

## REEF FISHERIES OBSERVATORY

The EU-funded Pacific Regional Oceanic and Coastal Fisheries Development Programme (PROCFish/C) and the Coastal Fisheries Development Programme (CoFish) continued compiling and editing country reports as well as conducting some follow-up invertebrate surveys in Fiji.

The PROCFish/C project officially concluded on 28 February 2009, while the CoFish project continues until 31 December 2009, or until funding is exhausted. Any outstanding reports from the PROCFish/C project will be produced under CoFish to ensure that all objectives are fully met for both projects by the end of 2009.

### PROCFish/C and CoFish team shrinks further

In late 2008 and early 2009, several staff left the project. Kim Friedman left in November 2008 after almost seven years with the project as Senior Fisheries Scientist (invertebrates). Kim accepted a position as Principal Research Scientist with the Western Australian Department of Environment and Conservation's Marine Science Programme. While working in his new position, Kim has also been assisting the remain-

ing PROCFish invertebrate team members with finalising several project reports.

Sarah Langi, who was recruited to edit country reports, left at the end of her contract in December 2008. Sarah made good progress during her time with the project, and has been hired as a consultant to edit the remaining country reports as they are compiled and formatted.

Pierre Boblin who was a Reef Fisheries Officer (finfish) with the project for almost four years left at the end of February 2009. Pierre is now working as a freelance consultant in New Caledonia, conducting underwater visual census surveys and other activities. The project will miss Kim, Sarah and Pierre, and wishes them well with their future employment.



From left to right: Kim Friedman, Sarah Langi and Pierre Boblin.

### Status of country reports

Reports for Niue, Kiribati, Samoa, and Wallis and Futuna were published earlier this year, with a French version of the Wallis and Futuna report produced as well. After each country report is published it is placed on PROCFish/C's web portal on the country specific page. The report for Papua New Guinea

is ready for publishing and the one for French Polynesia is being translated. Three other reports are with countries for comment and clearance (Solomon Islands, New Caledonia and Palau). The remaining five country reports will be finalised over the coming months and will be published before the end of 2009.

The remaining scientific staff will focus on analysing data and producing a regional assessment that will try to identify indicators of reef fishery status. This is a work in progress, which will also include the writing of several scientific publications based on the results of this analysis.

## Invertebrate resource surveys in Fiji Islands

Invertebrate field work was conducted at four sites in Fiji Islands in February 2009. The sites of Mali and Lakeba in Vanua Levu and Dromuna and Muaivuso in Viti Levu were assessed in 2003 but were re-surveyed in 2009 using refined tools and survey methodologies developed by the PROCFish/C and CoFish projects.

This re-survey also provides a picture of resource status trends over the six years between surveys. The four-week survey was headed by Kalo Pakoa from the project's invertebrate team, with assistance from Fiji's Fisheries Research Officers, Babitua Rarawa, Peni Drodrolagi and Serugali Ledua, and Hans Karl Wendt, a post-graduate student from the University of the South Pacific (USP). The project acknowledges the assistance of Fiji's Fisheries Division and staff Sunia Waqainabete, Aisake Bati-basaga, Aminio Raumuria, and Joji Vuakaca; as well as John, Sahn, Jone and Tavenisa for their support in Labasa; and in Suva, the Macuata Province Administration for its logistical support. Special thanks are also given to Bill Albersberg and Ron Vave from USP's Institute of Applied Sciences for their advice, and for allowing Hans to join the team; and to the village chiefs and

their communities at Muaivuso, Dromuna, Mali and Lakeba.

### MALI ISLAND

Mali lies off the Labasa mainland. The reef is part of the Great Sea Reef (Cakau Levu) stretching across the entire northern coast of Vanua Levu Island (Fig. 1). The middle part of the reef system, known as Vuata Reef, is separated from the outer barrier by a shallow "pseudo" lagoon system. Thin mangrove forest cover parts of the island.

While extensive, most of the shallow areas are predominantly sandy. The main seagrass bed is found in the middle section of the Vuata reef flat, about half of which is within a marine protected area (MPA) that was established some years ago. This MPA allows for village membership to the Fiji Locally Managed Marine Area (FLMMA) group — a network of community conservation interests. The MPA is about to be extended to the Vorovoro Passage fish spawning site reserve. The present survey was careful not to go over the Mali's boundary (like the first surveys did) and paid more attention to the MPA for impact assessment purposes, which was requested by both Macuata Province and the FLMMA group.



