurity.
	9. Hold a workshop on aquatic species introductions (FAO-SPC-CBD [Convention on Biological Diversity]).	9. This was combined with activity item 8 above.

	10. Provide ongoing technical advice and assistance on quarantine requirements on species introduction for aquaculture.	10. As in item1 above.
	11. Compile importation standards and requirements in key export markets for aquaculture products.	11. Import standards on fish feed has been produced and is in a draft stage.
	12. Facilitate assistance to aquaculture associations and cooperatives to promote aquaculture development.	12. Delayed for 2013, under IACT project.

Objective 3: Develop sustainable nearshore fisheries in PICTs to provide food security, livelihoods, economic growth and climate change adaptation.

Results	2012 planned activities	Status at end of 2012
3.1 Subsistence, artisanal, sport and industrial fishing activities within the sustainable production level of the available fisheries resources	1. Provide technical and training assistance to at least 5 fishing associations under the DevFish-2 project.	1. Assistance provided to fishing associations in Tonga, Palau and to PITI.
	2. Complete fishing association sustainability study and present results at regional workshop.	2. Study and regional workshop completed.
	3. Facilitate development of strategic plans for the Pacific Islands Tuna Industry Association (PITIA) and at least 3 national associations.	3. Strategic plan for PITIA developed, national plans postponed to 2013.
	4. Facilitate establishment of PNA crewing liaison office.	4. Assistance started to establish PNA crewing liaison office.
	5. Develop Small Fishing Operation course for Kiribati Maritime Training Centre.	5. SFO course introduced in Kiribati.
	6. Organise Solomon Islands University internship with industry.	6. University internship organised.
	7. Support networking of tuna industry and fishing associations.	7. Ongoing networking supported.
	8. Hold DevFish-2 project steering committee meeting and SPC/FFA work programming meetings; undertake 6-monthly reporting to EU.	8. Steering committee and work programming meetings held; EU reporting done.
	9. Implement DevFish-2 project communication strategy with assistance from Econnect, including media articles and press releases, regular project newsletters, webpage updates, development of discussion forum.	9. Communication strategy implemented and communication flow increasing.
	10. Enhance DevFish-2 project visibility through production of brochure, DVD and various promotional materials.	10. Various promotional materials produced, more planned for 2013.
	11. Represent FAME and provide inputs at at least one JCS scoping mission.	11. No JCS scoping mission in 2012.
	12. Represent FAME on steering committee for New Zealand Aid Programme Regional Fisheries Training Programme.w	12. Steering committee not yet established.
	13. Represent SPC and the region in development process for FAO's Voluntary Guidelines for Small Scale Fisheries (VG-SSF); facilitate regional VG-SSF meeting.	13. Regional FAO/SPC VG-SSF meeting held in June.

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	14. Implement regional safety, fishing and fisheries economics course for fisheries officers (Vanuatu).	14. Fisheries Officers course conducted in October at VMC, Vanuatu (10 participants).
	15. Implement two pilot fisheries diversification projects: <i>bagan</i> baitfishing and diamond-back squid fishing.	15. Projects implemented; <i>bagan</i> baitfishing project to continue in 2013; squid resource found in New Caledonia.
	16. Undertake FAD projects and associated capacity development in at least 5 PICTs; provide FAD programme management advice/technical assistance to at least 3 more PICTs.	16. FAD projects implemented in Kosrea (FSM), Cook Islands, American Samoa, Vanuatu; technical advice provided to several other PICTs.
	17. Hold FAD fishing skills workshops in at least two PICTs.	17. FAD fishing skills workshops in Kiribati and Vanuatu (FO course).
	18. Conduct small boat safety training with parallel counterpart training in at least 2 PICTs.	18. Small boat safety training conducted in Kiribati and Vanuatu (FO course).
	19. Organise technical assistance and training in coastal sport fishing in at least 2 PICTs.	19. Training provided to sport fishing guides in Niue and New Caledonia.
	20. Facilitate introduction of Fisheries and Climate Change in TVET/school curriculum in at least one PICT – collaboration with the GIZ Coping with Climate Change in the Pacific Island Region (CCCPIR) project.	20. Contribution to TVET curriculum development in Vanuatu.
	21. Produce and distribute at least 5 new resource publications.	21. Policy Brief and poster on FADs, two Guidelines for responsible spearfishing, <i>bagan</i> operation manual and data collection system.
3.2 Resource materials, advice and training in appropriate fishing techniques and technologies	22. Update NFDS web portal on an ongoing basis; make regular contributions to <i>SPC Fisheries Newsletter</i> .	22. Web portal updated and several articles for the Fisheries Newsletter, reports and press releases.
	1. Provide technical assistance to Competent Authority in at least 5 PICTs.	1. Assistance provided to CAs in Fiji, Solomon Islands, PNG, Kiribati, Vanuatu, Samoa.
	2. Organise regional auditors training course, with teaching inputs.	2. Regional auditors training course conducted in May in Auckland.
	3. Facilitate two other regional workshops: OIE workshop with Aquaculture Section and EU/TRACE workshop with CFSMS.	3. OIE and TRACE/EU workshops facilitated.
	4. Provide inputs into development of seafood technology programme for PNG University of Technology.	4. Inputs into development seafood technology programme started, will continue in 2013.
	5. Develop training curriculum on thermal process canning operation.	5. Training curriculum developed, course on thermal process canning operation to be delivered in 2013.

	6. Conduct training in thermal process canning operation in at least one PICT.	6. Course to be delivered in 2013.
	7. Conduct HACCP (Hazard Analysis and Critical Control Points) training courses in at least 2 PICTs.	7. HACCP training conducted in Fiji and Solomon Islands.
	8. Develop or revise HACCP plans for at least 3 fish processing enterprises.	8. Four HACCP plans reviewed or developed and technical advice provided in Fiji and Solomon Islands.
	9. Introduce ISO22000 Food Safety Management System at one fish processing enterprise.	9. Training provided on ISO22000 Food Safety Management System in PNG.
	10. Provide thermal process equipment to PNG National Fisheries College (cost-shared).	10. Thermal process equipment procured to NFC.
	11. Support fish silage projects in at least 3 PICTs; organise regional workshop on fish waste utilisation.	11. Fish silage projects supported in Fiji, Vanuatu, and New Caledonia, advisory services provided to French Polynesia; regional workshop held in Noumea in June.
	12. Provide training in onboard fish handling to local fishers in at least 2 PICTs.	12. Training in onboard fish handling provided in Vanuatu (FO course) and Kiribati.
3.3 Optimum benefits from the resource through improved seafood quality standards and value-adding	1. Conduct economic assessment of fisheries and/or aquaculture projects in at least 3 PICTs.	1. Fisheries/aquaculture projects economically assessed in Marshall Islands (<i>bagan</i> fishing), Vanuatu (sea cucumber fishery).
	2. Provide advice to improve economic profitability to at least 3 fisheries and/or aquaculture enterprises.	2. Economic advice given to Wallis and Futuna (fuel study), New Caledonia (fish silage production), PNG (Kavieng seafood processing facility).
	3. Assess development proposals for economic viability in at least 2 PICTs.	3. Development proposals assessed in Tokelau (tuna jerky exports), Samoa (marine ornamental trade).
	4. Provide economic inputs into at least 3 regional studies and/or national development plans.	4. Economic inputs into sea cucumber and mariculture studies and giant clam trade consultancy (French Polynesia).
	5. Provide inputs into the development of at least 3 economic surveys/data collection systems.	5. Regional artisanal tuna fishing and <i>bagan</i> fishing data collection systems; coastal fisheries statistics (French Polynesia); aquarium importer, NMDI and sport fishing tourism surveys
	6. Produce financial management training workbook.	6. Financial management training workbook completed.
	7. Conduct at least 4 training courses in financial management, economics, project management and governance.	7. Financial management courses conducted in Fiji, Solomon Islands, Vanuatu (FO course), New Zealand (NMIT FO course).
	8. Produce at least one more fishery economics publication.	8. Fish waste policy brief drafted.

OCEANIC FISHERIES PROGRAMME

Objective 1: 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.

Results	2012 planned activities	Status at end of 2012
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 and analyses for South Pacific albacore tuna, striped marlin, and oceanic whitetip and silky sharks.	1. Assessments for South Pacific albacore, striped marlin and oceanic whitetip and silky sharks completed and presented to SC8. Progress on the swordfish assessment presented to SC8 and WCPFC9.
	2. Prepare assessment inputs for blue and mako sharks in the southwest Pacific.	2. Work progressed on blue shark assessment preparation, but WCPFC has delayed work on mako sharks.
	3. Undertake analyses to inform consideration of target and limit reference points and harvest control rules.	3. Analyses completed and presented to SC8. SC8 recommended, and WCPFC9 accepted, limit reference points for the main tuna species.
	4. Evaluate the performance of WCPFC conservation and management measures.	4. Evaluation of CMM 2008-01 completed and presented to WCPFC8, SC8, TCC8 and WCPFC9. Information presented to WCPFC9 regarding the development of a new CMM for tropical tuna.
	5. Produce the annual Tuna Fisheries Assessment Report.	5. The Tuna Fishery Assessment Report has been posted on the SPC website (http://www.spc.int/oceanfish/en/publications/cat_view/116-ofp-publications-a-documents/131-stock-assessment-and-modelling/181-stock-assessments/228-latest-stock-assessment-publications).
	Stock assessment research and development	
	6. Release versions of TUMAS that incorporate time area closures for the purse-seine fisheries.	6. The new version of TUMAS was released on 21 December 2012 and included the ability to specific FAD and total purse-seine closures (http://www.tumas-project.org).
	7. Conduct analyses of catch per unit effort (CPUE), size and tagging data in support of regional tuna stock assessment.	7. Analyses of CPUE to support the albacore, striped marlin and shark assessments were presented to SC8 as Information Papers.
	8. Continue development (in particular to support multi-species applications and management-related projection analyses), testing and documentation on the MULTIFAN-CL stock assessment software, with updated software and documentation posted on www.multifan-cl.org .	8. Substantial progress on MULTIFAN-CL was achieved in 2012, and reported in an Information Paper to SC8.
1.2 FFA and subregional oceanic fisheries management initiatives are supported by the best science-based stock assessments and advice	FFA support	
	1. Provide scientific support to the bio-economic evaluation of management options.	1. Projections were provided to FFA economists and used in bioeconomic analyses.

