Fisheries Newsletter

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Editorial

After five years of negotiations, a convention was adopted during the third quarter of 2000 which will pave the way for an international scientific commission to ensure sustainable conservation of the stocks of tuna and related migratory species.

On the SPC front, the various Sections have been busy, as usual. Fisheries Development Officer, William Sokimi, is back from Samoa, where he was able to help assess the super alia's longline fishing capacity, while bearing in mind the vessel's cost effectiveness.

The Training Section continued to produce training materials, in particular for Niue, where it collaborated with the local Fisheries Department on the publication of two posters (in English and Niuean), on the dangers of drinking at sea. We sincerely hope that these posters will heighten public awareness and help reduce the number of accidents at sea.

The New Caledonian Marine Trades Training School (*École des métiers de la mer*) in Noumea recently acquired a navigation simulator, training equipment which reproduces a virtual ship's bridge and instruments. This simulator could be made available to trainees from the region's other countries and territories.

Reef Fisheries Specialist Being Yeeting continued his study on the live reef food fish trade and visited Hong Kong, the hub of the Asian market. In his article, he highlights the need to rapidly introduce resource management and monitoring mechanisms in order to prevent stocks from being over-fished, particularly in island countries.

Happy reading!

Jean-Paul Gaudechoux
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Clement Lulumani, a trainee from Solomon Islands, with a 40 kg opah, during the SPC-Nelson Polytechnic practical fishing module

in This Issue

SECRETARIAT OF THE PACIFIC COMMUNITY
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COMMUNITY FISHERIES SECTION

FAO National Legislative Review and Enforcement Training Workshop in Tonga

The Community Fisheries Officer (CFO) travelled to Tonga in late July to attend the FAO National Legislative Review and Enforcement Training Workshop in Tonga to present a paper on the draft management plan for the deepwater snapper fishery in Tonga.

The draft management plan for the deepwater snapper fishery in Tonga was prepared by Viliami Langi following earlier work done by Tim Adams. As both Tim and Viliami were unable to attend the workshop, the CFO went to present the management plan as well as contribute to the sessions on community-based fisheries management.

International attendants of the workshop included Blaise Keumlangan; David Doulman; Annik Van Houtte; Heiko Bamman and Masa Izumi of FAO; Semisi Fakahau; Autalavou Tau (Samoa); Trevor Larkin; and Len Rodwell (FFA). The workshop, held at the Dateline Hotel, was well attended by a wide variety of local people from government and private industry. The people who attended were very pleased to be given the opportunity to contribute to the draft legislation and know that government was willing to listen to them and take action on areas of concern.

The overall aim of the workshop was to present the draft national fisheries legislation, a review of the 1989 Fisheries Act, that was conducted by Blaise Keumlangan and Manumatavai Tupou, a young Tongan on attachment to FAO.

There were also a number of other topics to support various parts of the legislation: aquaculture and legislation; seafood safety, export procedures and HACCP; fisheries management plans (including those for the deepwater snapper, tuna and seaweed); monitoring control and surveillance; and community-based fisheries management, that was relevant to all topics.

Autalavou Taua's presentation on the experience in Samoa with community-based fisheries management was very well received. The situation in Tonga is very different to that in Samoa where traditional controls exist. One of the greatest challenges in Tonga will be to adapt the concept of community-based management to a place long accustomed to open access with government controls that are difficult to enforce.

Participants seemed mainly concerned about increasing the responsibility of district and town officers, seeing as how these officers are already poorly paid and reluctant to take on enforcement roles. The consensus reached by the end of the workshop however, was in favour of implementing some measures for community-based fisheries management in Tonga.

Second Fisheries Module for SPC Community Education and Training Centre

After the workshop in Tonga, the Community Fisheries Officer travelled to Suva to run the second fisheries module for the SPC Community Education and Training Centre (CETC) programme, in collaboration with the University of the South Pacific's Post Harvest lecturer, Tony Chamberlain.

CETC runs an annual, seven-month programme for women from the Pacific Island region. All the trainees are involved to some degree in community-based work in their home countries. During the programme, the trainees study a wide variety of topics including nutrition, media, public awareness and agriculture.

In 1999 the USP's Post Harvest Fisheries Development Project (PHFDP) in collaboration with the SPC Community Fisheries Section developed and delivered a pilot fisheries module. Tony Chamberlain of USP and Patricia Tuara of SPC, as the main resource people, developed a manual to support the training.

The module was offered as an elective and included practical skills in sustainable harvesting techniques, gear technology, seafood processing and preservation, and marketing. The pilot module was successful and CETC requested it again this year.

It was decided to run it again as a pilot module and to further develop the manual, with the CFO assisting Tony Chamberlain in the training. This year the trainers were also very fortunate to have a number of other USP resource people to help,

Lyn Lambeth

Participants learned ropework and net mending

including Jone Maiwelagi, Johnson Seeto, Gabriel Tilitili, Jope Lesavua, Samasoni Sauni, Jimaima Lako, Aliti Vunisea, Jese Verebalavu and Lilian Fay.

Due to the problems following the coup in Fiji Islands the workshop had to be arranged around continual power cuts, so video sessions had to be carefully planned in advance. Both participants and trainers enjoyed the fisheries module, the highlight being a half day of reef walking and fishing.

Lyn Lambeth

The trip out to the reef was enjoyed by all

Tuvalu fisheries workshop (4–8 September 2000)

In September 2000, the CFO travelled to Tuvalu to hold a train-the-trainer workshop for women involved in small-scale fisheries activities. The workshop followed up work begun by the Community Fisheries Section in 1999.

In 1998, Tuvalu requested the assistance of the Community Fisheries Section in assessing, documenting and subsequently training women involved in small-scale fisheries.

In January/February 1999 the Community Fisheries Officer travelled to Tuvalu to undertake the first part of the SPC Community Fisheries Section work in FSM – an assessment and report of the role of women in fisheries in Tuvalu. Sikela Ulumutu (Fisheries Department) and Suia Pesega (The National

Council of Women) assisted in this work. One of the recommendations of the report resulting from this visit, was that the SPC Community Fisheries Section assist in running a train-the-trainer workshop for the community workers of each island. Funding for the workshop was provided by the Government of New Zealand as part of additional NZODA support for the Women in Fisheries Development Project.

Twelve women and one man were selected to attend the workshop, including community workers or representatives from eight islands, and trainers from the Fisheries Department, the Women's Department and Tuvalu All Non-Government Organisations (TANGO).

One worker from NAFICOT also attended some of the processing and fish smoking sessions relevant to his work. The workshop covered seafood quality, spoilage, processing, preservation, small businesses, conservation and management. Following the workshop the community workers were to return to their islands and run similar workshops for their communities. The Community Fisheries Section looks forward to receiving the reports from these workshops.

Lyn Lambeth

Lyn Lambeth

NAFICOT lent their facilities and assistance for the fish processing training

Publications and Information

The report, *An Assessment of the Role of Women in Fisheries in Pohnpei, Federated States of Micronesia*, has been printed and distributed. The draft report for Kosrae is awaiting comment from relevant agencies in Federated States of Micronesia (FSM) while the reports for Chuuk and Yap are in the process of being written. The French version of *Fisheries Management by Communities: A manual on promoting the management of subsistence fisheries by Pacific Island communities* is almost ready for printing.

The Forum Secretariat has published three background reports on gender issues for the tuna industry. The reports were compiled in support of national tuna development and management plans for the Forum Fisheries Agency and the governments of the Solomon Islands, Palau and Vanuatu. These three reports cover the collaborative work completed by SPC Com-

munity Fisheries Section and the Forum Secretariat in those three countries.

The *Women in Fisheries Information Bulletin* #7 (English) and the French version of #6 have been completed and distributed.

These and other publications may be found in pdf format (and html for the bulletins) on the new Community Fisheries Section homepage at:

http://www.spc.int/coastfish/sections/community/index.html

Future work

The Community Fisheries Officer will travel to Niue in November to assist and train the new Women in Fisheries Officer there, as well as advise on information and awareness programmes for inshore fisheries management. Niue is developing an inshore fisheries management plan with the assistance of SPC's Coastal Fisheries Programme. The role of the Community Fisheries Section in this is to assist Niue in ensuring all parts of the community and the resources they catch or collect are considered in the management plan.