Figure 1. Survey coverage – Mali, Vanua Levu.

Survey coverage during the present survey was better. Sea cucumber diversity was incomplete, with the same 11 out of 19 commercial species recorded. None of these species showed any marked improvement in abundance between the two survey periods, and three species (*Actinopyga mauritiana*, *A. miliaris* and *Holothuria scabra*) previously known in the area, were absent in both of the surveys, suggesting they may have been extirpated. *A. miliaris* was reported to be common in a resource survey conducted 20 years ago. A slight improvement was seen in the MPA for *Stichopus chloronotus*, *S. hermanni*, *Holothuria atra* and *Bohadschia argus*, which is promising, although others such as *H. fuscogilva* still appear to be overharvested. Sea cucumbers can be sold raw directly to processors in Labasa. Increasing the MPA outwards to the outer barrier reef is recommended. Overall, Mali's sea cucumber resources are very much depleted, and any form of fishing activity should be discouraged.

The only two giant clams, *Tridacna maxima* and *T. squamosa*, were present in dangerously low numbers. The number of *T. squamosa* was slightly higher than for *T. maxima* because the former was protected within the MPA, while much of the suitable *T. maxima* habitat is widely accessible.

Similarly, a small population of *Trochus niloticus* in the reef passages is currently protected, with very few shells found on the outer slopes of the barrier reef despite the presence of suitable reefs. *Trochus* numbers have not changed since the last survey, suggesting unsuccessful breeding, which happens when spawners are scattered apart for successful fertilisation.

## LAKEBA (VANUA LEVU)

Lakeba village is one of several villages and settlements in Namuka District that share the same fishing zone (Fig. 2). The reef is extensive, with diverse habitats such as a well developed mangrove system, a large area of seagrass beds, shallow and deep lagoons, back-reefs and an outer reef slope. However, as in Mali, the lagoons are predominantly sandy-bottomed with scattered hard-bottom formations.

Lakeba joined the FLMMA group in 2003 when it established an MPA on Cakaunikuita Reef, the inner reef flat in front of the village. *Actinopyga miliaris* was one of the main marine products in the area and one of the principal resources requiring protection. In 2007, the MPA closure was lifted, and *A. miliaris* was the main species harvested (in boat loads) and sold raw to a Chinese buyer in Labasa for FJD 6.00/kg whole (Seruqali Ledua, Fiji Fisheries Division, pers. comm., 2009). Because the MPA was abandoned until just before the team's arrival, the village decided to reactivate it.



Figure 2. Survey coverage – Lakeba, Vanua Levu.

Sea cucumber diversity was intact, with 17 species recorded, the same as in the first assessment. However, *Actinopyga miliaris* was not recorded during this survey, although it was present in good numbers in the first survey. *Holothuria fuscogilva* was present but sporadic in

the sandy lagoon along back-reefs, and *H. scabra* is in danger of being extirpated (only one specimen was found in an open access area). Sandfish is a local delicacy in Fiji. The *Stichopus horrens* population — locally known as “caterpillar” — seemed to be healthy, although it is not typically exploited due to its very small size. Sea cucumber harvesting was very active in Lakeba compared with all other sites, with products sold raw, partly cooked or fully dried to processors in Labasa. Lollyfish (*Holothuria atra*) make up the



Figure 3. Boiled lollyfish, the main sea cucumber processed in Lakeba.

bulk of fishers' catch (Fig. 3) followed by greenfish (*Stichopus chloronotus*) and pinkfish (*H. edulis*). *H. atra* is ranked the lowest in value, and its dominance in catch composition is a significant indicator for over-exploitation in the fishery.

The giant clam *Tridacna maxima* was more common than *T. squamosa*, but densities were as low as at other sites. Active breeding is occurring, but considering the less favourable environments around Lakeba, stronger management efforts should be pursued by the community.

A small population of *Trochus niloticus* is found north of the main passage. *Trochus* harvests in 2007 amount to 300 kg, which sold for FJD 1,500 (at FJD 5.00/kg). The community should consider protecting the existing stock. Populations of the clam, kaikoso (*Anadara* spp.), were found at all four sites. Perhaps moderate harvesting is one contributing factor. However, it would be wise to develop a management plan that would help sustain the resource over a longer term, especially while the stock is still in good condition. Management of the Lakeba MPA is of concern. More advice is needed and an MPA management plan may provide guidance.