2. Provide scientific support to the evaluation of potential management options.	2. OFP staff attended the 8th FFA Management Options Consultation and the pre-WCPFC9 FFC meeting, providing input to the development of FFA-member positions for WCPFC9.
3. Provide scientific support to US Tuna Treaty consultations and negotiations.	3. Papers reviewing the purse seine fishery and observer and port sampling data were provided to the USTT Annual Consultation.
4. Communicate the information on management-related scientific work conducted for FFA.	4. Press release made on reference point and harvest control work undertaken for PNA, FFA, and WCPFC (http://www.spc.int/en/component/content/article/216-about-spc-news/1074-getting-to-the-point-on-pacific-tuna-fisheries.html).
PNA support	
5. Provide scientific information and analyses in support of the development of the longline vessel days scheme.	5. Papers and presentations made to several meetings of the steering committee plus national workshops for Palau, Marshall Islands, Federated States of Micronesia, and Solomon Islands.
6. Provide scientific information and analyses in support of the implementation of the purse-seine vessel days scheme.	6. Stock assessment outputs and analysis on vessel day calculations were presented to the PNA Purse seine VDS Technical Committee.
7. Provide scientific information and analyses to support the MSC certification conditions for the purse-seine fisheries, including work on target reference points and harvest control rules for skipjack tuna.	7. OFP staff worked closely with the PNA Office and assessors to provide information to the adjudication of objections to the assessment outcomes. The MSC certification was ultimately awarded. OFP staff also facilitated a PNA workshop pre-SC8 on limit reference points, leading to PNA and FFA adopting a strong position that was ultimately accepted by SC8 and WCPFC9.
8. Provide analyses of bio-economic trade-offs between FAD and free-school fishing.	8. Bioeconomic analyses of FAD closure options were provided to PNA members in early 2012, and updated in late 2012.
Support to the Sub-Committee on South Pacific Tuna and Billfish Fisheries (SC-SPTBF)	
9. Summarise recent trends in the southern longline fishery.	9. Paper presented to the 11th meeting of the Subcommittee on South Pacific Tuna and Billfish Fisheries.
10. Conduct simulation studies into the impacts of various reference points for South Pacific albacore, including the development of harvest control rules. Analyses should draw on economic information where possible.	10. Paper presented to the 11th meeting of the Subcommittee on South Pacific Tuna and Billfish Fisheries.
11. Provide the necessary data summaries to support the SC-SPTBF's deliberation of allocation options and attending in-country workshops as required.	11. Paper presented to the 11th meeting of the Subcommittee on South Pacific Tuna and Billfish Fisheries.
12. Continue research into oceanographic impacts and potential range contraction of tropical tuna species.	12. Paper presented to the 11th meeting of the Subcommittee on South Pacific Tuna and Billfish Fisheries.
Support for Te Vaka Moana	
13. Similar to SC-SPTBF.	13. Attendance at several TVM meetings and provision of data summaries to assist in allocation discussions. Also input to the TVM-requested WCPFC paper on South Pacific albacore.

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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 tuna fisheries status reports	
	1. Finalise national tuna fishery status reports (NTFSRs) for Kiribati, Solomon Islands, and Cook Islands.	1. The Kiribati and Solomon Islands NTFSRs were finalised in 2012 and Solomon Islands report was presented to the fisheries department. Feedback on a final draft of Cook Islands NTFSR is still awaited, and finalisation is expected in early 2013.
	2. Complete NTFSRs in the new format for at least three of the following members: Cook Islands, Tuvalu, Solomon Islands, Fiji, CNMI and American Samoa.	2. NTFSRs are no longer being produced by OFF, instead this is being delivered through the enhanced country web pages with full narratives. These are near completion for Cook Islands, Fiji, and Solomon Islands.
	3. Enhance secure national webpages containing updatable information of fishery trends and stock status information.	3. Enhanced webpages were updated in late 2012 for all SPC members.
	Issue-specific national reports	
	4. Analyses of FAD closure impacts, including bio-economic considerations, for FSM, Kiribati, Nauru, Marshall Island, PNG, Solomon Islands and Tuvalu.	4. ISNRs delivered in early 2012 and updated in late 2012.
	5. Analysis of potential interactions between artisanal and commercial fisheries for Cook Islands, Kiribati, Nauru, Tuvalu, Tokelau and Vanuatu.	5. Draft reports for each country were provided to FFA for comment in December 2012 and will be distributed to the countries for comment in early 2013.
	Support for development of national tuna management plans and associated instruments	
	6. Provide technical support to national tuna management plan development in Fiji (including support for the MSC process and bio-economic modelling), American Samoa, CNMI, and Guam.	6. Technical analyses were presented to several meetings in Fiji. No specific requests for technical support in stock assessment have been received for the other countries.
	7. Respond to ad hoc requests for scientific information and analyses in support of national tuna management.	7. Ad-hoc requests were responded to for several countries and these included country visits to Fiji, Nauru, Samoa, and Niue.
1.4 Enhanced capacity of SPC MEMBERS to interpret stock assessment information and advice	Attachments	
	1. Complete attachments of fishery officers for at least two from Fiji, CNMI, and American Samoa.	1. Due to staff turn-over no in-house attachments were possible in 2012 and have been deferred to 2013. Some collaborative work was undertaken with a Fijian scientist in Fiji on shark-related issues.
	2. Support of member participation at regional meetings.	2. Support was provided to members participating in SC8, WCPFC8 and WCPFC9.
	3. Contribute to briefing material and talking points for WCPFC SC8 and WCPFC8 and 9 (led by FFA).	3. Contributions to and comments on the briefs were provided. Staff also participated actively in the pre-meeting FFCs that worked through the briefs and drafted talking points.

Objective 2: 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.

Results	2012 planned activities		Status at end of 2012
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. Conduct paired spill and grab sampling experiments on at least 10 purse-seine trips.		1. 25 paired spill and grab samples were conducted.
	2. Conduct an at-sea video monitoring trial on a purse seiner and evaluate the potential utility in routine catch monitoring.		2. The at-sea video monitoring trial was conducted in collaboration with ISSF in May.
	3. Using all available data, update the estimation of selectivity bias based on paired spill and grab samples collected by observers on purse seiners.		3. The estimation of selectivity bias in grab samples collected by observers on purse seiners was updated and a working paper was presented at SC8.
	4. Provide estimates of purse-seine catch composition by species and size, based on observer grab samples corrected for selectivity bias.		4. Estimates were updated and a working paper presented to SC8.
	Non-target species		
	5. Estimate catches of key shark species based on observer data.		5. Catch of oceanic whitetip and silky sharks were estimated as part of the assessment process and reported in a SC8 information paper.
	6. Estimate catches of other non-target species based on observer data.		6. Catches of billfish species and aggregate discards were estimated and presented in a SC8 working paper.
	Technical support to the WCPFC Secretariat		
	7. Provide advice on fishery monitoring issues to WCPFC as requested.		7. A plan for the improvement of the availability and use of purse-seine catch composition data was requested by WCPFC and an information paper on this topic was provided to WCPFC8.
2.2 Enhanced national oceanic fishery monitoring by SPC MEMBERS to meet national and international obligations	Regional coordination		
	1. Conduct the 9th meeting of the SPC-FFA Data Collection Committee (provisional).		1. DCC9 has been postponed and will take place in Rarotonga in February 2013.
	2. Provide data collection forms to national fisheries administrations on a request basis.		2. Distributions of data forms were continued throughout 2012. Longline logsheet forms were updated to include new requirements for species-specific shark reporting.
	3. Prepare and publish online the 9th edition of the <i>Fork Length</i> newsletter.		3. Preparation of the 9th edition of <i>Fork Length</i> will take 4–6 weeks and has been postponed due to time constraints.
	National fishery monitoring support		
	4. Develop and update MOUs with members for the provision of technical support and funding of sampling programmes and related positions.		4. MOUs developed and/or updated for Cook Islands, Kiribati, Samoa, Tuvalu and Vanuatu.
	5. Follow up on previous National Tuna Data Workshops in Solomon Islands, Marshall Islands and Nauru to review implementation of fishery monitoring recommendations.		5. NTDW were followed up in Nauru in June and Solomon Islands in November. Follow-up for Marshall Islands has been postponed. Sampling programmes in French Polynesia were reviewed in September.



6. Support the implementation of TUFMAN Artisanal Fisheries Database (TUF-ART), in Cook Islands, Tuvalu and Tokelau.	6. TUF-ART was installed in Cook Islands in June. A training database was installed in Tuvalu in September. TUFMAN and TUF-ART were installed in Tokelau in September.
7. Develop, maintain and disseminate (OFP and/or national webpages) an in-country hardware/software minimum standards document.	7. This activity is covered under section 2.4, item 20.
Develop or enhance national observer programmes	
8. Coordinate the development of Pacific Island Regional Fisheries Observer (PIRFO) programmes as required.	8. A PIRFO Trainer Assessor's Workshop and a PIRFO Training Resources Workshop were held in Noumea in August. Assistance with the pre-selection of participants at observer training courses was provided. Ongoing advice regarding the training of observers, observer debriefers and observer trainers was provided when organising and conducting training courses and workshops (see below).
9. Coordinate technical support provided to PIRFO programmes by observer trainers, technical advisors and field technicians as required.	9. Observer and observer debriefer training courses and workshops were coordinated (see below).
10. Develop competency-based training (CBT) standards.	10. The Report of the PIRFO Competency Based Training and Certification Project was finalised.
11. Develop other regional standards for PIRFO programmes in collaboration with FFA, WCPFC Secretariat, SPC-FFA Data Collection Committee, etc., and supervise the PIRFO website.	11. No other standards were developed.
12. Improve data collection protocols as required through paired sampling on purse seiners, the use of motion-compensated scales and other special projects.	12. The spill sampling data collection protocol for observers on purse seiners was documented and presented in a working paper at SC8.
13. Participate in the ISSF purse-seine bycatch mitigation project.	13. See section 2.1, item 2.
14. Evaluate support required for observer programme in Palau.	14. Support for Palau and pre-selection for observer training courses was done during a visit in February.
15. Assist with observer pre-selection in Marshall Islands.	15. Pre-selection for observer training courses in Marshall Islands was done in February and May.
16. Review of sampling programmes in Solomon Islands.	16. Sampling programmes in Solomon Islands were not formally reviewed; however, advice was provided on the development of the sampling programmes during observer and observer debriefer training courses in June.
17. Provide support for the PNG observer programme and development of data collection protocols.	17. Assistance was provided for observer and observer debriefer training courses during four visits in January, March, July and October.