A training attachment is being arranged for a Master of Science (marine science) student from the University of the South Pacific, Ms Lilian Fay, to begin working with the SPC Coastal Fisheries Programme. The Community Fisheries Section is supervising the attachment and will no doubt find plenty of work for Lilian to do.

The University of the South Pacific's Post Harvest Fisheries Development Project and the Community Fisheries Section are working on a series of eight community fisheries training booklets based on the manual piloted at the CETC fisheries training module outlined above. The booklets will be printed early next year and will cover the following topics:

Book 1	Fishing
Book 2	Nutrition & Recipes
Book 3	Sea Vegetables
Book 4	Disease and Spoilage
Book 5	Handling and Cold Chain
Book 6	Processing
Book 7	Business Development
Book 8	Management (e.g. fisheries management and conservation).

■ FISHERIES DEVELOPMENT SECTION

During the third quarter of 2000, Fisheries Development Officer, Steve Beverly, continued work in Noumea that began during the second quarter. In July, Steve completed an assignment working with the Training Section, tutoring students during the SPC/Nelson School of Fisheries Practical Fishing Module (reported on separately, see feature article).

July also saw the Fisheries Development Adviser, Lindsay Chapman, complete his work in Vanuatu, where he was providing input to the development of a National Tuna Management Plan. Lindsay focused mainly on infrastructure requirements, training needs and development options for domestic participation in tuna fishing activities. During July, Lindsay compiled a detailed report with many suggestions for encouraging the development of domestic tuna fishing activities, and gave it to the Vanuatu Fisheries Department.

Project Assistant, Marie-Ange Roberts, prepared several Section reports, including a report on technical assistance to Samoa in late 1999. This report has since been printed and distributed.

Successful conclusion to Samoa project

Fisheries Development Officer William Sokimi successfully completed his project in Samoa. The project was planned to finish towards the end of July, however, due to time lost dealing with mainline reel problems, the project was extended for six weeks to the end of August.

The initial stages of this project were reported in the last *Fisheries Newsletter* (No. 93), with encouraging results. The fishing and sea trials continued during July and August on board the Fisheries Division's new 12.2 m super alia, F/V *Ulimasao* (Figure 1), under William's supervision, with good catches continuing for the most part. The skipper and crew of the vessel were also trained to a point where William was confident that they could continue the sea and fishing trials on their own.

Several weeks of fishing time were lost in late July/early August, when the new Seamech Smart Reel and line shooter arrived in Samoa from Fiji Islands, and were installed on F/V *Ulimasao*. The new reel (Figure 2) was purchased to replace the original reel that had to be repaired early in the project.

The Smart Reel was a 1.2 m size, with a drum core of 0.4 m, flange diameter of 1.0 m and a distance of 1.2 m between flanges. The reel holds up to 35 nm of 3.5 mm monofilament line. With the larger new reel, effort was increased from 700–800 hooks/set to 1,100–1,200 hooks/set.

William Sokimi

***Figure 1: Prototype 12.2 m super alia F/V* Ulimasao**

William Sokimi

***Figure 2: New Smart Reel installed on board F/V* Ulimasao**

Catch and catch rates

A total of 30 sets were made over the 11 fishing trips undertaken on F/V *Ulimasao*. The total saleable catch came to 1,070 fish weighing 16,838 kg. With 25,055 hooks set during the project, the overall catch per unit of effort (CPUE) came to 67.3 kg/100 hooks for saleable species.

The overall catch rates for domestic tuna longliners in Fiji Islands and Tonga over recent years (1996–2000) for the same period May to August, vary between 38.8 kg/100 hooks and 68.7 kg/100 hooks for Fiji Islands, and 36.4 kg/100 hooks and 52.0 kg/100 hooks for Tonga (SPC Regional Tuna Fisheries Database). The overall catch rate for this Samoa project of 67.3 kg/100 hooks compares very favourably with these catch rates.

Albacore tuna (*Thunnus alalunga*) was the most predominant species, with 544 fish weighing 9,533 kg (56.6% of the saleable catch with a CPUE of 38.1 kg/100 hooks). The second main species was yellowfin tuna (*T. albacares*), with 223 fish weighing 4,142 kg (24.6% of the saleable catch with a CPUE of 16.6 kg/100 hooks). Unfortunately, bigeye tuna (*T. obesus*) only made up 3.3 per cent of the catch (26 fish weighing 483 kg), with a CPUE of 2.2 kg/100 hooks.

The remainder of the saleable catch (277 fish weighing 2,681 kg), was made up of 12 different species; the main ones by number were skipjack tuna (*Katsuwonus pelamis*—156 fish weighing 960 kg); mahi mahi (*Coryphaena hippurus*—28 fish weighing 201 kg); and wahoo (*Acanthocybium solandri*—21 fish weighing 226 kg). Billfish numbers were low at 20 fish; however, the saleable weight (headed, gutted and tail removed) was 983 kg.

Only small numbers of unsaleable fish were taken during the project: 60 fish weighing 660 kg. Nine blue sharks (*Prionace glauca*) and four oceanic whitetip sharks (*Carcharhinus longimanus*) made up the bulk of this weight (555 kg). Although

the flesh of the sharks was not sold, it was eaten by the crew. The shark fins were sold to a local buyer.

Economics of F/V Ulimasao

One of the main objectives of this project was to assess the suitability of F/V *Ulimasao* as a tuna longliner for Samoan fishing conditions. To do this effectively, the economics of the fishing operation were examined to see if the fishing operation was viable.

Although fishing was conducted over a four-month period, the catch figures were extrapolated to cover ten months, which is the expected fishing period. This is based on anecdotal information that the period from February to April is unproductive for tunas, especially albacore, and the fishing season of the longline fleet is thus reduced.

All fish were gilled and gutted at sea before chilling. When landed for sale, the head and tails of billfish and opah were removed before weighing and marketing. All other saleable species were sold gilled and gutted, or cut into chunks and sold to fisheries staff. Records were kept of all fish sold, with the weights and value recorded.

The purchase price paid by processors varied by species, and in some cases, such as yellowfin and bigeye tuna, by size of fish as well. The price paid for albacore tuna was consistent at WST 5.95/kg *[1 WST ≈ 0.29 USD].*

For yellowfin and bigeye tuna, the price varied from WST 2.20/kg for small fish, WST 3.10 or 4.85/kg for medium fish, and WST 7.50/kg for large fish. Broadbill swordfish sold for WST 4.40/kg (trunked), marlin for WST 2.20/kg (trunked), and *opah* for WST 5.95/kg (headed and gutted). Other bycatch species sold for an average price of WST 2.20/kg. Based on these prices, the total saleable catch of 16,838.2 kg had a wholesale market value of WST 81,616.80, which gives an average price of WST 4.85/kg.

The overall cost of F/V *Ulimasao*, ready for fishing, was around WST 550,000 (USD 161,000). This included the latest in electronic equipment, and appropriate sea-safety equipment for this size of vessel.

The value is based on information provided by the Samoan Fisheries Division, with estimates for some gear costs. Based on the vessel being valued at WST 550,000, and allowing 12 per cent interest on loan repayments, ten per cent depreciation, nine per cent for insurance, three per cent for repairs and maintenance and an annual licence fee of WST 700, the total fixed costs would be around WST 187,700 annually.

The total for the variable costs (fuel, oil, bait, ice, food, replacement fishing gear and other incidentals) excluding wages came to WST 26,359 for the 11 fishing trips, an average of WST 2,396 per trip. The trips themselves varied in length from three to six days (one to four sets). The effort also varied from 700–800 hooks set on average for the first seven trips, and from 1,100–1,200 hooks used per set for the last four trips.

The increased number of hooks being set increased bait usage on the last four trips, and hence the cost of bait. Ice usage also increased from 60 bags per trip for the first 4 trips, to 70 bags per trip for most of the remaining trips, although the cost dropped from WST 8.00 to 6.00/bag.