## DROMUNA, VITI LAVU

Dromuna is one of two villages at Kaba Point, both of which share the same fishing area (Fig. 4). Kaba's lagoonal reefs are extensive and complex, having all of the qualities for supporting a diverse array of species. Coral cover on the reef slope north of the main passage was healthy, with 60–70% coverage in some places. Dromuna does not have an MPA; the village elders prefer that their reef remains open to access, to support the daily food security needs of their people.

Sea cucumber diversity in Dromuna was intact with 17 species recorded. This is in contrast to the first survey which recorded 12 species. A global decline in density was revealed between the two periods, which can be linked to fishing pressure. Only two white teatfish specimens (*Holothuria fuscogilva*) were recorded from the passage area. Divers fished these lagoons using scuba and hookah gear, which may have contributed to the scarcity of the resource. Many shallow water species, including *Bohadshia argus*, *B. vitiensis*, *Stichopus chloronotus*,

*S. hermanni*, *Holothuria atra* and *Thelenotas ananas* were present, although continuous exploitation has kept their populations from increasing. Sandfish (*H. scabra*) is represented by a few juveniles and is no longer harvested. *H. scabra* was the third most common product in fishers' catch in 2003. The blackfish, *A. miliaris*, was recorded only in Dromuna but the numbers recorded and those noted in fishers' catches indicate a large decline since 2003. In total, 4,202 specimens were recorded in fishers' catches in 2003, while half of a bucket load was seen on one occasion in 2009. *A. miliaris* is collected at night and sold raw to a processor in Nakelo Landing at FJD 5.00/kg for large specimens, and FJD 4.00/kg for smaller specimens.

The same situation exists for the giant clams *Tridacna maxima* and *T. squamosa*: their numbers are low and sporadic, with few large-sized individuals noted. *T. niloticus* is survived by a small population distributed on the outer barrier reefs and passages. A dramatic decline in the density of *Anadara* spp. was noted in 2009.

## MUAIVUSO, VITI LAVU

Muaivuso Reef is a much smaller study area (Fig. 5). The available reef is shallow with the outer reef flat is exposed at low tide, with a few "blue holes" (pools) in the middle of the reef. The outer barrier reef is less well developed and drops steeply from the reef crest. Over 60% of the reef is protected by an MPA initiated in 2001 and covering the middle area out to the reef edge (Fig. 5). Muaivuso's eastern reef is exposed to pollution such as siltation and solid wastes from Suva city.

Sea cucumber diversity was low, with 12 species recorded. Three important species *Actinopyga miliaris*, *A. echinites* and *Holothuria fuscopunctata*, which were documented in 2003, were absent in the 2009 surveys. This is surprising because both *A. miliaris* and *A. echinites* numbers in the 2003 survey — just five years ago — were high. Both species can be easily overharvested because they are found in accessible shallow-water areas. All three sea cucumbers may not come back. *H. scabra* and *H. scabra versicolor* were represented by one specimen each, the latter being the only specimen documented in all of the Fiji sites. Both species deserve maximum protection if they are to survive at all. *H. atra*, *H. edulis*, *H. nobilis*, *Stichopus chloronotus*, *S. hermanni* and *Bohadshia argus*



**Figure 4.** Survey coverage for Dromuna, Kaba Point, Viti Levu.



**Figure 5.** Survey coverage for Muaivuso, Suva, Viti Levu.

improved in densities within the MPA in contrast to open access reefs. The positive effect of the MPA is encouraging, although overall, the resource has not improved and three species may have been extirpated and two other will follow if adequate protection is not provided.

No improvement was seen for the giant clams, *Tridacna maxima* and *T. squamosa*, although notable numbers seem to have been preserved inside the MPA. Similarly, for *Trochus niloticus*, overall numbers were higher in 2003 than in 2009, but notable stocks are protected inside the MPA area, and can repopulate. Muai-vuso is known for its collector urchin (*Tripneustes gratilla*), which is the main edible sea urchin sold at the Suva market. A drop in density was noted overall since 2003, but again the MPA seems to have preserved a good population. A small population of coral-eating crown-of-thorns

starfish (*Acanthaster planci*) has eaten away much of the corals at Nukusanga Passage.

### TRAINING

On-the-job training of three participants — Peni Drodrolagi, Babitu Rarawa and Hans Karl Wendt — was successful

(Fig. 6). Their participation enabled them to acquire basic skills in species identification, using different invertebrate surveying techniques, recording data, using GPS, habitat identification and placing stations, safety issues in underwater assessment work, and planning surveys.