	Develop or enhance national port sampling programmes	
	18. Review port sampling data quality.	18. Port sampling data quality was reviewed in 2008 and a working paper was presented at SC4. This review has not been updated.
	19. Implement routine port sampling of purse-seine landing categories at Noro, Solomon Islands.	19. Port sampling of landing categories at the cannery in Noro, Solomon Islands was conducted in the context of a study to compare species composition determined from logsheets, observer data and cannery receipts.
	Auditing of national tuna fishery monitoring	
	20. Develop procedures for reviewing data collection systems as part of auditing of national tuna fishery monitoring.	20. This activity is covered in section 3.3, items 22–23.
	21. Participate in WCPFC audits of observer programmes as requested by the WCPFC Secretariat.	21. No requests to participate in WCPFC audits were received.
	Artisanal fishery monitoring	
	22. Develop resource materials for artisanal tuna fishery monitoring, including an artisanal fishery monitoring guide.	22. A draft <i>Artisanal Fishery Monitoring Guide</i> and a draft <i>Species Identification Guide for Small-Scale Fisheries</i> were developed.
2.3 Enhanced capacity of SPC MEMBERS in fisheries monitoring, data management and data use.	Support for national tuna data coordinators	
	1. Conduct a national tuna data workshop (NTDW) in Vanuatu (with Data Management Section).	1. A NTDW was held in Vanuatu in March.
	2. Conduct a national artisanal tuna data workshop in Tuvalu (with Data Management Section).	2. An artisanal NTDW was held in Tuvalu in September.
	3. Hold the annual regional tuna data workshop (RTDW) (April 2012) (with Data Management Section).	3. The sixth RTDW was held in Noumea in April.
	Observer training	
	4. Hold subregional observer training course for Cook Islands, French Polynesia and Samoa in Apia.	4. An observer training course for Cook islands was held in Rarotonga in January.
	5. Provide national observer upgrade training for cadets in FSM.	5. The training for cadets was cancelled and combined with the basic course below.
	6. Hold subregional observer training course for FSM and Palau in Pohnpei.	6. An observer training course for FSM, Marshall Islands and Palau was held in Pohnpei in April.
	7. Hold subregional observer training course for Fiji and Tonga in Suva.	7. An observer training course for Fiji, Samoa and Tonga, Tuvalu was held in Suva in May–June.
	8. Assist with subregional observer training course for PNG and Tuvalu in Kavieng and develop auditing procedures for observer training courses and institutions.	8. An observer training course for Papua New Guinea was held in Kavieng in March–April. Responsibility for auditing procedures was taken over by the WCPFC Secretariat.

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9. Hold national observer training course for Solomon Islands in Honiara.	9. Two observer training courses for Solomon Islands were held in June and July.
10. Hold subregional observer training course for Niue, Tokelau, Tuvalu and Vanuatu in Port Vila.	10. An observer training course for Fiji, Tokelau, Tonga and Vanuatu was held in Santo in July–August.
11. Assist with subregional observer training course for PNG and Palau in Kavieng and develop auditing procedures for observer training courses and institutions.	11. An observer training course for Papua New Guinea and Tonga was held in Kavieng in July.
12. Hold national observer training course for Kiribati in Tarawa.	12. An observer training course for Kiribati was held in Tarawa in November. An observer upgrade course for longline for Kiribati was also held in Tarawa in November.
13. Assist with subregional observer training course for PNG and Palau in Kavieng and develop auditing procedures for observer training courses and institutions.	13. An observer training course for PNG and Tuvalu was held in Kavieng in November.
14. Hold national observer training course for Marshall Islands in Majuro.	14. An observer training course for FSM, Marshall Islands and Solomon Islands was held in Majuro in September–October.
15. Hold subregional observer training course for Fiji, Nauru, Tuvalu and Vanuatu in Port Vila.	15. An observer training course for Cook Islands, FSM, Nauru, Tokelau and Tuvalu was held in Santo in November–December. An unscheduled observer training course for Fiji was held in Suva in September–October. During the observer training courses, 7 observer trainer trainees from FSM (1), Fiji (1), Marshall Islands (1), PNG (3), Solomon Islands (1) participated and worked towards certification.
Other observer programme support	
16. Conduct an observer trainers workshop and observer trainer certification.	16. A trainers assessors workshop and a training resources workshop were held in Noumea in August.
17. Produce longline and purse-seine observer guides.	17. A draft Purse-seine Observer Guide was completed and a Longline Guide was commenced.
18. Conduct an observer debriefing workshop.	18. A regional debriefer training workshop for Fiji, Nauru, Solomon Islands, Tonga, Tuvalu and Vanuatu was held in Noumea in May. A regional debriefer training workshop for Cook Islands, Marshall Islands, Nauru, PNG and Solomon Islands was also held in Honiara in June.
19. Provide debriefer training during in-country visits or in workshops.	19. Four national debriefer training workshops for PNG (3) and Kiribati (1) were held.
20. Hold regional observer coordinators workshop (ROCW).	20. The ROCW was held in Tonga in February.
21. Host 4 fishery monitoring training attachments (including Solomon Islands and Palau).	21. Four attachments from FSM (1), Solomon Islands (2) and Tokelau (1) were trained in collaboration with the Data Management Section.

Objective 3: Provide high-quality data management services and capacity development to support the management of oceanic fisheries by regional, subregional and national fisheries

Results	2012 planned activities		Status at end of 2012
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, check the quality of, and manage the WCPFC databases (annual catch estimates, aggregated catch and effort data, operational [logsheet] data, aggregate size composition data).	1.	All WCPFC data imported into the WCPFC databases prior to SC8. WCPFC data provided to Secretariat with the CES system on a regular basis.
	2. Review Chinese data and liaise with China to address problems relating to catch attribution.	2.	Informal meetings with Chinese delegate at SC8 and WCPFC9 to discuss issues with Chinese data. Ongoing.
	3. Incorporate shark species data into WCPFC databases.	3.	Latest shark species data incorporated into the annual catch estimates and aggregate data prior to SC8.
	Routine papers for WCPFC meetings		
	4. Provide scientific data to the Commission.	4.	Prepared and presented at SC8
	5. Prepare annual catch estimates for the WCPFC area.	5.	Prepared and tabled at SC8
	6. Provide an overview of WCPFC tuna fisheries, including economic conditions.	6.	Prepared and presented at SC8
	7. Provide recent changes in scientific data for stock assessments.	7.	Not required for SC8.
	Data dissemination		
	8. Produce and publish on the commission's website the Tuna Fishery Yearbook (2011), containing annual catch estimates by gear type, flag and species.	8.	Prepared and published on WCPFC website in November 2012 (http://www.wcpfc.int/statistical-bulletins)
	9. Maintain relevant webpages on the WCPFC website – Bycatch Mitigation Information System (BMIS), data provision tables, Regional Observer Programme (ROP) data provisions.	9.	Updated to reflect the latest data provisions prior to SC8.
	10. Disseminate data to members and others according to the WCPFC rules and procedures.	10.	Three requests for WCPFC ROP data were actioned during 2012 and seven requests for WCPFC non-public domain catch/effort data.
	11. Prepare and publish public domain data on the WCPFC website.	11.	Latest version of the WCPFC public domain data were prepared and published on the WCPFC website on 31 October 2012.
	ROP data management		
	12. Enter, undertake quality control on, and manage the WCPFC ROP data.	12.	A significant amount of ROP data were entered and checked during 2012 (see http://www.wcpfc.int/doc/WCPFC-TCC8-2012-16/Report-Status-ROP-Data-Management).
	13. Provide advice on ROP data management issues, including SC and TCC papers, as required.	13.	See http://www.wcpfc.int/doc/WCPFC-TCC8-2012-16/Report-Status-ROP-Data-Management .

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14. Develop a version of TUBS VIEWER for the WCPFC Secretariat and provide training as required.	14. TUBS Viewer was developed during 2012 but yet to be installed at the WCPFC Secretariat (scheduled for March 2012).
15. Provide ad hoc ROP data summaries as required.	15. Various ad hoc ROP data summaries provided on request during the WCPFC meetings and for the Secretariat and CCMs via email requests during 2012.
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'.	16. Several informal discussions with the WCPFC Secretariat staff on (i) interpretation of the data rules and (ii) possible future enhancements of the data rules.
17. Prepare data summaries for the evaluation of conservation and management measures.	17. Data summaries prepared as papers for the WCPFC Technical Compliance Meeting (TCC8) – (see http://www.wcpfc.int/doc/WCPFC-TCC8-2012-IP04-Att/Attachment-WCPFC-TCC8-2012-IP04-Catch-and-Effort-tables-CMM-2008-01-%E2%80%93p) and the WCPFC Regular Session (WCPFC9) – (see http://www.wcpfc.int/node/6496)
18. Prepare catch data summaries to determine WCPFC member budget contributions.	18. Catch data summaries for latest years prepared and provided to the Secretariat in September 2012.
19. Provide monthly updates of tuna fishery database systems.	19. Tuna fisheries data and systems provided to WCPFC through the secure OFP webpages. These data are generated automatically on a monthly basis.
20. Provide training to secretariat staff in CES and Observer Trip Viewer.	20. Basic training in using the CES and the Observer Trip Viewer systems provided in March 2012 (in the fringes of the WCPFC8 meeting).
Technical support to the Western Pacific East Asia (WPEA) Oceanic Fisheries Management Project	
21. Convene national annual catch estimates and data review workshops in Indonesia, the Philippines and Vietnam.	21. Six workshops conducted in the three WPEA countries during 2012 (three annual catch estimates workshops and three data review workshops). See workshop reports at http://www.wcpfc.int/west-pacific-east-asia-oceanic-fisheries-management-project .
22. Update latest data management software and provide training in Indonesia, the Philippines and Vietnam.	22. The latest versions of the TUFMAN database system and NSAP (Philippines) system provided to Philippines and Vietnam during 2012. Basic training provided to two Vietnam counterparts during 2012.
23. Review databases and conduct data collection and management system audits in Indonesia, Vietnam and the Philippines.	23. Data audits conducted in each WPEA country during 2012 and outcomes presented and documented at the respective data review workshops.
24. Import WPEA data into WCPFC databases for use in 2012 stock assessments.	24. All WPEA data provided in 2012 were imported into the WCPFC databases prior to December 2012.