Therefore the cost of ice remained somewhat consistent. Wages for the skipper and crew were paid on a flat value of 20 per cent of the income from fish sales shared between them.

Projection of annual vessel economics and viability

The projection of annual vessel economics and viability is based on the catches and expenditure recorded by the F/V *Ulimasao* over the course of this project. A fishing trip is considered to be four to five days at sea with three sets made per trip. Ideally the vessel should work 1,000 hooks per set.

Assuming few trips are made between the unproductive months of February to April, and that a trip lasts four to five days, it is estimated that 50 trips would be conducted per year, which equates to 150 fishing days with between 200 and 250 days spent at sea during a year.

Using the CPUE achieved during the fishing trials of 67.3 kg/100 hooks of saleable fish, this would give a catch of 673 kg/set of 1,000 hooks, with a three-set trip catch of 2,019 kg of saleable fish, and an annual catch over 50 trips at around 100,950 kg. To give a total value for the annual catch, the average price per kilo of WST 4.85 is used.

The vessel cost is around WST 550,000 with the annual fixed costs calculated at WST 187,700. The variable costs for the fishing trials averaged WST 2,396.30/trip. Given the increase in bait use and cost associated with setting 1,000 hooks per set that is not truly reflected in the average, the estimated variable cost per trip should be increased slightly to WST 2,500. This does not account for any additional ice that may be carried if a deck

ice box is used in future. Table 1 summarises the profit/loss projection for a 12-month period, based on the fishing operations of F/V *Ulimasao* during the project.

The figures presented in Table 1 should be viewed as a guide only, as there are so many variables that can influence income or expenditure. If the catch rates go up or down, they will also have an effect.

If the price of fuel or bait or ice increases, then the expenditure will increase, reducing profits. If the average sale price of the catch increases, then the profit margin will also increase. Therefore caution is required when interpreting these figures and the likely profit margin.

Conclusions

The results of the longline fishing and sea trials for the prototype 12.2 m super alia, F/V *Ulimasao*, are very encouraging. The vessel is feasible for the fishing operations in Samoa and has proved itself over the eleven trips that were conducted. The present design is adequate to conduct full-scale longline fishing operations and the vessel is a large improvement on the smaller alias in the fishery. The increased size and stability of the vessel; the below-deck insulated fish holds; the added safety and efficiency of the twin diesel engines; the cabin for accommodation and the latest navigational equipment; all make this a good small-scale tuna longliner that appears to work well under Samoan fishing conditions.

The assessment of F/V *Ulimasao* focused mainly on six major areas: engine performance; structural durability; hydraulic fishing gear; fishing operations; vessel economics; and the suitability of the ice hold for fish preservation.

The twin Yanmar engines performed admirably and demonstrated that the horsepower produced by both engines was more than sufficient to power a boat of this size and take the load of the hydraulic fishing gear. Fuel consumption by these engines showed that the vessel could be run economically, and the most practical cruising speed is achieved at 2,500 RPM on both engines. This will give the vessel a speed of between 6.5 and 10 knots and the combined fuel consumption for both engines will vary between 6.5 and 7.2 litres/hour.

The new mainline reel was installed using the same hydraulic system except for the addition of a heat exchanger to cool the hydraulic oil. This system is adequate to conduct the fishing operation effectively, although there is room for improvement, especially in the line-setting operation.

While the original plans for the vessel indicate that it can carry up to four tonnes of ice, the trials showed that for practical purposes, 1.8 t is more realistic and comfortable to work with. If need be, 2.0 t can be taken on a fishing trip. The vessel's ice and fish holding capacity is one area that can be improved.

When viewing the economics of this fishing operation, consideration has to be given to the fact that the trials on F/V *Ulimasao* were conducted under semi-commercial circumstances.

However, despite this limitation, the economics of the operation based on the achieved saleable catch were profitable. There is room for improvement in some operational aspects, although this will be hard to achieve under a government system.

***Table 1: Profit/loss projection for an annual fishing operation based on the catches and expenses recorded during the fishing trials on F/V* Ulimasao**

Item	Value (WST)
Income	
150 sets of 1,000 hooks with a CPUE of 673 kg/1,000 hooks (estimated catch of 100,950 kg) and an average sale price of WST 4.85/kg	489,607.50
Expenditure	
Fixed costs for one year	187,700.00
Annual variable costs	125,000.00
Salaries based on 20 per cent of the catch value	97,921.50
Total expenditure	**410,621.50**
PROFIT	**78,986.00**

Assistance to New Caledonia's École des Métiers de la Mer

During August, SPC Fisheries Development Officer Steve Beverly worked with New Caledonia's École des Métiers de la Mer, or EMM, as it is known. EMM is beginning a training programme for longline skippers to fill a gap in availability of local skippers. Fifteen new

skippers will be trained during each course. They will eventually be placed with a new longline company that is soon to start operations in Koumac in the Northern Province. Steve offered advice on setting up the longline training vessel, F/V *Nondoue*, that will be used to train the new skippers. The boat, newly re-built, will be equipped with a Lindgren-Pitman monofilament longline system and an array of modern electronics.

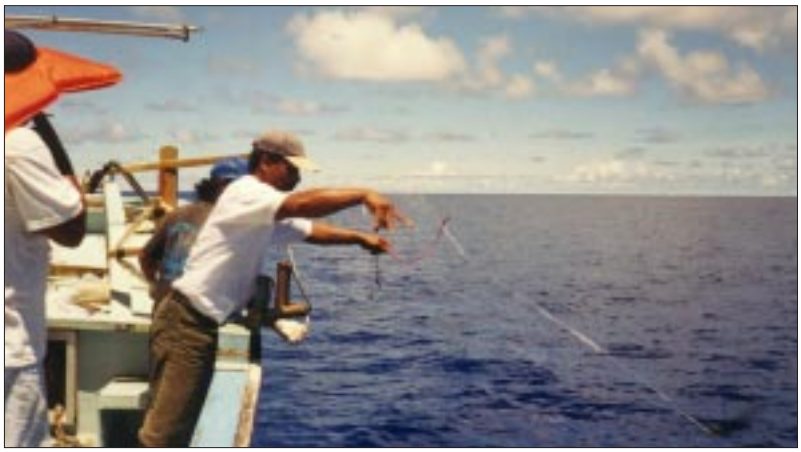
In addition to the vessel, EMM has recently purchased a navigation and fishing simulator from a company in France (Faros, which can be seen at www.faros.com). The simulator provides desktop duplication of at-sea situations in navigation and various fishing techniques, including purse-seine fishing and trawling. Faros' expert, Nicholas Chapman, is working on a programme to simulate longline fishing. Steve worked with Nick, giving technical advice in vessel layout, longline fishing techniques, and situations likely to be encountered during longline setting and hauling so that the finished simulation will be close to the real thing (see article on page 27).

FAD fishing skills workshops in Kosrae

SPC Fisheries Development Officer Steve Beverly spent the month of September in Kosrae, Federated States of Micronesia (FSM). During April of this year Kosrae's Fisheries Development Division and SPC deployed two FADs, one off Utwe Harbor and one off Okat Harbor. During September, as a follow-up to the FAD deployments, Steve conducted two workshops on FAD fishing and deep-bottom fishing for Fisheries Development Division (FDD) staff and for local fishermen. The first workshop was a "train the trainers" workshop for FDD staff only.

Steve Beverly

Figure 1: Workshop trainees making vertical longline branchlines



Steve Beverly

***Figure 2: Setting vertical longline from F/V* Mutunte**

A total of nine staff, including Administrator, Robert Taulung, and Peace Corps volunteer, Brenda Long, completed the workshop. FDD staff then assisted Steve in conducting the second workshop, which was attended by a total of fourteen trainee fishermen.

During the first day of the workshop, trainees made up monofilament and rope vertical longlines, monofilament branchlines, floats and floatlines, flag buoys, *palu-ahi* mid-water tuna handlines, and deep bottom fishing rigs (see Figure 1).