**Figure 6.** Survey team. From left to right: Kalo Pakoa, Babitu Rarawa, Peni Drodrolagi and Hans Karl Wendt.

## The 11<sup>th</sup> Pacific Science Inter-Congress

The 11<sup>th</sup> Pacific Science Inter-Congress — held in conjunction with the 2<sup>nd</sup> Symposium on French Research in the Pacific — took place from 2–6 March 2009 in Tahiti, French Polynesia. The conference was organised by France and French Polynesia in association with the Pacific Science Association. SPC's PROCFish/C programme was

represented by Mecki Kronen, Community Fisheries Scientist, who gave a short presentation and poster on "Assessment of finfish fishing pressure (and risk) and identification of major socioeconomic and resource (biology and habitat) drivers".

About 1,000 participants from the Pacific, France and else-

where attended the conference. There were five parallel sessions: "Ecosystems, biodiversity and sustainable development", "Climatic change and ocean acidification", "Public health challenges in the Pacific", "Culture and politics", and "Governance and economy".

## Sixth and final Advisory Committee meeting for PROCFish

The sixth and final Advisory Committee meeting for PROCFish/C (EDF8, ACP and OCT) and CoFish (EDF9, ACP) was held in Noumea, New Caledonia on 9 February 2009. The meeting brought together representatives from 14 of the 17 participating countries, the EC Delegation in Suva, the Regional Authorising Officer (Forum Secretariat) in Suva, and a range of observers from the US territo-

ries and other regional organisations and NGOs.

The meeting was divided into four sessions or themes.

### SESSIONS 1: Update on project activities and outputs

Project Manager, Lindsay Chapman, reported to the Advisory Committee on project objectives and progress, stating that all

outputs will be fully completed in the remaining time of the two projects, with PROCFish/C concluding on 28 February 2009, and CoFish to conclude on 31 December 2009. Over 175 Pacific Island nationals received training through in-country activities during fieldwork or regional or sub-regional workshops. Seven country reports were published and in the public domain, with four others to

be finalised in the first quarter. The remaining six reports will be compiled, edited and with countries for comment and clearance by the middle of 2009. The report of the regional comparative assessment will also be drafted by mid-2009.

There was considerable comment by the Advisory Committee on the project, with many countries expressing disappointment at the length of time to receive survey results and country reports, although countries were pleased that the reports were beginning to come out. There was also strong support for further, similar survey work to be undertaken in some countries, especially the larger ones, with results to come out in a more timely fashion.

Countries were also pleased with the training that was provided, although further training would be required due to staff turnover within countries. Areas highlighted for future work were the need for monitoring programmes to be developed and implemented at the national level, as well as further assistance with survey work on specific species rather than general surveys. In reply, the Project Manager stated that these areas were built into an EDF10 funding proposal; however, if successful, the funding would not be available until early to mid-2010.

### **SESSION 2: Data acquisition, scope and mechanisms for its distribution, and characteristics and variations of fisheries communities and their resource**

The project's Information Manager, Franck Magron, presented the data acquired, its scope, and the mechanisms for its distribution. Mecki Kronen, Community Fisheries Scientist, gave a presentation on the socioeconomics of fisheries communities, Silvia Pinca, Senior Fisheries Scientist (finfish), discussed the diversity of finfish resources, and Kim Friedman, former Senior Fisheries Scientist (invertebrates) discussed the characteristics of invertebrate communities. Countries expressed interest in the database and the possibility of adding additional data collected by countries, as well as the need for country staff to be trained in analysing and presenting data.

### **SESSION 3: Fishing pressure, variation in fish and invertebrate resources, and the current database and software**

Mecki Kronen gave a presentation on fishing pressure (finfish and invertebrates), Sylvia Pinca discussed the variation of fish resources due to use, Kim Friedman presented the status of key invertebrate stocks, and Franck Magron presented the

current databases and software, and future developments to these. There was interest in the indicators or density levels for invertebrates, especially some beche-de-mer species. In regard to the database, countries were supportive of further development to incorporate other data, especially data direct from the private sector, which would be summarised and provided to fisheries departments. The issue of data confidentiality was raised, and participants were assured that the data belonged to each country, and that SPC would not release this information to third parties without country permission.