3.2 The oceanic fisheries management initiatives of FFA and other subregional fisheries organisations are supported by efficient and cost-effective data management services	Provision and receipt of data and database systems	
	1. Provide quarterly updates of the 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.	1. The latest version of the CES database system with each country's data are now generated and made available each week for download on secure webpages of the OFP we site.
	2. 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.	2. The catch by EEZ database was generated, on average, every two months during 2012, including preliminary work on incorporating the coverage rates from the VMS-logsheet reconciliation data.
	3. Provide CES training to FFA staff as required.	3. There were no opportunities for training FFA staff during 2012.
	4. Provide CES training to PNA office staff as required.	4. A demonstration of the CES system was provided to PNA office staff, but no formal training was provided.
	5. Provide CES training to TVM office staff as required.	5. Basic level training in CES was provided to the TVM office coordinator in the fringes of one of the regional meetings.
	6. Provide TUBS VIEWER training to FFA and PNA office staff as required.	6. FFA staff were trained in using TUBS system in October 2012. The PNA office have yet to request the TUBS system.
	7. Receive and import US Treaty and FSM Arrangement observer data.	7. US Treaty and FSM Arrangement (FSMA)observer data were received and imported at three occasions during 2012.
	8. Process the PS-4 forms and import into observer database.	8. US treaty and FSMA PS-4 data regularly received and entered. Ongoing.
	9. Receive, enter and import US Treaty and FSM Arrangement logsheet data.	9. US Treaty and FSMA Logsheet data regularly received and entered. Ongoing.
	10. Receive and import VMS data.	10. VMS data regularly received and imported.
	11. Receive and import FFA vessel register data.	11. FFA vessel register data regularly received and imported.
	12. Receive and import regional licensing data.	12. Liceninsg data from TUFMAN regularly imported to regional licensing database.
	13. Review data exchange protocols for SPC/FFA colloquium.	13. Conducted (1st quarter 2012).
	14. Request the provision of PNA vessel days for inclusion in a dedicated database which can be queried by CES.	14. Data requested, yet to be received.
	Provision of reports and data summaries	
	15. Provide routine papers for US Treaty Annual Consultation.	15. Two papers prepared and provided for the US Treaty Consultation (1st quarter 2012).
	16. Provide data summaries and reports for the PNA purse-seine vessel days scheme.	16. At least 8 data summaries prepared and provided as requested.
	17. Provide data summaries and reports for the PNA longline vessel days scheme.	17. At least 3 data summaries prepared and provided as requested.
	18. Provide data summaries and reports for TVM initiatives.	18. At least 2 data summaries prepared and provided as requested.
	19. Provide data summaries for FFA in advance of WCPFC sessions as required.	19. At least 5 data summaries prepared and provided as requested.

	Joint database initiatives	
	20. Review status of FFA using TUBS (observer database system).	20. TUBS installed at FFA offices in October 2012.
	21. Establish reference table standards between SPC and FFA.	21. An agreed master set of reference tables have been established as a result of an SPC/FFA IT Meeting in August 2012.
	22. Liaise with FFA to obtain relevant information from the TUBSMAN system as per SPC/FFA data exchange agreement.	22. The OPM (ex-TUBSMAN) system has been established and data will be provided to SPC during 2013.
	23. Liaise with FFA to conduct an audit of the observer data they enter.	23. No action as yet but scheduled for 2013.
	24. Encourage participation in TUFMAN MCS database deployment the output of which is used in FFA regional MCS.	24. Visits to at least four member countries related to TUFMAN MCS work. The TUFMAN MCS data schemas have been provided to FFA to assist in their development of their web-based version.
	25. Provide advice related to the PNA Fisheries Management Information System (FMIS) initiative as required. • Development of a licensing report from national TUFMAN systems for submission to PNA.	25. Completed and PNA now receive automatically generated license lists from several PNA members.
	Contribute to regional MCS work to detect illegal, unreported and unregulated (IUU) fishing	
	26. Participate in Regional MCS Working Group.	26. Completed successfully.
	27. Participate at Regional Licensing Officers Workshop.	27. Completed successfully.
	28. Develop and install tools that assist in regional MCS work undertaken by FFA.	28. Various tools provided to the RFSC during 2012, including the introduction of the AIS data.
	29. Participate in regional MCS operations as required.	29. Actively participated in the provision of technical support in each of the four regional operations.
	30. Conduct analyses to detect patterns in IUU fishing.	30. Preliminary work only, for example, considering spatial distribution of the edges of the warm pool to predict concentrations of vessels in the purse-seine fishery.
	31. Estimate the level of IUU fishing in the region.	31. An early draft structure of a report was produced by December 2012.
3.3 Enhanced national oceanic fishery data management by SPC MEMBER COUNTRIES to meet national requirements and international obligations	Data processing services	
	1. Manage, register, enter and verify data provided by SPC members: a. Logsheet data; b. Port sampling data; c. Observer data.	1. Ongoing task.
	2. Import data provided by SPC members in electronic form: a. Logsheet data; b. Port sampling data; c. Observer data.	2. Ongoing task.
	3. Conduct and evaluate a trial of observer-based data entry at sea (FSM).	3. No trials were possible during 2012.

4. Provide technical support for data scanning in SPC member countries.	4. Various ongoing support was provided during 2012 including the provision of the latest version of scanning software (SLOPS v3.0) and a comprehensive scanning user manual.
5. Develop the new database systems with MS SQL back-end: a. Logsheet Data Entry/Verification System (for SPC).	5. Preliminary design of system undertaken. Ongoing.
Provision of database systems	
6. Install updated TUFMAN systems remotely in fisheries offices on a regular basis.	6. TUFMAN database system advanced from version v6.13 to v6.24.
7. Conduct visits for TUFMAN installation/training in Samoa, Tokelau, FSM and Fiji.	7. Member country visits related to TUFMAN work conducted in Cook Islands, FSM, Marshall islands, PNG, Samoa, Tokelau, Kiribati.
8. Continue ongoing development of the TUFMAN system, including as top priority: a. Optimise TUFMAN reports for MS SQL; b. Design a TUFMAN data warehouse and consider a new standalone TUFMAN reporting module which could be Web-based, TUFMAN-CES, etc.; c. Include catch by species in the VMS-logsheet reconciliation report; d. Implement new logic for catch nationality and consider FLEET database; e. Implement the Fiji OFFLOAD NOTIFICATION module; f. Enhance the VDS Management System; g. Consider better ways of updating the WCPFC Yearbook and VMS data in country versions of TUFMAN.	8. a. A number of reports and functions were converted to 'pass-through' queries for enhanced performance. Ongoing. b. No action – rescheduled for 2013. c. Completed d. Rescheduled for 2013. This will be handled by the 'recon'. e. Not required now. f. Minor enhancements as requested g. No action – carried over
9. Consider long-term development objectives: a. Enhance the VMS data use in TUFMAN and TUBS; b. Investigate and implement alternative GIS to Mapinfo.	9. a. No action – carried over. b. Alternatives were investigated but none found that filled all the criteria. The criteria have now been revised and are now fulfilled by some of the tools that were investigated. Some OFP software now uses Google Earth as the GIS.
10. Continue development, support and maintenance of other data systems used by member countries: a. CES; b. TUBS; c. TUBS VIEWER; d. TUFMAN Artisanal Fisheries Database (TUF-ART); e. TUFMAN MCS.	10. Most of these systems were significantly enhanced during 2012, particularly the TUBS system which was re-developed as a Web-based system in view of future technological developments (i.e. E-reporting and 'Cloud' computing).

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11. Enhance capacity of OFP Data Management Section staff to better support TUFMAN and TUBS in country, extending the capacity development to other OFP sections and CFP.	11. Several in-house meetings during 2012 served to enhance the capacity of Data Management section staff with respect to the key OFP systems – TUFMAN and TUBS.
12. Distribute CES monthly (through the country webpages).	12. Completed.
13. Distribute the Observer Trip Viewer System / TUBS VIEWER (through the country webpages) on a monthly basis.	13. Completed.
14. Undertake national installations of TUBS (observer database system) in PNG and Cook Islands.	14. TUBS was installed in PNG and Solomon Islands during the 4th quarter 2012. Installations for Fiji and Cook Islands planned for early 2013.
15. Compile a basic list of observer trips conducted by subregional and national observer programmes to determine coverage of observer data provided.	15. Completed. A database system of observer trips conducted was established and regular requests for information from national programmes are now made.
16. Develop the new database systems: a. TUBS Viewer System.	16. Completed.
17. Install TUBS in SPC Pohnpei, including training of data entry staff.	17. Rescheduled for 1st quarter 2013 with SPC Pohnpei staff moving to WCPFC offices.
18. Improve MCS capabilities to identify IUU fishing using database system.	18. No action as yet.
19. Participate in regional information management systems (IMS) development initiatives: a. Meeting(s) to discuss strategy for implementation of OFP systems at PNG/NFA; b. Site visits to integrate TUFMAN and TUBS into PNG/NFA FIMS system; c. Meeting(s) to discuss strategy for implementation of OFP systems in Cook Islands; d. Site visits to integrate TUFMAN and TUBS into Cook Islands IMS system.	19. OFP staff attended four regional IMS-related meetings during 2012 and had significant input into the proposed 2012 and 2013 work plans in this area.
20. Develop, maintain and disseminate an in-country hardware/software minimum standards document. <u>Improving data quality and coverage.</u>	20. Document updated as required. Ongoing.
21. Develop the new database systems: a. Observer Debriefing Database System; b. Observer Data Auditing System; c. TUFMAN Logsheet data Audit System.	21. a. Developed and operational b. Developed and operational. Ongoing work expected. c. Developed and operational as an in-house product. Ongoing work expected.