Before the workshops, FDD staff had made several wooden Samoan handreels to use during the workshops. After all the gear was made up, several trips were made to the Utwe FAD on FDD's vessels, F/V *Mutunte* and F/V *Hunter II*, for vertical

Steve Beverly

Figure 3: Cleaning the catch from the first vertical longline set

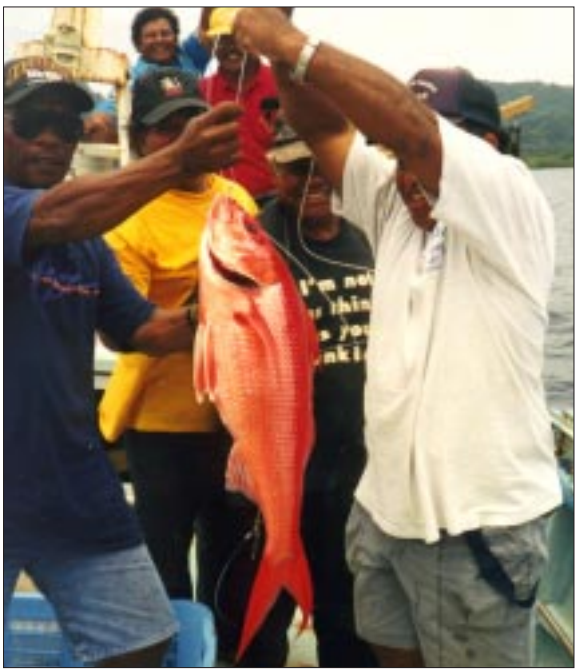
Steve Beverly

Figure 4: F/V* Hunter *fishing palu ahi at Utwe FAD

longline fishing and *palu-ahi* fishing (Figures 2, 3, 4). One trip was made to a seamount off Utwe Harbor to demonstrate deep bottom fishing techniques.

Fishing was not spectacular during the "train the trainers" workshop but things changed the following week. On the first day of vertical longline fishing at the Utwe FAD with the local fishermen trainees, a total of fifteen fish were caught, including thirteen yellowfin tuna and two rainbow runners. One vertical longline caught six yellowfin tuna on just one set. During the deep bottom fishing trial, three market-sized longtail snappers were caught on the top of the seamount (Figure 5).

At the conclusion of the workshops, Steve assisted FDD staff in rigging and deploying a third FAD on the northeastern side of the island. FDD staff should now be able to carry on, not only with their FAD programme, but also with additional FAD fishing workshops.



Steve Beverly

Figure 5: Trainees catch longtail snapper at Utwe seamount

International Marine Debris Conference on derelict fishing gear and the ocean environment

SPC Fisheries Development Adviser, Lindsay Chapman, attended a one-week International Marine Debris Conference on derelict fishing gear and the ocean environment, held in Hawai'i from 6–11 August 2000.

The Conference was jointly chaired by Mr Allen Tom, Sanctuary Manager, Hawaiian Islands Humpback Whale National Marine Sanctuary, Hawaii, and Ms Kitty Simonds, Executive Director, Western Pacific Regional Fishery Management Council, Hawai'i.

The Conference focused on derelict fishing gear, although this was only a small part of the wider marine debris issue. In the review of past workshops on marine debris, Dr James Coe (Acting Science and Research Director, Alaska Fisheries Science Centre, Washington) tried to put into perspective the amount of derelict fishing gear. He estimated that derelict fishing gear made up possibly one per cent of all marine debris.

Even with such a small percentage, the potential impact on the environment and marine life is very significant. For example, light sticks (and cigarette lighters) were mentioned as causing a problem to albatross, as adult albatross ingest them and feed them to their chicks. This then restricts the amount of food the chicks can hold in their stomachs. Marine animals also get caught in strapping materials from bait boxes, and in some cases die.

Derelict netting washed up on the coral reefs in the Northwestern Hawaiian Islands causes a real problem. The netting, which mainly appears to be trawl net from the north Pacific with some monofilament gillnetting, not only damages the coral reefs, but also entangles some of the Hawaiian Monk Seals, listed as an endangered species under US legislation.

The coastguard was also concerned that derelict fishing gear posed a potential navigation hazard, especially if propellers get entangled. Such entanglement could cause mechanical breakdown and place vessels and crew in danger.

Dr James Ingraham (Oceanographer, NOAA, Alaska Fisheries Science Centre, Washington), gave a very interesting presentation on ocean currents and the potential movement of marine debris, such as derelict fishing gears, across the Pacific Ocean north of the Equator.

According to his model, it takes on average 2.6 to 3.0 years for marine debris to move from one side of the Pacific to the other, although some areas produced limited movement. It was felt that much of the derelict fishing gear could have been drifting for more than 10 years before ending up on the reefs in the Northwestern Hawaiian Islands. The point was also made that even if no more gear was lost from today on, derelict gear would still show up in the water for the next 10 or more years.

The International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V was discussed many times in relation to the international requirements of those countries that are signatories to the Convention and its Annexes. MARPOL applies to all vessels, not just fishing vessels flagged by signatory countries. It appears that few countries in the south Pacific are up to date on the requirements of MARPOL in relation to their domestic fleet. To address this, the MARPOL requirements are presented separately in this newsletter to try and raise awareness in the Pacific fishing industry.

Another main topic that was discussed was what to do with debris, garbage, and unwanted fishing gear, when it is landed on shore for disposal. Many countries had poor port receival facilities and dumpsites are filling up. In some countries, the dump is on the coast so some of the rubbish is being blown or washed into the ocean. This highlights the larger problem of rubbish in general and there were no ideas put forward at the meeting on how to overcome this.

A group of students from Hawai'i, Alaska, American Samoa, Palau and Micronesia were brought to the Conference in recognition of the need to educate our youth. These students brought with them some marine debris from their country to set up a display (see Figure 1 on page 13). They also asked questions and gave a pantomime illustrating the effect of the marine debris on the marine environment; this was very well received by the participants.

Midway through the second day, the delegates broke into working groups under six main topics: Prevention and Legal Issues; Reducing Impact of Gear; Source Identification; Industry; Monitoring and Removal; and Education and Outreach. Each group had several presenters and a facilitator. The aim was to identify any issues through a brainstorming session, discuss them, and come up with ways to address them.

There were several representatives at the Conference from different fishing industries (e.g.

WHAT IS MARPOL, AND WHAT DOES IT MEAN TO THE FISHING INDUSTRY IN THE PACIFIC?

- MARPOL is the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, relating thereto.
- Annex V of the Convention is an Optional Annex, which means it applies to ships registered in States that have acceded to this Annex and to all ships in ports of Parties that have acceded to this Annex.
- The following countries fishing in the Pacific region have acceded to MARPOL 73/78 Annex V: Australia, Peoples Republic of China, Korea, France (covering territories), Japan, Marshall Islands, New Zealand, Papua New Guinea, Tonga, Tuvalu, United States of America (covering territories), and Vanuatu.
- Annex V to the Convention has nine Regulations for the Control of Pollution by Garbage from Ships. Ships are defined in the Convention as vessels of any type whatsoever operating in the marine environment. Unless expressly provided otherwise, the provisions of Annex V apply to all ships. This includes all fishing vessels.

In summary, the main Regulations state:

1. The disposal into the sea of all plastics is prohibited anywhere. Plastics include synthetic ropes, synthetic fishing nets, nylon monofilament fishing line, plastic bags, plastic bottles, plastic strapping and more.
2. The disposal into the sea of dunnage, lining and packing materials that float is prohibited within 25 nautical miles of land or reef.
3. The disposal into the sea of food waste and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse is prohibited within 12 nautical miles of land or reef.
4. The disposal of garbage in 3 above can be conducted three nautical miles outside of land or the reef if the materials are ground into pieces less than 25 millimetres in size.
5. If garbage is mixed with other discharges having different disposal or discharge requirements, the most stringent requirements shall apply.