### **SESSION 4: Recommendations for fisheries management and monitoring of resource changes due to use in view of climate change and consequences for livelihoods**

Mecki Kronen presented the use of decision tools and price mechanisms, Sylvia Pinca presented information on finfish resource monitoring, and Kim Friedman presented information on managing key invertebrate stocks. There was some discussion on management, especially in regard to spearfishing, with the use of scuba and lights at night highlighted as bad practices that should be banned. Other important topics that were discussed include the need for a range of surveys in the future (in-water, socioeconomic, marketing data, etc.), and the need for awareness and educational materials on survey methodologies, with the suggestion that a CD/DVD be produced on how to conduct underwater visual censuses. A CD/DVD would allow in-country fisheries staff to learn these techniques on their own, especially where in countries with a high turnover rate of staff. In reply, more specific recommendations were offered for easier and quicker surveys for the three disciplines.



Graham Nimoho, from Vanuatu, and Dr Chris Ramofafia, from the Solomon Islands, were among the meeting participants.

## Activities of the Live Reef Fish Trade Initiative

A proposed draft of a management policy was previously prepared by SPC's Senior Fisheries Scientist (Live Reef Fisheries), Being Yeeting, and provided to the Marshall Islands Marine Resources Authority (MIMRA) for comment. In February 2009, MIMRA sent in their comments, with a request that the Senior Fisheries Scientist look over the document again before finalising it. The policy document will eventually be finalised by the Management Board and then submitted to Marshall Islands government for endorsement.

### COMPLETION OF THE UPOLU MARINE AQUARIUM TRADE RESOURCES SURVEY REPORT

Following the attachment training of a fisheries officer from Samoa in late 2008, the Upolu Marine Aquarium Trade Resources survey report was finalised. The report indicates that marine aquarium fish resources around Upolu Island are abundant enough to support some marine aquarium fish operations. The report recommends that if Samoa decides to restart such operations, then they should also look at economic feasibility and develop the best possible marketing strategies. Before allowing any operations to start, management policies, a management plan and regulations should be developed. With completion of the report, the decision now remains with the Samoan government to decide whether it wants to revive the marine aquarium fish industry in Samoa or keep it closed.

### COMPLETION OF ENFORCEMENT GUIDELINES ON ILLEGAL REEF FISHING FOR THE AUSTRALIAN PACIFIC PATROL PROGRAM

In early 2008, a letter was received from the Australian Defense Force Pacific Patrol Boat Programme requesting SPC's

assistance and collaboration in developing enforcement guidelines for illegal reef fishing activities. Such guidelines would help the crew of patrol boats to be better recognise and enforce against illegal reef fishing activities in the Pacific. Given the significance of illegal fishing activities — especially in the live reef fish trade (e.g. cyanide fishing and use of other chemicals such as bleach, MS-222, clove oil and terrin), and poaching of protected valuable species (e.g. humphead wrasse) — SPC's Live Reef Fish Section was given the responsibility of assisting the Australian Defense Force.

In early 2009, after considerable discussions with Australian Defense Force counterparts, the final draft of the Enforcement Guidelines was completed.

### DEVELOPMENT OF THE LIVE REEF FISHERIES MONITORING DATABASE

To save money and time, the PROCFish Database Manager, Franck Magron, is working on this project. The advantage being that once it is developed, the database can be used as the basis for setting up similar databases for monitoring other reef fisheries. Following initial discussions and the information collected from countries in late 2008, a proposed database structure, showing the flow of information, was developed. Details of the information and data to be collected, including data forms, were then developed and incorporated into the database design.

A document describing the proposed architecture of the database was prepared and was sent to participating countries for comments. The purpose of this is to ensure that the system on which the database would be developed is compatible to what exists in the countries.

Work on the database will continue through 2009, with the hope of getting the first version out for trial before the end of the year. A hands-on training workshop to explain the database and show how it works will be held for the three countries involved in the pilot project. Following this workshop will be an in-country implementation of the database with technical support and advice to be provided as needed by SPC.

### THE PACIFIC REGIONAL CIGUATERA INITIATIVE RECEIVES ENDORSEMENT OF HOF6

During the 6<sup>th</sup> Head of Fisheries (HOF) meeting — held at SPC's headquarters in Noumea, New Caledonia from 9–13 February 2009 — the Live Reef Specialist presented the outcomes of a ciguatera workshop in late 2008 on behalf of the Ciguatera Conference Steering Committee. The presentation highlighted the increasing threat of ciguatera fish poisoning to food security and income earning opportunities to PICTs, especially in small atoll countries that lack agricultural resources and depend entirely on their marine resources for their livelihoods. Recommendations from the ciguatera conference to set up a Pacific Regional Ciguatera Initiative to help PICTs address ciguatera fish poisoning and other related marine biotoxin problems was also presented to HOF participants for their support and endorsement.