	22. Conduct in-country and remote national TUFMAN data audits: a. In Solomon Islands, PNG, Cook Islands and one other country; b. Include SPC-entered logsheet, unloading and port sampling comparisons as standard remote audit checks.	22. Audits conducted in Vanuatu, Solomon Islands, Marshall Islands and Cook Islands. Web audit tools developed for VMS-logsheet reconciliation (soon available for all countries).
	23. Conduct in-country and remote national OBSERVER data audits: a. PNG/NFA, on a regular basis.	23. No action as yet. Rescheduled for 2013.
	24. Implement OBSERVER DATA ENTRY helpdesk to identify and rectify problems.	24. Completed.
	25. Conduct port sampling data quality screening at SPC using PORT Admin system.	25. Conducted on an ad hoc basis. Ongoing.
	26. Import data provided from the PNG/NFA EFORMS initiative and compare it with (i) VMS data and (ii) logbook data to provide advice on quality issues back to PNG/NFA.	26. No data yet available. Pending receipt of data.
	27. Commence development of a data quality control module for post-entry logsheet checking at SPC.	27. No action as yet.
	28. Commence development of a data quality control module for post-entry observer checking at SPC.	28. A system for post-entry data checking and back-filling in TUBS has been developed. Ongoing.
	29. Enhance tools to check the coverage of logsheet data.	29. Significant progress in the VMS-logsheet reconciliation tool which is now accessible via a Web-based system.
	30. Develop workbooks, standards and general documentation for data quality control and auditing.	30. No addition to existing documentation as yet. Rescheduled for 2013 once development has been advanced.
	31. Identify data gaps and follow up with countries regarding submission of missing data.	31. Various work in this area with the member countries during 2012 using the VMS-reconciliation tool resulting in improved coverage rates for processed logbook data.
Online data summaries		
	32. Enhance the SPC/OFP in-country webpages and provide training to national fisheries officers in accessing these webpages.	32. Significant work on redevelopment of SPC/OFP in-country webpages including the support of data summaries for the WCPFC Part 1 Annual Report.
3.4 Enhanced capacity of SPC MEMBER COUNTRIES in oceanic fishery data management and data use	Capacity development	
	1. Conduct the Sixth Annual Tuna Data Workshop (April 2012).	1. Completed – April 2012.
	2. Conduct the Regional TUFMAN Workshop.	2. Completed – December 2012.
	3. Liaise with the OFP Fisheries Monitoring Section to conduct a national tuna data workshop in Vanuatu.	3. Completed with data audit conducted.
	4. Liaise with the OFP Fisheries Monitoring Section to conduct a national artisanal fisheries data workshop in Tuvalu.	4. Completed. No direct participation, but contributed to the preparations for the workshop.

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	5. Assist countries to prepare Part 1 national reports for WCPFC SC.	5. Assistance provided to seven member countries (FSM, Kiribati, Marshall Islands, Nauru, Palau, Tokelau and Vanuatu) and the Philippines.
	6. Train national tuna fishery data management staff in the use of TUFMAN and other database and sampling programme management software during in-country visits to FSM, Samoa, Tokelau, Fiji and other relevant countries.	6. Training provided during visits to Cook Islands, FSM, Marshall Islands, PNG, Samoa, Tokelau, Kiribati and Solomon Islands.
	7. Develop training resources for TUFMAN and TUF-ART.	7. Significant training resources developed for TUFMAN in the lead-up to the Regional TUFMAN Training workshop (see http://www.spc.int/Ocean-Fish/en/meetingsworkshops/tufman-training-workshop/372-tufman-training-workshop-1). Training resources for TUF-ART developed during visits to Kiribati and Tokelau.
	8. Host training attachments in data management principals and database systems for fisheries officers from Tonga, PNG and other relevant countries.	8. Training attachments conducted at SPC for FSM, Tokelau, Solomon Islands (2) and Kiribati.
	9. Assist countries to improve national capacity through funded data entry positions in FSM.	9. One data entry position funded at NORMA during 2012.
	10. Assist countries to improve their fisheries IT infrastructure, including: a. Provision of new scanners in relevant member countries; b. Provision of new network servers in relevant member countries.	10. The latest version of the OFP scanning software (SLOPS v3.0) provided to all countries during 2012, 5 new scanners provided to member countries and 4 new servers provided to member countries (PNG, Solomon Islands, Tokelau and Tuvalu).
	11. Offer ad hoc national support through provision of data summaries and advice during WCPFC meetings.	11. Various support provided to member countries during the WCPFC SC (August), Technical and Compliance Committee (September) and the main regular session (December).

Objective 4: Improve understanding of pelagic ecosystems in the western and central Pacific Ocean.

Results	2012 planned activities	Status at end of 2012
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. Conduct tuna tagging campaigns in the western and central Pacific for the provision of data for stock assessment – in 2012, one two-month cruise in PNG and one four-week cruise in the central Pacific.	1. Tagging cruises completed with 39,926 tuna tagged in PNG and 6174 tagged in the central Pacific.
	2. Publish analyses of horizontal and vertical movements of equatorial tuna in peer-reviewed literature.	2. Ongoing.

	3. Publish temporal changes in exploitation and FAD impacts in peer reviewed literature.	3. Completed. See Leroy et al. (2012). Aquatic Living Resources. DOI: 10.1051/alr/2012033.
	4. Implement tag recovery programme, including on catcher vessel, transshipment, unloading and cannery locations.	4. Completed. Additional tag recovery officers appointed in Kiribati and Philippines.
	5. Implement 50 tag seeding experiments on purse seiners.	5. Ongoing with 2012 targets completed.
	6. Conduct training of observers in tag recovery during regular observer training workshops.	6. Completed. Tag recovery now part of regular curriculum for observer training.
	7. Continue the validation of tag return data.	7. Ongoing with 2012 targets completed.
	Tuna biological research	
	8. Publish preliminary analyses of bigeye age, growth and reproductive biology in peer reviewed literature.	8. Ongoing.
	9. Publish albacore age, growth and reproductive biology in peer-reviewed literature.	9. See Williams et al. (2012). PlosOne. 7(6): e39318; and Farley et al. (accepted). PlosOne.
	Deepwater Snapper	
	10. Snapper biological data collection for stock assessment commenced.	10. Logbook and Port sampling implemented in Tonga, Samoa and Vanuatu Two scientific cruises implemented sampling in Fiji, Samoa, Wallis and Futuna, and Tonga
	Trophic dynamics	
	11. Collect stomach and muscle samples and fatmeter measurements during tagging cruises and observer trips.	11. Completed.
	12. Submit analyses of the impacts of FADs on trophic ecology for publication.	12. Ongoing.
	13. Submit analyses of albacore diet for publication.	13. See Menkes et al. (2012). www.zoneco.nc.
	14. Publish analyses of the interaction between coastal and oceanic ecosystems in peer reviewed literature.	14. See Allain et al. (2012). PlosOne. 7(5): e36701.
4.2 Appropriate ecosystem models and analyses are available to inform ecosystem-based fisheries management	1. Complete SEAPODYM reference fits for yellowfin tuna and South Pacific albacore and submit them for publication.	1. Reference fit for South Pacific Albacore completed and publication in final draft before publication. Yellowfin reference fit is ongoing.
	2. Prepare one report on impact of environmental variability on tuna distribution at the regional level.	2. See Menkes et al. (2012) www.zoneco.nc.
	3. Submit discussion paper on the application of SEAPODYM in fisheries management for publication.	3. Ongoing.

ANNEX I

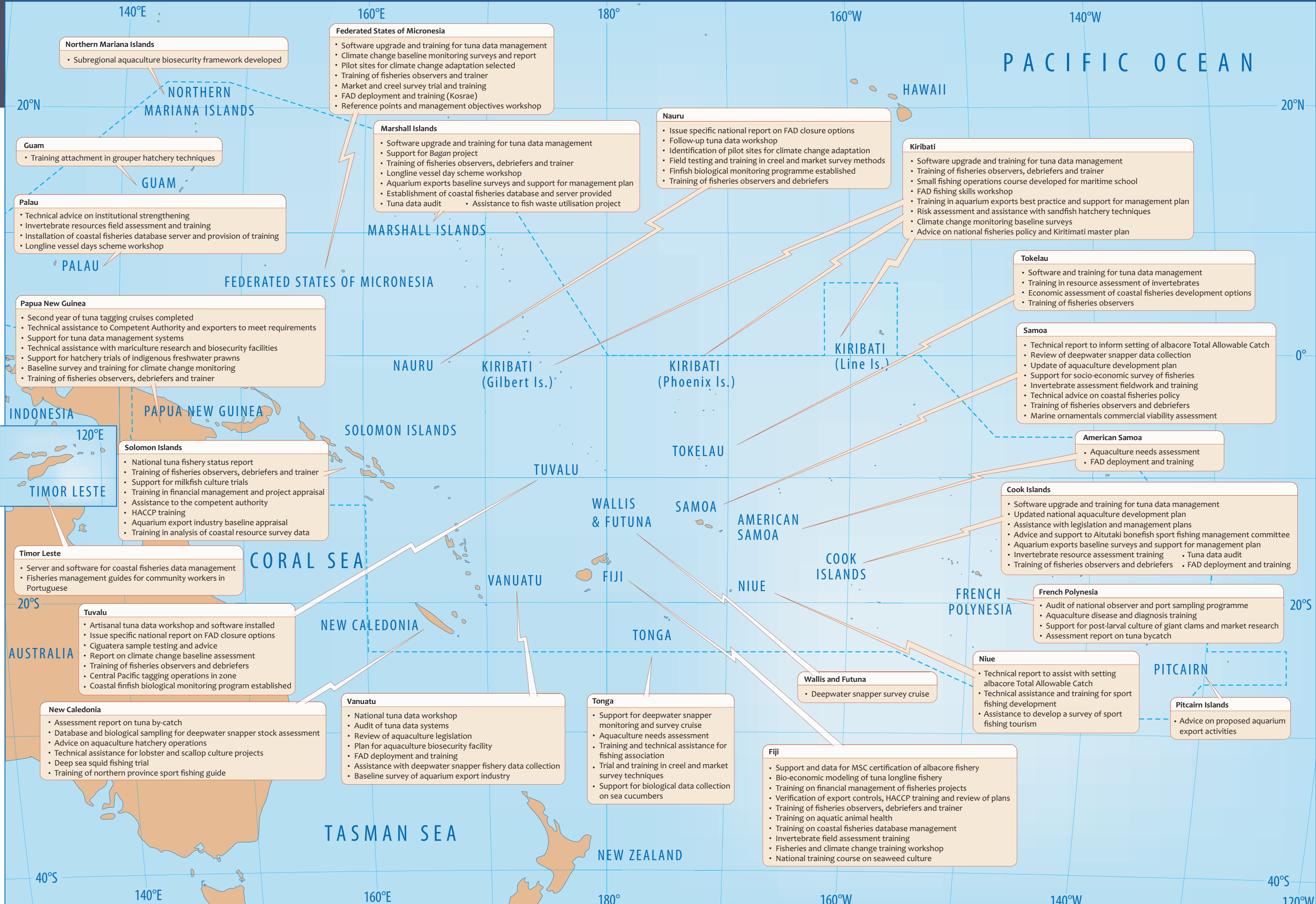
4.3 Improved knowledge of the impacts of climate change on oceanic ecosystems to inform adaptation	1. Manuscript accepted on the impacts of climate change on skipjack distribution.	1. See Lehodey et al. (2012). DOI 10.1007/s10584-012-0595-1.
	2. Complete analyses on the impacts of ocean acidification on tuna larval survival and growth.	2. Ongoing. See Scholey et al. (2012). PFRP Newsletter Vol 16(1).
	3. Commence 'Phase 2' modelling of climate change impacts on tuna stocks.	3. Activities commenced and ongoing. Oceanographic profiles completed.
	4. Complete analysis examining the potential of predator diet and tuna movement to monitor climate change.	4. See Nicol et al. (2012). DOI 10.1007/s10584-012-0598-y.
	5. Commence simulations to assess potential impacts of climate change on key bycatch species.	5. Activities commenced and ongoing.
4.4 Regional oceanic fisheries policy and decision-making by WCPFC is informed by science-based information and advice on ecosystem issues	Ecological Risk Assessment (ERA)	
	1. Provide technical and scientific support for BMIS.	1. See Fitzsimmons (2012). WCPFC-SC8-EB-IP-01. www.wcpfc.int .
	2. BMIS fully populated and accessible online.	2. See http://www.wcpfc.int/bycatch-mitigation-information-system-bmis .
4.5 FFA's ecosystem-based fisheries management initiatives are supported by the best scientific information and advice	1. Support for FFA EAFM initiatives and regional plans of action provided on request.	1. No requests in 2012.
4.6 Ecosystem-based management of oceanic fisheries by SPC members is supported by the best scientific information and advice	1. Assessment of bycatch undertaken as required for NTFSRs and online materials.	1. Completed for New Caledonia and French Polynesia as requested.
	2. Subregional summaries of trophic structure completed and incorporated into NTFSRs and/or ISNRs.	2. No requests for this information in 2012.
	3. Information on seamounts included in NTFSRs and online materials.	3. No requests for this information in 2012.
	4. National-level 'tuna resource profiles' produced using SEAPODYM modelling results.	4. Fifteen national-level 'tuna resource profiles' completed. Report versions current under internal review prior to dissemination to SPC members.
	5. National-level tuna tagging information released online.	5. Country specific login pages at www.spc.int/tagging .
	6. Deepwater snapper data collection system implemented in Vanuatu, Tonga and Samoa.	6. TufART database and Artisinal data form modified to include deepwater snapper data collection and provided to Vanuatu, Tonga and Samoa
	7. Provide support for post-graduate study for 3 students from member countries.	7. Masters support provided to student from Vanuatu and Samoa. Support provided to existing PhD student from Tonga.