Summary of supplementary Regulations:

6. Every ship of 12 m or more in length overall shall display placards which notify the crew and passengers of the above disposal requirements.
7. The placards shall be written in the official language of the State whose flag the ship is entitled to fly and, for ships engaged in voyages to ports under the jurisdiction of other Parties to the Convention, in English or French.
8. Every ship over 400 gross tonnage and every ship which is certified to carry 15 persons or more, shall carry a garbage management plan which the crew shall follow. This plan shall provide written procedures for collecting, storing, processing and disposal of garbage, including the use of the equipment on board. It shall also designate the person in charge of carrying out the plan. Such a plan shall be in accordance with the guidelines developed by the Organisation* and written in the working language of the crew.
9. Every ship over 400 gross tonnage and every ship which is certified to carry 15 persons or more engaged in voyages to ports under the jurisdiction of Parties to the Convention, shall be provided with a Garbage Record Book. The Garbage Record Book, whether as a part of the ship's official logbook nor otherwise, shall be in the form specified in the Appendix to MARPOL Annex V.

Exceptions:

- The disposal of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea.
- The escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimising the escape.
- The accidental loss of synthetic fishing nets or fishing gear, provided that all reasonable precautions have been taken to prevent such loss.

Port reception facilities:

1. The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.
2. The Government of each Party shall notify the Organisation for transmission to the parties concerned of all cases where the facilities provided under this Regulation are alleged to be inadequate.

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* Organisation means the International Maritime Organization, an agency of the United Nations with responsibility for safety at sea and the marine environment, based in London, England.

Lindsay Chapman

Figure 1: Display of marine debris collected by students in their country or territory

trawling, purse seining, tuna longlining) in the Pacific region. They participated in the working groups and provided valuable insight into the gear and techniques employed to catch fish. It became very clear from their participation that they do not want to lose fishing gear, and when they do, they make every effort to recover it. They also expressed concern at the problems caused in Hawai'i by derelict fishing gear washing up on the reefs, and the effects on wildlife. They undertook to work with others at the meeting on this issue.

The results of each working group were presented in plenary, with just the main one or two issues discussed, although most groups had five or six. The main points to come out of the Conference were:

- Establish an International Plan of Action to control and minimize the loss of fishing gear;
- Develop mechanisms to improve the reporting of lost fishing gear and complying with international and domestic legal regimes to prevent and mitigate the effects of fishing gear loss;
- Identify, quantify, and mitigate the adverse effects of ghost nets and ghost fishing;
- Identify the source of derelict fishing gear;

Lindsay Chapman

Figure 2: 'Akau'ola, Secretary for Fisheries, Tonga, delivers the closing speech

- Establish protocols to map locations of commercial fishing and aquaculture activities using Global Information System (GIS) techniques;

- Consider 'effort-rationalization' management approaches as tools to reduce loss of commercial fishing gear;

- Develop private–public partnerships to fund programmes to recover derelict fishing gear and to provide long-term funding for education and outreach activities;

- Alert government agencies to the urgency of addressing derelict fishing gear as national and international priorities; and

- Promote the availability and use of emerging technologies for educating all stakeholders about derelict fishing gear impacts and for disseminating information on initiatives and programmes to prevent, mitigate, and monitor the impacts of derelict fishing gear.

The Conference Chairs have planned quarterly meetings with working group representatives to monitor and promote implementation of the recommendations over the coming months and years. Marine debris is a huge problem that needs to be addressed by all, not just the fishing industry.

'Akau'ola, the Secretary of Fisheries in Tonga, in his closing address (Figure 2) to the Conference, highlighted the importance of the issue for small Pacific countries and territories. He urged everyone to make an honest pledge to act upon the marine debris issue, as the guardians of the marine environment today, for future generations. He said this was a great challenge to us all.

Other project activities

Lindsay travelled to the Commonwealth of the Northern Mariana Islands (CNMI) for initial meetings with the staff of the Department of Lands and Natural Resources and the Division of Fish and Wildlife (DFW), following a request for technical assistance. DFW has embarked on a FAD programme, to promote small-scale development including sport-fishing. The first stage of this programme was the deployment of 10 FADs around Saipan, Tinian and Rota, completed in the first half of this year.

The second stage of the FAD programme is the introduction of mid-water fishing techniques to CNMI, and this is the technical assistance being requested. Lindsay worked with the DFW staff to develop a work programme and gear list for materials that needed to be purchased. A Memorandum of Agreement was also developed to clearly set out the roles and responsibilities of both the SPC and CNMI.

Lindsay was taken out to see several of the FADs off Saipan. While at sea, local fishermen reported one FAD being off-station, so the DFW vessel headed to check things out. Indeed, the FAD was drifting, so the crew of the DFW vessel retrieved the buoy (Figure 1) and were able to pull the top hardware and around 100 m of nylon rope on board. The end of the rope had been severed by a clean, curved cut that looked like shark bite (Figure 2).

The buoy was too large and heavy to get on board, so the skipper secured the buoy with a towing bridle and set off on the 5 hour trip back to port, towing the FAD buoy at three to four knots.

Lindsay Chapman

Figure 1: Recovering the buoy from a FAD gone off station in Saipan

In September, William and Lindsay worked on the report for the sea and fishing trials on the super alia in Samoa.

Marie-Ange also worked on this report, doing many drawings to highlight specific components of the vessel and possible areas that could be changed or improved.

Lindsay Chapman

Figure 2: End of rope where the mooring line parted

TRAINING SECTION

New educational materials available

The Vessel Economics software in French will be available soon

The Fisheries Training Section has been awaiting a translation of its Vessel Economics software in French. The translation is now completed and the instruction manual in press. The software, with an instruction manual in French, will be distributed shortly.

For those who missed our previous article on this computer software, here is a short description: The software is a tool to understand and manage the financial aspects of longline vessel operations. The programme is useful to vessel skippers, owners, company managers, fleet managers and any others who have an interest in the economics of longlining. It gives a quick and accurate indication of vessel profitability and can immediately calculate profit variations caused by changing parameters in vessel operation.

The programme is particularly useful for teaching; it can be used to compare vessel income with fixed and variable costs and give the cash flow and profit/loss figures. With this achieved, the programme user may then alter any parameter in vessel operation and the software will instantaneously show how this change affects the profit. By this means, the key factors and the most effective ways of increasing profitability are demonstrated.

If you are interested in obtaining this computer programme, you should contact staff of the SPC Fisheries Training Section.

"Don't increase the risk, stay sober at sea."

Niue is keen to protect its fishermen from the danger of drinking alcohol while at sea. Niue Fisheries Department asked SPC Fisheries Training Section's help to produce a poster showing what happens to fishermen who go fishing after a drinking party.

This cartoon poster adds to the resource materials produced by the Training Section, aimed at reducing the number of small-boat accidents in the region. The poster has been printed in both English and Niuean languages.

SPC Fisheries Training Section can assist other countries to promote safety at sea. For more information, please contact SPC Fisheries Training Adviser at michelbl@spc.int.

Second regional course for women managers in New Zealand

The New Zealand School of Fisheries, long-time associate of SPC's Fisheries Training Section, has recently hosted the second course on seafood enterprise operations and management for Pacific Island women. The course was co-ordinated by Cushla Hogarth and Neil Wilson, both seafood technology experts at the NZSOF, and ran from Monday 13 November to Friday 1 Decem-ber 2000.

Once again, Nelson-based industry representatives and staff of the NZSOF combined their efforts to provide SPC trainees with a unique learning experience. As for the initial course, held in 1999, the training programme included a mixture of tutorial sessions, group discussions, seafood plant visits and practical production trials. The main topics covered were seafood quality and handling, hygiene, sanitation and safety, seafood processes and technologies, product development and improvement, marketing, staff management and business planning.

During the reporting period, Section staff liaised with NZSOF tutors on programme content, selected course participants and organised travel arrangements. The 10 participants were Josephine Mee from Latitude 8, Mele Mahe from Maritime Projects, Telatuni Saafi from Alatini Fisheries, Reena Narayan from Solander, Elena Veiqaliyaca from Ocean Trader, Elvine Lehartel, Agnes Sablan from Marianas Fishing Company, Nerrie Sumati from Delta Seafood, Sara Fillmed from Yap Fresh Tuna, and Heatatisia Filo from Seastar Fishing.

The course assisted the selected women to upgrade their technical skills and helped them develop strategies for enhancing the commercial viability of their enterprise.