### IUCN WRASSE AND BLENNIES RED-LISTING WORKSHOP

The red-listing of fish species is a process developed by the International Union for the Conservation of Nature to check on the status of exploited fish species and to assess and classify species according to their respective level of global risk

for extinction. Critically endangered species eventually become listed by the Convention on the International Trade in Endangered Species (CITES), which provides some protection for trade through the implementation of the convention by party countries.

As a member of the Groupers and Wrasse Specialist Group, and with experience with the assessment process, SPC's Live Reef Specialist was invited as one of the regional experts to assist in assessing two particular groups of fish: wrasses and blennies. These two fish groups are very important to the marine aquarium trade in the Pacific, and a review showing the status of those fish species was presented by the Live Reef Specialist. The assessment was made to ensure that fish species are not red-listed unnecessarily, based on their status from other parts of the world.

The workshop ran from 23–28 March 2009 in the Philippines. Attending the workshop were 12 global labrid and 3 global blenny experts, 11 participants from the Coral Triangle Initiative participating countries (Malaysia, Indonesia and the Philippines), and some participants from Silliman University, the local university in Dumaguete.

In total, 255 wrasse species were assessed, with most of them rated as "Least Concerned", meaning that they are quite abundant throughout their range and are not currently being threatened by exploitation. About 44 species were listed as "Data Deficient", meaning that there was not enough information to assess the species. Usually these are species where information regarding them is based on a single specimen. No species were considered as endangered although one species from the Persian Gulf, *Halichoeres leptotaenia*, was listed as "Near Threatened" because the species is naturally rare with a very limited geographical range and is being heavily targeted. For the Pacific region, no species of blennies or small labrids are of concern.

#### MEETING WITH THE SOCIETY FOR THE CONSERVATION OF REEF FISH AGGREGATIONS

Being Yeeting met with Yvonne Sadovy, chair of the Society for the Conservation of Reef Fish Aggregations (SCRFA), to determine whether there were any new issues emerging in regard to managing and monitoring reef fish spawning aggregations. A common request coming from member countries is the need for assistance and training in how to monitor and manage reef fish

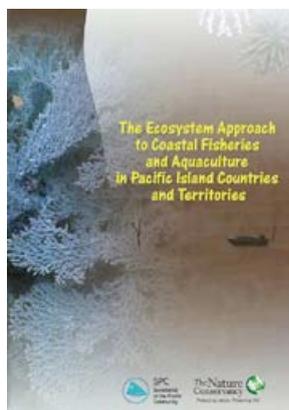
spawning aggregations. Countries that have expressed this interest include Cook Islands, Kiribati, Marshall Islands, Samoa and Vanuatu. It was agreed that a hands-on field training workshop on monitoring methods would address this need.

Funding for the workshop has been secured through the Coral Reef Initiative for the South Pacific (CRISP) project, with the workshop is scheduled for late August 2009. CRISP has agreed to provide airfares and per diem for two participants from each of the five countries. Plans are now being made with Fiji's Fisheries Division and SCRFA to prepare for the workshop.

#### PREPARATION OF AN UPDATED CIGUATERA POSTER FOR PUBLIC AWARENESS

In support of ciguatera awareness, an updated poster has been prepared in collaboration with the French Institute for Research and Development. The poster incorporates some of the new information, especially new findings and research on cyanobacteria as a possible cause of a slightly different kind of fish poisoning, mainly from the consumption of molluscs (bivalves) such as giant clams. The poster has been printed and translated into Bislama for a planned field trip to Vanuatu.

### New booklet published: "Ecosystem approach to fisheries and aquaculture in PICTs"



The ecosystem approach to fisheries (EAF) is an improved approach to developing and managing coastal fisheries and aquaculture. It takes into account the broader effects of fishing on the environment, as well as the effects of other sectors on fisheries and the ecosystems within which they occur.

This 20-page booklet, prepared by Garry Preston, from Gillett, Preston and Associates, and co-produced by SPC and The Nature Conservancy, gives a brief overview of EAF guiding principles and how they could be applied in the Pacific Islands region.

PDF copies can be downloaded from:

[http://www.spc.int/coastfish/Reports/EAFM\\_Workshop/EAFM\\_Booklet.pdf](http://www.spc.int/coastfish/Reports/EAFM_Workshop/EAFM_Booklet.pdf)

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