ANNEX II



PLEASE OPEN THIS PAGE TO SEE

ANNEX II: NOTABLE ACTIVITIES IN EACH MEMBER COUNTRY OR TERRITORY



ANNEX III PUBLICATIONS





LIST OF PUBLICATIONS PRODUCED BY OR FOR SPC'S FAME DIVISION IN 2012

PUBLICATIONS AND ARTICLES PRODUCED BY OR FOR FAME

- Adams T. 2012. FADs – Are they all bad ? SPC Fisheries Newsletter #137:36–40.
- Adams T. 2012. The characteristics of Pacific Island small-scale fisheries. SPC Fisheries Newsletter #138:37–43.
- Anon. 2012. Internal Review of the SPC Fisheries, Aquaculture and Marine Ecosystems (FAME) Division Strategic Plan 2010–2013: working Paper 1. Noumea, New Caledonia: Secretariat of the Pacific Community. Informal Consultation with Heads of Fisheries, Noumea, New Caledonia, 4 June 2012. 12 p.
- Anon. 2012. Proposed model for Samoa's ecosystem approach to community-based fisheries management. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community. 17 p.
- Anon. 2012. Samoa aquaculture management and development plan. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community. (in English with parts in Samoan)
- Bell J.D., Johnson J.E., Ganachaud A.S., Gehrke P.C., Hobday A.J., Hoegh-Guldberg O., Le Borgne R., Lehodey P., Lough J.M., Pickering T., Pratchett M.S. and Waycott M. 2012. Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change: Summary for Pacific Island Countries and Territories. Secretariat of the Pacific Community, Noumea, New Caledonia. 164 p. (In French)
- Garcia-Gomez R. and Kinch J. 2012. Pathogen and ecological risk analysis for the introduction of Cobia (*Rachycentron canadum*) from the Philippines into Papua New Guinea. Noumea, New Caledonia: Secretariat of the Pacific Community, and Papua New Guinea National Fisheries Authority. 44 p.
- Hambrey Consulting and Nautilus Consultants. 2012. Opportunities for the development of the Pacific Islands' mariculture sector - Report to the Secretariat of the Pacific Community. Noumea, New Caledonia: Secretariat of the Pacific Community. 129 p.
- Mariojouls C. and Sharp M. 2012. SPC/IFREMER Seminar on Fish Waste Utilization, 11 June 2012, Noumea, New Caledonia - Report of the Meeting. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community. 23 p.
- Moore B., Sapatu M., Yeeting B., Pakoa K., Magron F., Bertram I. and Chapman L. 2012. Climate Change Baseline Assessment - Majuro Atoll. Noumea, New Caledonia: Secretariat of the Pacific Community. 110 p.
- Moore B., Siaosi F., Lalavanua W., Pakoa K., Yeeting B., Magron F., Bertram I., Chapman L. 2012. Climate Change Baseline Assessment - Pohnpei - Federated States of Micronesia. Noumea, New Caledonia: Secretariat of the Pacific Community. 109 p.
- Moore B., Siaosi F., Lalavanua W., Simpson R., Magron F., Bertram I., Chapman L. 2012. Climate Change Baseline Assessment - Northern Manus Outer Islands - Papua New Guinea. Noumea, New Caledonia: Secretariat of the Pacific Community. 117 p.
- Pakoa K., Kaku R. and Nimitia T. Status of pronghorn spiny lobster fishery in Aneityum Island, Vanuatu, and management advice. SPC Fisheries Newsletter #138:31–36.
- Sharp M. 2012. Investment profile for anchored nearshore fish aggregating device. SPC Fisheries Newsletter #136:46–48.
- Sharp M. and Mariojouls C. 2012. Waste not, want not: Better utilisation of fish waste in the Pacific. SPC Fisheries Newsletter #138:44–48.
- Siaosi F., Sapatu M., Lalavanua W., Pakoa K., Yeeting B., Magron F., Moore B., Bertram I. and Chapman L. 2012. Climate Change Baseline Assessment - Funafuti Atoll. Noumea, New Caledonia: Secretariat of the Pacific Community. 107 p.
- Siaosi F., Sapatu M., Lalavanua W., Yeeting B., Pakoa K., Magron F., Moore B., Bertram I., Chapman L. 2012. Climate Change Baseline Assessment - Abemama Atoll -



Kiribati. Noumea, New Caledonia: Secretariat of the Pacific Community. 115 p.

Teitelbaum A. and Remoissenet G. 2012. Proceedings of the Tahiti Aquaculture Conference: 6–11 December 2010. Secretariat of the Pacific Community, Noumea, New Caledonia. 38 p.

PAPERS PREPARED BY FAME'S OCEANIC FISHERIES PROGRAMME FOR THE WCPFC SC 8 (AUGUST 2012)

GN-WP-01 — Williams P. and Terawasi P. Overview of tuna fisheries in the western and central Pacific Ocean including economic conditions – 2011

GN-IP-03 — Harley S. A proposal to investigate range contraction for tropical tunas in the WCPO

SC8-WCPFC8-01 — SPC-OFP. Review of the Implementation and Effectiveness of CMM 2008-01

SC8-WCPFC8-04 — SPC-OFP. Summary Whale Shark and Cetacean Interactions in Tropical WCPFC P/S Fishery

SC8-WCPFC8-05 — SPC-OFP. Western and Central Pacific Tuna Fishery: 2010 Overview and Status of Stocks

SC8-WCPFC8-07 — SPC-OFP. WCPFC CMM 2008-01 Background Stats

SC8-WCPFC8-08 — SPC-OFP. Project 60 Plan for Improvement of Purse-Seine Catch Composition Data

ST-WP-01 — Williams P. Scientific data available to the Western and Central Pacific Fisheries Commission. Rev 1 (30 July 2012)

ST-WP-02. Lawson, T., Lasi F. and Sharples P. Report on Project 60: Collection and Evaluation of Purse-Seine Species Composition Data

ST-WP-03 — Lawson T. Estimation of the species composition of the catch by purse seiners in the Western and Central Pacific Ocean using grab samples and spill samples collected by observers Rev 1 (27 July 2012)

ST-IP-01 — Oceanic Fisheries Programme (OFP), Estimates of annual catches in the WCPFC Statistical Area.

ST-IP-02 — Williams P. and Cole C. Status of observer data management

SA-WP-02 — Harley S., Williams P. and Hampton J. A compendium of fisheries indicators for bigeye, skipjack, yellowfin, and south Pacific albacore tunas and south Pacific swordfish

SA-WP-03 — Nicol S. Bigeye tuna age and reproductive biology progress report

SA-WP-04 — Hoyle S., Hampton J. and Davies N. Stock Assessment of Albacore in the south Pacific Ocean Rev 1 (29 July 2012)

SA-WP-05 — Davies N., Hoyle S. and Hampton J. Stock Assessment of Striped Marlin (*Kajikia audax*) in the Southwest Pacific Ocean

SA-WP-06 — Rice J. and Harley S. Stock Assessment of Oceanic Whitetip Sharks in the Western and Central Pacific Ocean Rev 1 (3 August 2012)

SA-WP-07 — Rice J. and Harley S. Stock Assessment of Silky Sharks in the Western and Central Pacific Ocean Rev 1 (3 August 2012)

SA-WP-08 — Harley S., Kleiber P. and Hoyle S. Progress Towards a Stock Assessment for Swordfish in the southern WCPO including Standardized CPUE for Spanish Swordfish Fleet

SA-IP-01 — Davies N., Fournier D., Hampton J., Kleiber P., Hoyle S., Bouyé F. and Harley S. Recent developments in the MULTIFAN-CL stock assessment software

SA-IP-02 — SPC-OFP Response to the Independent Review of the 2011 bigeye tuna stock assessment

SA-IP-09 — Hoyle S., Davies N. and Pilling G. CPUE Standardisation for Striped Marlin in the Western and Central Pacific Ocean

SA-IP-10 — Rice J. Catch per unit effort of oceanic white tip sharks in the Western and Central Pacific Ocean