This regional course was funded through a grant from the New Zealand Government.

A report on this training will be available in the next issue of our bulletin.

In brief

- A tuna-grading workshop may soon be run in Samoa. Following a request from the Fisheries Division, Section staff plan to visit Apia in December to train local tuna exporters on the grading of sashimi tunas. The workshop will combine classroom sessions to explain the sashimi concept and present the various grading parameters and practical grading sessions. The Nauru Fisheries and Marine Resources Authority has also approached the Training Section for a similar workshop, tentatively sched-

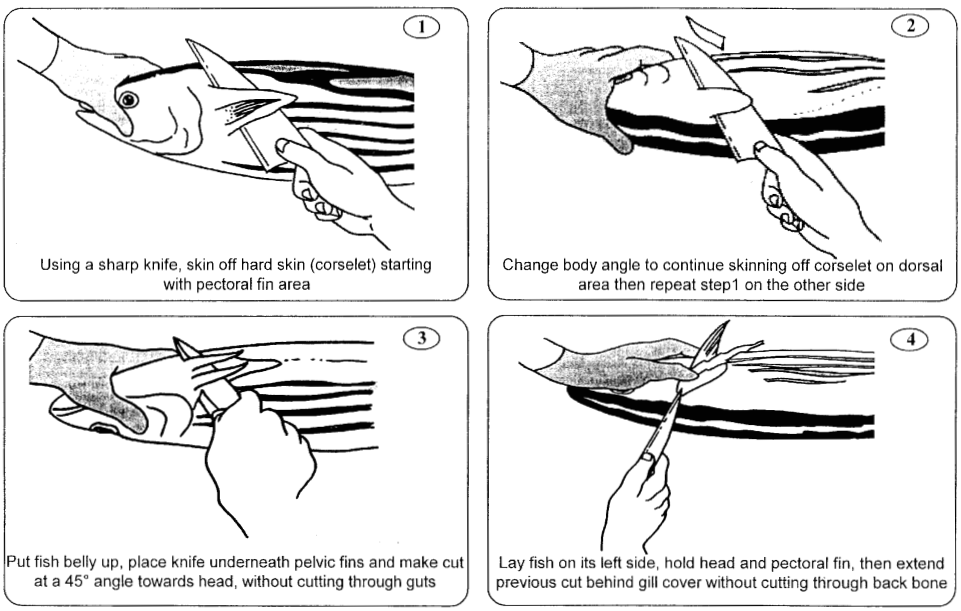
uled for January 2001. The Nauru workshop will target tuna retailers and exporters as well as the main tuna fishers. Sessions on on-board tuna handling will be included to meet the needs of the fishermen.

- The SPC / Australian Fisheries Academy (AFA) traineeship programme for Pacific Island fishers is underway in South Australia. On 1 November, the six participants to this pilot project completed the shore component of their training at the Australian Fisheries Academy's campus at Port Lincoln. The trainees are now working on board commercial Australian vessels until the end of December. Section staff will report extensively on this project in the next issue of the bulletin. In the meantime, we are seeking AusAID's financial assistance to repeat this training activity in 2001.

- A long-awaited workshop on *tataki* production (see our previous issue) was run early in October at the company Ocean Trader, Fiji Islands. The Section contributed to the workshop by producing a training manual on skipjack filleting and bringing Ken Harada, Quality Control Officer at the Sydney Fish Market. AusAID's annual grant to the Section financed Ken to tutor the workshop.

- Funding from NZODA will enable SPC and NZSOF to conduct a third regional course on seafood enterprise operations and management for Pacific Island women in 2001. This time, the course will target the owners / managers of small artisanal seafood businesses. The programme advertisement will be released in due course.

For safety reasons, wear a filleting glove on the hand holding the fish



Selection from the training manual on skipjack filleting, produced by the Fisheries Training Section

OCEANIC FISHERIES PROGRAMME

Well-known fisheries scientist joins OFP

In July 2000, Marc Labelle joined the OFP team of the SPC. A graduate of three Canadian Universities (B.Sc - McGill, M.Sc - University of Alberta, Ph.D - University of British Columbia), Marc worked at SPC during 1990–93 as senior scientist on the albacore project.

He then worked as Head of the Stock Management Unit of the British Columbia Ministry of the Environment (Canada), as Head of the MAERHA (Mathématique Appliquée à l'Évaluation des Ressources Halieutiques et Aquacoles) laboratory of IFREMER (France), and as a Research Scientist at JIMAR (Joint Institute of Marine and Atmospheric Research) of the University of Hawai'i.

Marc has considerable training and experience in the fields of zoology, marine sciences, statistics, computer programming, fisheries research and assessment and management of pelagic stocks.

As a specialist in stock assessment, funded by the Global Environment Facility, his current duties at SPC are to analyse and interpret biological and statistical data pertaining to the assessment of tuna and billfish species harvested in the Western and Central Pacific Ocean (WCPO), in the context of an ecosystems approach to the sustainable harvest of ocean resources in the region.

His initial work will focus on formulating and estimating several biological reference points for pelagic species, as required by the new Commission responsible for the management and conservation of highly migratory fish stocks in the WCPO. These reference points are commonly used to determine the sustainability of existing exploitation patterns, and to forecast the long-term impacts of proposed fishery management regimes.

This will be accomplished through the development of specialised extensions to the MULTIFAN-CL application. MULTIFAN-CL is a sophisticated, length-based, statistical catch-at-age model currently used by several fishery agencies to assess the status of tuna stocks and fisheries in the Pacific. By integrating the assessment and forecasting operations into a single modelling framework, one should be able to predict more reliable trends, having confidence intervals that account for more of the uncertainty in underlying processes.

Jean-Paul Gaudechoux

Gamefishing in the Pacific

As part of the Oceanic Fisheries Programme, Wade Whitelaw (billfish biologist) has been putting together information on the billfish and gamefish resources of the central and western Pacific. Part of this work has involved setting up a 'recreational fishing database' (thanks to Emmanuel Schneiter). Much of the available gamefish catch and effort data from around the Pacific has now been entered into this database.

This information will be collated into a publication entitled 'A country guide to gamefishing in the western and central Pacific'. This report will describe the existing gamefishing facilities and show target species and seasonal availability for the SPC member countries.

Billfish and gamefish in the Pacific were on the agenda at the 13th Standing Committee for Tuna and Billfish (SCTB) as their importance is increasing in

the Pacific area both economically and as a by-catch issue. A number of papers were provided to the SCTB – these can be viewed on the SCTB web site for the Oceanic Fisheries Programme of the SPC:

http://www.spc.int/OceanFish/Standing Committee

Wade recently visited Samoa, American Samoa, Tonga and PNG, where much valuable gamefish catch and effort information was obtained from clubs in Apia, Pago Pago, Nuku'alofa, Port Moresby, Madang, Lae and Rabaul (thanks to all the clubs). While there, he stressed the need for continued data collection to assist the fisheries scientists and managers to better manage their fisheries, especially the game fisheries which are starting to assume more economic importance.

Gamefishing is flourishing in PNG with numerous game and charter boats operating out of all the main towns. PNG is now also embracing the tag-and-release ethos, with over 900 fish released around Lae and Madang since 1998. These include quite a few marlin, as well as sharks, trevally, various tunas, and spanish mackerel.

Gamefishing boats come in all shapes and sizes, as can be seen in the photos from Samoa and Hawai'i – the same is true all over the Pacific, where people go to sea in small boats to try their luck. Data sheets for tournaments and charter-vessels can be found on the SPC web site:

http://www.spc.int/OceanFish/gamefish

Any information that can be sent to SPC will be much appreciated and will provide more information on the developing game fisheries in the Pacific.

Wade Whitelaw

Charter vessel out of Hawai'i at the beginning of the Hawai'ian International billfish tournament

Wade Whitelaw

Start of the Samoan international gamefishing tournament, August 2000

Wade Whitelaw

Dinghy rigged for gamefishing, American Samoa

Thirteenth Meeting of the Standing Committee on Tuna and Billfish

The Thirteenth meeting of the Standing Committee on Tuna and Billfish (SCTB13) was held from 5 to 12 July 2000 in Noumea, New Caledonia, at the invitation of the Secretariat of the Pacific Community.

SCTB13 was attended by participants from American Samoa, Australia, Canada, Cook Islands, Federated States of Micronesia, Fiji Islands, France, French Polynesia, Guam, Japan, Kiribati, Korea, Marshall Islands, New Caledonia, New Zealand, Niue, Northern Marianas, Palau, Papua New Guinea, Samoa, Solomon Islands, Taiwan/ROC, Tonga, United States of America, Vanuatu, and Wallis and Futuna. Participants from the Food and Agricultural Organization of the United Nations (FAO), the Forum Fisheries Agency (FFA), the Indian Ocean Tuna Commission (IOTC) and the Inter-American Tropical Tuna Commission (IATTC) also attended.

The meeting convenes as six working groups - the Statistics Working Group (SWG), the Skipjack Research Group (SRG), the Albacore Research Group (ARG), the Yellowfin Research Group (YRG), the Bigeye Research Group (BRG), and the Billfish and By-catch Research Group (BBRG). The Bigeye RG and Billfish and By-catch RG were accorded priority, with time allocated for deliberations, given existing uncertainties about the resources.

The initial overview of Western and Central Pacific Ocean (WCPO) tuna fisheries noted that the estimated total catch for 1999 for the four main tuna species was 1,718,776 mt, the second highest total catch on record after 1998 (1,900,290 mt). The 1999 catch of skipjack (1,101,617 mt) was slightly down on the record level of the previous year (1,244,349 mt) and, as usual, dominated the total catch (64%). The catches of yellowfin (396,747 mt) and South Pacific albacore (37,080 mt) were also slightly down on the 1998 levels, but the bigeye catch (105,365 mt) was a record high, just eclipsing the previous record catch in 1997 (103,886 mt). National fishery reports provide further details of these catches.

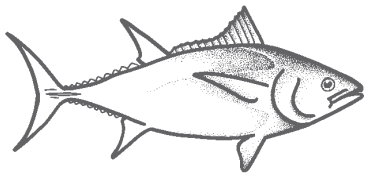
Reports on relevant activities of other organisations were received from the Bureau of Resource Sciences (BRS-Australia), Commonwealth Scientific & Industrial Research Organisation (CSIRO-Australia), IATTC, Institut de recherche pour le développement (IRD-France), FAO and the Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

The objectives of the SCTB Statistics Working Group (SWG) are to coordinate the collection, compilation and dissemination of tuna fisheries data. In regard to the coordination of data collection, the SWG held a session prior to the main SCTB meeting to review the catch and effort logsheets developed by the SPC/FFA Tuna Fishery Data Collection Forms Committee, that are widely used in the region. In the future, the SWG will review other logsheets, including those of the Japanese fleets, through a small group of participants that will report their findings to future meetings of the SCTB.

During the main SCTB meeting, the SWG Coordinator reported on the status of data collection, compilation and dissemination. Data that are compiled by the OFP on behalf of the SCTB include annual catch estimates, catch and effort data, length data, and other types of data. Progress in data compilation was achieved, although estimates of the annual catches in recent years in Indonesia and the Philippines have not been provided and problems remain with the longline and purse-seine catch and effort data provided by Japan and Korea. It was reported that revised catch and effort data covering the Taiwanese distant-water longline fleet would be provided in the near future.

It was reported that the level of coverage of longline catches in the WCPO during 1991–1999 by observer data held by the OFP is only 0.15 per cent. It was noted that observer coverage must be increased in order to better estimate the catches of non-target species, including sharks and rays, marine reptiles, marine mammals and birds.

Other subjects discussed by the SWG included the evaluation of observer and port sampling programmes; factors for converting processed weights to whole weights; predation of longline-caught fish by marine mammals and sharks; the compilation of annual catch estimates for small-scale fisheries (whether commercial, artisanal, subsistence or recreational); the availability of information on illegal, unreported and unregulated (IUU) fishing; the availability of Vessel Monitoring System (VMS) data; definitions of Gross Tonnage (GRT); the placement of SPC observers aboard Australian longliners;



the application of regression trees to estimates of purse-seine catches of bigeye and yellowfin; and the compilation of information on longline gear attributes and operations.

The five Research Groups considered regional fishery developments, advances in research, stock assessment and research co-ordination and planning for those species or species groups, with the BBRG concentrating efforts this year on swordfish. Summary statements on these matters are provided below for each research group. The BRG held an informal workshop prior to SCTB plenary, to review the application of the MULTIFAN-CL model to Pacific-wide bigeye. Also, a meeting to consider the use of oceanographic data in pelagic fisheries research was held prior to the SCTB plenary.

The meeting was also provided with an update of the ongoing MHLC process to develop an arrangement for the conservation and management of highly migratory fish stocks in the WCPO, that is scheduled for completion in August 2000 (Convention and Commission). The implications for SCTB in terms of the provision of scientific advice to the proposed Commission were also discussed. It was decided that a small group, under the direction of the SCTB Chairman, would consider how SCTB might make the transition to a Scientific Committee in the new MHLC Interim Conference.

The SCTB13 was presented with, for the first time, applications of the MULTIFAN-CL length-based assessment model to all four target tuna species in the WCPO and to North Pacific blue shark. In response to a need for SCTB to receive technical advice regarding the application of this and similar methods, the meeting decided to establish a Methods Working Group. The terms of reference for this Working Group were agreed and are listed in a section following the Species Research Group summary statements.

Recognising tagging as a key source of information for stock assessment work, the meeting decided to explore convening a tagging workshop in early 2001, the dates and venue to be decided. The objectives of the workshop will be to scope tagging objectives, prioritise methodology and logistics for mounting large-scale tagging projects for the four target tuna species, as well as integrating existing electronic and conventional tagging projects.

The meeting thanked outgoing Chairman Dr Ziro Suzuki for his sterling service over the past two years and Dr Tony Lewis for his role as interim Skipjack Research Group Coordinator for the past three years. The new SCTB Chairman and Working Group and Research Group Coordinators for the next two years are as follows:

- SCTB Chairman: Mr Bernard Thoulag;
- Statistics WG Coordinator: Mr Tim Lawson;
- Methods WG Coordinator: Dr John Sibert;
- Skipjack RG Coordinator: Dr Gary Sakagawa;
- Yellowfin RG Coordinator: Dr Robert Campbell;
- Bigeye RG Coordinator: Mr Naozumi Miyabe;
- Albacore RG Coordinator: Dr Talbot Murray;
- Billfish and By-catch RG Coordinator: Mr Peter Ward

The venue for SCTB 14 to be held during the period June–July 2001 was not confirmed, but will be communicated to participants at a later date.

Skipjack Research Group Summary Statement

Skipjack contribute two-thirds of the WCPO catch of the four main tuna species. The best available estimates indicate that the 1999 skipjack catch in the WCPO was approximately 1.1 million mt (slightly less than the record 1998 catch), with purse-seine fleets providing the majority of this catch (71%).

Available indicators (purse seine, pole and line) show variable catch rates over time in the fishery. A new analysis of purse-seine CPUE for Japanese vessels has shown a declining trend in standardised CPUE for unassociated school sets since the 1980s but an increasing trend for sets associated with logs and FADs. In the latter case, the recent switch away from natural log sets to mainly drifting FAD sets make associated-set CPUE difficult to interpret as an index of abundance at this time.

Ongoing studies in fisheries oceanography have continued to provide a better understanding of environmental influences on fluctuations seen in skipjack availability and productivity in the WCPO. These studies suggest that El Niño conditions have a positive impact on skipjack recruitment, particularly when followed rapidly by La Niña conditions, as occurred in 1998.

Tag-based assessments from the early 1990s found regional exploitation levels of skipjack to be low to moderate at catch levels similar to those in recent years. The preliminary results of a MULTIFAN-CL analysis for skipjack were consistent with

the tag-based assessment, but in addition indicated that fishing mortality may have increased significantly since the early 1990s, particularly in the tropical region west of 165°E. Nevertheless, the overall estimates of fishing mortality-at-age were still considerably smaller than the corresponding estimates of natural mortality-at-age. It is stressed that these are preliminary results from an analysis still under development. The analysis will be refined in the coming year by the inclusion of additional tagging and fisheries data from the North Pacific.