SA-IP-11 — Rice J. Catch per unit effort of silky sharks in the Western and Central Pacific Ocean (Rev 1)

SA-IP-12 — Rice J. Alternative catch estimates for silky and oceanic whitetip sharks in the WCPO

SA-IP-14 — Bigelow K. and Hoyle S. Standardized CPUE for South Pacific albacore

SA-IP-15 — Farley J.H., Williams A.J., Davies C.R., Clear N.P., Eveson J.P., Hoyle S.D. and Nicol S.J. Population Biology of Albacore Tuna in the Australian Region

MI-WP-01 — Harley S.J., Berger A.M., Pilling G.M., Davies N. and Hampton J. Evaluation of stock status of south Pacific albacore, bigeye, skipjack, and yellowfin tunas and southwest Pacific striped marlin against potential limit reference points Rev 1 (24 July 2012) NOTE: This rev includes SP Albacore

MI-WP-02 — Pilling G.M., Harley S.J., Berger A.M., Davies N. and Hampton J. Consideration of target reference points for WCPO stocks with an emphasis on skipjack tuna

MI-WP-03 — Berger A.M., Harley S.J., Pilling G.M., Davies N. and Hampton J. Introduction to Harvest Control Rules for WCPO Tuna Fisheries,

MI-WP-06 — Hampton J., Harley S. and Williams P. Review of the implementation and effectiveness of key management measures for tropical tunas

- EB-WP-01 — Evans K., Brown J., Bell J., Nicol S., Lehodey P., Sen Gupta A. and Menke C. Progressing adaptation to climate variability and change in the Western and Central Pacific Ocean tuna fisheries
- EB-WP-02 — Nicol S., Progress on Kobe III bycatch technical working group
- EB-WP-03 — Rice J. and Harley S. A progress report on the Shark Research Plan Rev 1
- EB-WP-04 — Rice J. and Harley S. Assessment of the whale shark as a key shark species
- EB-WP-11 — Itano D., Muir J., Hutchinson M. and Leroy B. Overview of the ISSF Bycatch Mitigation Research Cruise in the WCPO
- EB-WP-12 — Hutchinson, M., Itano D., Muir J., Leroy B and Holland K. The post-release condition of FAD associated silky sharks (*Carcharhinus falciformis*) caught in tuna purse seine gear. Rev 1
- EB-WP-13 — Muir, J., Itano D., Hutchinson M., Leroy B. and Holland K. Behavior of target and non-target species on drifting FADs and when encircled by purse seine gear.
- EB-WP-14 — Itano D., Muir J., Hutchinson M. and Leroy B. Development and testing of a release panel for sharks and non-target finfish in purse seine gear.
- EB-WP-18 — Pilling, G.M., Nicol S. and Harley S. Estimation of catches and fate of edible bycatch species taken in the equatorial purse seine fishery Rev 1 (25 July 2012)
- EB-IP-11 — Allain V., Griffiths S.P., Polovina J. and Nicol S. WCPO ecosystem indicator trends and results from ecopath simulations.
- RP-PTTP 02 — Caillot, S., B. LeroyB., C. Sanchez C., Kolody D., Nicol S., Hampton J., Lewis A., Usu T., Kumasi B., Kumoru L. Pacific Tuna Tagging and PNG Tagging Project Progress Report and Workplan for 2012-2013.
- ARTICLES WRITTEN BY FAME STAFF AND PUBLISHED IN SCIENTIFIC JOURNALS**
- Allain V., Fernandez E., Hoyle S., Caillot S., Jurado-Molina J., Nicol S., Andrefouet S. 2012. Interaction between Coastal and Oceanic Ecosystems of the Western and Central Pacific Ocean through Predator-Prey Relationship Studies. *PLoS ONE* 7(5): e36701.
- Allain V., Nicol S., Polovina J., Coll M., Olson R., Griffiths S., Dambacher J., Young J., Jurado Molina J., Hoyle S., Lawson T. 2012. International workshop on opportunities for ecosystem approaches to fisheries management in the Pacific Ocean tuna fisheries. Review in *Fish Biology and Fisheries*. DOI 10.1007/s11160-011-9220-z
- Bell J.D., Reid C., Batty M.J., Lehodey P., Rodwell L., Hobday A.J., Johnson J.E. and Demmke, A. 2012. Effects of climate change on oceanic fisheries in the tropical Pacific: implications for economic development and food security. *Climatic Change*. DOI 10.1007/s10584-012-0606-2
- Busilacchi S., Williams A.J., Russ G.R. and Begg G.A. 2012. The complexity of applying minimum legal sizes (MLS) of retention in an Indigenous coral reef fishery. *Fisheries Management and Ecology* 19:233-244.
- Evans K., Patterson T.A., Reid H., Harley S.J. 2012. Reproductive schedules in Southern bluefin tuna: Are current assumptions appropriate? *PLoS ONE* 7(4):e34550. doi:10.1371/journal.pone.0034550
- Howell E.A., Wabnitz C.C.C., Dunne J.P. and Polovina J.J. 2012. Climate-induced primary productivity change and fishing impacts on the Central North Pacific ecosystem and Hawaii-based pelagic longline fishery. *Climate Change*. DOI: 10.1007/s10584-012-0597-z
- Leroy B., Phillips J.S., Nicol S., Pilling G.M., Harley S., Bromhead D., Hoyle S., Caillot S., Allain V. and Hampton J. 2012. A critique of the ecosystem impacts of drifting and anchored FADs use by purse-seine tuna fisheries in the Western and Central Pacific Ocean. *Aquatic Living Resources*. DOI 10.1051/alr/2012033
- Nicol S.J., Allain V., Pilling G.M., Polovina J., Coll M., Bell J., Dalzell P., Sharples P., Olson R., Griffiths S., Dambacher J.M., Young J., Lewis A., Hampton J., Jurado Molina J., Hoyle S., Briand K., Bax N., Lehodey P. and Williams P. 2012. An ocean observation system for monitoring the affects of climate change on the ecology and sustainability of pelagic fisheries in the Pacific Ocean. *Climatic Change*. DOI 10.1007/s10584-012-0598-y
- Roff G., Wabnitz C.C.C., Harborne A.R., Mumby P.J. 2012. Macroalgal associations of motile epifaunal invertebrate communities on coral reefs. *Marine Ecology* (in press)
- Salinger M.J., Bell J.D., Evans K., Hobday A.J., Allain V., Brander K., Dexter P., Harrison D.E., Hollowed A.B., Lee B. and Stefanski R. 2012. Climate and oceanic fisheries: recent observations and projections, and future needs. *Climatic Change*. DOI:10.1007/s10584-012-0652-9
- Sibert J., Senina I., Lehodey P. and Hampton J. 2012. Shifting from marine reserves to maritime zoning for conservation of Pacific bigeye tuna (*Thunnus obesus*). *Proceedings of the National Academy of Sciences of the United States of America*. DOI 10.1073/pnas.1209468109
- Williams A.J., Farley J.H., Hoyle S.D., Davies C.R., Nicol S.J. 2012. Spatial and sex-specific variation in growth of albacore tuna (*Thunnus alalunga*) across the South Pacific Ocean. *PLoS ONE* 7(6): e39318. doi:10.1371/journal.pone.0039318.



Williams A.J., Nicol S.J., Bentley N., Starr P.J., Newman S.J., McCoy M.A., Kinch J., Pilling G.M., Williams P.G., Magron F., Bertram I. and Batty M. 2012. International workshop on developing strategies for monitoring data-limited deepwater demersal line fisheries in the Pacific Ocean. *Reviews in Fish Biology and Fisheries* 22:527–531.

POSTERS, LEAFLETS, INFORMATION SHEETS AND PLASTIC CARDS

- Anon. 2012. Code of conduct for responsible spearfishing – Best practices [Leaflet]. Noumea, New Caledonia: Secretariat of the Pacific Community. 2 p. (in English and French)
- Anon. 2012. Code of conduct for responsible spearfishing – Safety [Leaflet]. Noumea, New Caledonia: Secretariat of the Pacific Community. 2 p. (in English and French)
- Anon. 2012. FADs in the Pacific [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community. (in English and French)
- Anon. 2012. Guide & Information sheets for fishing communities (2nd edition). Noumea, New Caledonia: Secretariat of the Pacific Community. 25 items, including 23 information sheets on marine resources, 1 guide to information sheets on fisheries management for communities and 1 leaflet on marine protected areas (In English, French and Portuguese)
- Anon. 2012. Manage your trochus fishery [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community. (in English and French)
- Anon. 2012. Giant clams of Palau [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community.
- Anon. 2012. Kiribati lobster size regulation [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community (in I-Kiribati)
- Anon. 2012. Laws and regulations for coastal fishery resources of Kosrae [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community.
- Anon. 2012. Sea te sikuatela? (What is ciguatera?) [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community (in Tuvaluan)
- LeBars J.-P. 2012. Marin marawan Kiribati (Oceanic wildlife of Kiribati) [Poster]. Noumea, New Caledonia: SPC, Secretariat of the Pacific Community (in I-Kiribati)

POLICY BRIEFS

- Anon. 2012. The western and central Pacific tuna fishery: 2010 overview and status of stocks. Policy Brief, 14/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Oceanic fisheries and climate change. Policy Brief, 15/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Coastal fisheries and climate change. Policy Brief, 16/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Freshwater fisheries and climate change. Policy Brief, 17/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Aquaculture and climate change. Policy Brief, 18/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Aquaculture and climate change. Policy Brief, 18/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Fish aggregating devices (FADs). Policy Brief, 19/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

Anon. 2012. Opportunities for the development of the Pacific Islands mariculture sector. Policy Brief 20/2012. Noumea, New Caledonia: Secretariat of the Pacific Community. 4 p.

NEWSLETTER AND INFORMATION BULLETINS

- SPC Beche-de-mer Information Bulletin #32 (in English and French)
- SPC Live Reef Fish Bulletin #20 (in French)
- SPC Pearl Oyster Information Bulletin #19 (in French)
- SPC Traditional Marine Resource Management and Knowledge Information Bulletin #28 (in French)
- SPC Traditional Marine Resource Management and Knowledge Information Bulletin #29 (in English and French)
- SPC Traditional Marine Resource Management and Knowledge Information Bulletin #30 (in English)
- SPC Women-in-Fisheries Bulletin #22 (in English and French)
- SPC Fisheries Newsletter #135 (May–August 2011) (in French)
- SPC Fisheries Newsletter #136 (September–December 2011), (in English and French)
- SPC Fisheries Newsletter #137 (January–April 2012), (in English and French)
- SPC Fisheries Newsletter #138 (May–August 2012), (in English)

ANNEX IV MEETINGS



MAIN SECTORAL MEETINGS AND WORKSHOPS

Regional observer coordinators' workshop, 13–17 February, Nuku'alofa Tonga (organised jointly with FFA)

Subregional workshops on basic coastal fisheries database skills, 20–29 February and 5–14 March, Noumea New Caledonia

6th Annual tuna data workshop, 23–27 April, Noumea New Caledonia

Regional fish inspectors' training course for competent authority staff, 7 May–1 June, Auckland New Zealand

Informal consultation with Heads of Fisheries, 4 June, Noumea New Caledonia

Workshop on priority adaptations to climate change for

fisheries and aquaculture, 5–8 June, Noumea New Caledonia (organised jointly with FAO)

SciCOFish project annual steering committee meeting, 11 June, Noumea New Caledonia

FAO/SPC workshop on the small scale fisheries draft code of conduct, 12–14 June, Noumea New Caledonia

FAO/SPC regional workshop on aquatic biosecurity and aquaculture statistics, 1–5 October, Nadi Fiji

Regional practical skills course for Fisheries Officers, 1–26 October, Santo Vanuatu

Regional TUFMAN training workshop, 3–7 December, Noumea New Caledonia

ANNEX V MINI-HOF OUTCOMES





SPC INFORMAL CONSULTATION WITH HEADS OF FISHERIES – SPC CONFERENCE CENTRE, NOUMEA 4 JUNE 2012

Ray Tulafono, the representative from American Samoa, opened the meeting with a prayer. DDG Richard Mann gave the welcoming speech, detailing the objectives of the HOF meeting and highlighting the discussion points: the strategic plan; FAME's annual report; a proposal to strengthen sea cucumber fisheries; and a proposal for improved capacity building in oceanic fisheries science. Kautoa Tonganibeia from Kiribati was appointed chair of the meeting.

INTERNAL MID-TERM REVIEW OF FAME DIVISION STRATEGIC PLAN 2010-2013

The Director of FAME presented on the strategic plan, including results of an internal mid-term review. The internal review highlighted that some of the high-level objectives were outside the control of the SPC FAME programme and that a number of OFP and CFP objectives need to be revised to better frame the sections' work and result areas and capture project-based activities developed in recent years.

Members noted the minor modifications to the FAME strategic plan objectives to enhance plan delivery and generally endorsed suggested changes. These will be submitted to CRGA for final approval.

Areas of specific interest and concern noted by members included:

- ▶ need for improved implementation of regional management actions (e.g., to address bigeye tuna overfishing) on the basis of the scientific advice provided by SPC. While implementation of management measures is outside of SPC's remit, SPC strives to provide clear and tangible scientific advice to support key management partners and individual members in their management decisions:
- ▶ continued development of collaborative work between OFP and CFP as appropriate, building on the shared activities through the artisanal tuna statistics and deepwater snapper assessment projects:
- ▶ food security in regional and coastal communities. It was noted that indicators for this priority have been developed through individual projects developed since the initial plan was written:
- ▶ collaboration with existing monitoring control and surveillance (MCS) programmes to minimise duplication of effort when developing MCS capacity in coastal fisheries. The need to learn and draw on the experience from the activities of other regional and national organisations was noted as was the need to develop collaborative partnerships with these:
- ▶ need for different national departments to work collaboratively on issues pertaining to climate change:
- ▶ need for improved capacity building activities in member countries and territories. The young professional training scheme is currently underway to help address this, noting the issues encountered in securing the release of applicants from national fisheries departments for the programme.



FAME DIVISION ANNUAL REPORT AND WORK PLAN FOR 2012

The activities of the FAME Director's office, Coastal, and Oceanic fisheries in 2011 were summarised by the director

and programme managers. Overall the director noted good progress on existing projects in all 3 of FAME sections and implementation of new initiatives. Countries acknowledged SPC's continued support and assistance.

Planned objectives for 2012 were also listed, and activities already underway or completed were highlighted. It was noted that the work of FAME is increasingly dependent on project-based funding, which limits activities to specific topics, duration, countries served, and outcomes.

CFP

Interest was raised for individual country involvement in nearly all CFP technical capacity building activities scheduled for 2012. It was noted that funding sources may limit the support to certain countries/territories. Specific areas included:

- ▶ Database and server development. Related to this it was noted that a regional symposium was scheduled for the week of 11 June in Cook Islands on information management systems. There may be potential links particularly to the OFP national database work:
- ▶ Review of legislation in coastal fisheries, linking with FFA on oceanic fisheries:
- ▶ Economic cost/benefit studies on FADs:
- ▶ Squid fishing trials, which require access to in-country vessels (pending the outcome of planned trials in New Caledonia):
- ▶ Coastal resources survey work:
- ▶ FAD fishery development, noting the need for country input (financial and in kind):
- ▶ Market and creel surveys:
- ▶ Support to stakeholders (e.g., sports fishermen's associations), noting the importance of ensuring stakeholder inputs into fisheries management:
- ▶ Aquaculture/mariculture development and associated environmental concerns:
- ▶ Training local guides in sports fishing:
- ▶ Deployment of temperature loggers and assessment of coastal resources for climate change monitoring (noting that while beyond the scope of the current project, if countries have their own resources, there may be capacity for countries to receive relevant training and develop complementary data monitoring processes and have their data included in future analyses).

It was suggested that some ground rules for requesting assistance from CFP may be needed, with potential matching contribution requirements (financial, practical) from member countries.

OFP

SPC members noted the value of OFP in supporting sustainable tuna management. Areas of priority action noted by members were:

- ▶ Issues arising from the interaction between inshore and offshore operations and the need for fine scale information on fish movements to allow estimates of such interactions. Descriptive work on this at the national level is planned by OFP. In addition, small-scale acoustic tagging around FADs in specific countries to examine residence time may be feasible, although funding sources external to those currently available would need to be secured:
- ▶ Support for more national stock assessments to support a 'bottom-up' allocation model, while noting the need to keep overall exploitation of the stocks within sustainable limits (better information on fish movement would probably be needed to provide such assessments with confidence):
- ▶ Presentation of tuna stock assessment results in simple terms to inform stakeholders (including fishermen). OFP noted that a summary of stock status is presented in easily digestible form in the relevant policy brief. Members' attention was also drawn to the annual tuna fishery assessment report, available for download from (http://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Policy_Brief14_12.pdf):
- ▶ Importance of observer databases and data management systems. OFP underscored this priority and highlighted the long term strategy to assist countries to process and manage the data themselves, while maintaining SPC as a long-term repository for all observer data for the region:
- ▶ Development of IT minimum standards (including bandwidth) to facilitate long term cost-savings through remote access system maintenance.

SPECIAL TOPIC 'A PROPOSED REGIONAL APPROACH TO IMPROVED MANAGEMENT OF SEA CUCUMBER FISHERIES'

Noting the current overexploitation of sea cucumber resources in most member countries, thereby foregoing an important source of income for communities, CFP presented proposed activities toward their sustainable management. These included two studies to be focused on four member countries of the Melanesian Spearhead Group (MSG) with support from ACIAR. The plan for those studies, namely to examine: (i) historical levels of sea cucumber production and estimate benefits lost due to poor management systems; and



(ii) how fees and taxes or other economic measures could help regulate sea cucumber fisheries, was put forward to HOF for comments and endorsement.

Members noted the importance of sea cucumbers across much of the region. While the studies were proposed for four Melanesian countries, their scope may be extended to other SPC members, notably Tonga, pending agreement of MSG members. The outcomes of the studies will be made available to all SPC members. Beyond these studies, interested parties are encouraged to collaborate on areas of mutual interest. In addition, SPC support for the development of national management plans would be forthcoming on request.

Five key areas were noted for further attention: stock assessments; development of management plans; enforcement/monitoring and compliance; exchange of views and experience with investors in the trade; and marketing information and intelligence. It was further requested that these five areas be incorporated into future SPC activities. SPC (ianb@spc.int) volunteered to act as a focal point for the sharing of information on markets, investors and pricing information.

Additional areas of importance were raised:

- ▶ Alternative sea cucumber processing options. One member noted that frozen products, rather than dried, would help preserve mangroves as these were commonly exploited for fuel to dry bêche-de-mer. Other members noted that dried products may be a preferred option for exports, to maximize benefits to local society. It was noted that an updated manual on sea cucumber processing has been proposed and SPC could translate it into French:
- ▶ Risk analysis of new sea cucumber species' introduction for aquaculture purposes:
- ▶ Scientific research on biological parameters of sea cucumbers to support assessments and management:
- ▶ Role of precautionary approaches (including closed areas) in sustainable management of the resource:
- ▶ Importance of communicating fisheries and research findings in a format directly relevant to management:
- ▶ Need to engage with NGOs in raising awareness of the ecological and livelihood role that sea cucumbers play, while noting that they are not a particularly iconic group of species.

SPECIAL TOPIC 'BUILDING CAPACITY IN OCEANIC FISHERIES SCIENCE'

Shelton Harley gave a quick presentation on five key activities proposed by SPC designed to build capacity at the regional level in stock assessment approaches. Participants were asked whether they are in agreement with the proposed initiatives and for these to be submitted for funding. Members expressed their general support for capacity building in stock assessment of country personnel as outlined in the proposal.

A few points were raised:

- ▶ Potential relevance of course material to national NGOs as well as fisheries staff:
- ▶ Short-term need for the continuation of the OFP stock assessment workshops along with attachments at SPC to develop national skills:
- ▶ Longer-term interest in developing links with regional Universities to provide an accredited qualification:
- ▶ Support for medium- to longer-term attachments to strengthen the stock assessment skill set among scholarship students (either during or after their study programmes):
- ▶ Difficulty in obtaining funding support for OFP personnel to deliver training (compared with support for attendance of participants at these workshops).

SPC will make required amendments to incorporate observations made by Heads of Fisheries.

AOB

SPC OFP presented a summary of the US Pelagic Fisheries Research Programme, which has provided SPC with funds to support activities of regional and national relevance over a long period of time, and which is likely to end in the near future. SPC will email a draft letter of support for continuation of the programme to its members for their consideration for forwarding to the relevant US authorities.

TIMING OF NEXT HOF MEETING

The next HOF meeting was proposed for the first week of March 2013.



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