Given the importance of skipjack to the fisheries in this region, there is urgent need

(i) to improve the statistical coverage of the fisheries, which remains poor in some areas (e.g. Indonesia, Philippines);

(ii) to develop fishery indicators, such as standardised CPUE, for use in stock assessments;

(iii) to better document and understand the use and impacts (ecological and biological) of new technology (such as remotely monitored FADs) in the purse-seine fishery;

(iv) to continue the development of the MULTIFAN-CL-based assessment (and in particular to extend the geographical scope of the analysis to include the northern portion of the stock); and

(v) to continue to develop an understanding of processes affecting stock productivity and recruitment.

Given the likely continued reliance on tagging data since it is a source of information on skipjack (and other tuna) stock dynamics that is independent of the fishery, consideration now needs to be given to a new, large-scale tuna tagging programme in the WCPO.

Bigeye Research Group Summary Statement

Although the catch of bigeye for the Pacific Ocean accounts for a relatively small portion (8%) of the total tuna catch, its economic value is substantial (approximately US$1 billion annually). The 1999 total Pacific catch was 184,546 mt, with 105,365 mt and 79,181 mt in the WCPO and EPO, respectively. Both regions recorded increases in bigeye catch (around 13,000 mt and 8,000 mt respectively) in 1999, due to increases in purse-seine catches.

This increased catch in the WCPO appears to be associated with the extensive use of drifting FADs, while the increase recorded in the EPO was due to the improvement in bigeye catch monitoring for the purse-seine fishery. It should also be noted that the size of bigeye caught by drifting FADs sets in the EPO was much larger in 1999 than previous years. The overall catch trend in the WCPO has been increasing in recent years, reflecting either higher longline or purse-seine catches depending on year.

In the EPO, the surface fishery catch increased markedly to 29,000 mt in 1994 and has been more than 35,000 mt per year since then. At the same time, the longline catch has declined from its maximum of about 100,000 mt in the mid-1980s to about 35,000 mt in 1998. Overall, EPO catches of bigeye have varied from 60,000–80,000 mt in recent years.

The environmental effects on availability and productivity have been investigated through fisheries oceanographic studies. As with yellowfin, El Niño events may increase the catchability of bigeye in the west by raising the lower limit of their swimming habitat. At the same time, recruitment could be higher in the east due to the warmer and more suitable environment for spawning and larval survival. Incorporating such information into the stock assessment process may enhance the reliability of population models for this species. This study therefore should be further pursued.

During the past year, collaborative research involving several institutions has been undertaken in order to better assess the status of the bigeye stock. The work has involved the application of an integrated statistical model (MULTIFAN-CL) to Pacific-wide bigeye data for the first time.

The preliminary results from the model are promising and are consistent in several respects with the results obtained by the IATTC for the EPO using an independently derived model, although the absolute values of F (fishing mortality) from the collaborative study were considerably lower. Further work is required before the MULTIFAN-CL results can be interpreted in a management context. The IATTC analysis for the EPO indicated that stock biomass has been relatively stable in recent years, but the outlook for the stock is uncertain because the most recent recruitment is not precisely estimated.

The Group examined several nominal and standardised CPUE series for the longline fishery. Despite some differences among the standardised CPUE series, they tended to indicate a similar declining trend in recent years. Although

these estimates require further refinement, these results raise a concern of possible overfishing and decline in adult biomass, particularly in combination with the record purse-seine catch in the WCPO in 1999 and continuing high catches in the EPO.

The Group therefore strongly recommends that current research regarding appropriate stock assessment be continued as a priority. Other priorities for research and data collection include:

(i) acquire more detailed catch statistics and size-composition data for the fisheries of Philippines and Indonesia;

(ii) if possible, refine the methods for estimating bigeye catches in the purse-seine fishery;

(iii) better document and understand the use and impacts (ecological and biological) of new technology (such as drifting FADs) in the purse-seine fishery; and

(iv) refine the estimates of bigeye vertical distribution in relation to temperature and other variables (for use in habitat models) using the most recent archival and sonic tagging data.

In addition to these short-term research items, the Group predicted a longer-term need for additional tagging on a large-scale to provide information on bigeye movement, natural mortality and exploitation rates in order to support future stock assessment analyses.

Yellowfin Research Group Summary Statement

The yellowfin tuna catch for the western and central Pacific Ocean (WCPO) has increased since the 1980s, when the purse-seine fishery began its significant expansion in the WCPO. Since 1990, the catch ranged from 320,000 mt (1996) to 458,000 mt (1997). The majority (55%) of this catch is produced by purse seiners.

In 1999, poor market conditions for purse-seine caught fish resulted in reduced purse-seine fishing effort and catch. In addition, the longline yellowfin catch for 1999 of 52,580 mt was the lowest for nearly 30 years. The overall catch for 1999 fell from 440,000 mt in 1998 to about 397,000 mt, well below the peak of 458,000 mt in 1997.

Catch rates for purse-seine fleets continue to be variable and show no clear trend in the available time series of data. However, catch rates for some fleets since about 1997 may have benefited from the increased use of drifting FADs. This fishing innovation is rapidly becoming the preferred technique for most fleets.

Catch rates for longline fleets continue to remain near their historical lows. The trend in the recent data is mixed, with some fleets showing a flat trend and others showing a slightly downward trend since 1988. It is noted that these trends may have been affected by changing fishing practices.

Tag-based assessments from the early 1990s found regional exploitation levels of yellowfin tuna to be low to moderate, with catch levels at that time slightly below those in recent years. The updated results of a MULTIFAN-CL analysis for yellowfin tuna continue to be consistent with the tag-based assessment, but in addition indicate that fishing mortality may have increased significantly since the mid 1990s.

However, the overall estimates of fishing mortality-at-age remain considerably smaller than the corresponding estimates of natural mortality-at-age. The analysis also indicates that recent recruitment may have declined, which in turn is producing a decline in overall stock biomass. Additional research with the MULTIFAN-CL model will be undertaken to determine the significance of these results in terms of future stock productivity. Assuming that major changes in yellowfin stock productivity have not occurred, it is likely that the WCPO yellowfin tuna stock can sustain the current catch level.

The research priorities for yellowfin include:

(i) continued improvement in the quality and coverage of catch and effort data and size composition sampling, with particular emphasis on the Philippines and Indonesian domestic fisheries;

(ii) continued development and evaluation of the MULTIFAN-CL model for yellowfin tuna; and

(iii) continued collection of information on a range of biological information, including age and growth, sex-specific natural mortality, and trophic/ecosystem dynamics.

As noted in the skipjack summary statement, it is likely that there will be continued reliance on tagging data as a source of information on yellowfin stock dynamics. Therefore, consideration now needs to be given to a new, large-scale tuna tagging programme in the WCPO.

Albacore Research Group Summary Statement

Albacore caught in the South Pacific constitute a single stock. Longline, primarily catching adults, accounts for the majority of albacore catches (89%) in the South Pacific; trolling catches the remainder (11%). The albacore catch in 1999, estimated at 37,080 mt, was less than in 1998 when catches reached the 10-year peak of over 42,000 mt.

In 1999, longline catches were 33,353 mt and troll catches 3,641 mt. Longline catches from several South Pacific Island countries and territories exceeded 2,000 mt, and contributed substantially to the total albacore catch. The combined albacore longline catch in 1999 by Fiji Islands, French Polynesia and Samoa was slightly lower than 1998 in all three areas. This catch, more than 11,000 mt, constitutes 29% of all longline catches of albacore in the South Pacific. Catches in Samoa have rapidly increased from 560 mt in 1994 to over 4,000 mt in 1998, but declined in 1999 to 3,400 mt.

Longline albacore catches also declined for vessels in American Samoa over the same time period. Slight declines in catches were also reported for Canadian and USA troll vessels fishing the Subtropical Convergence Zone (STCZ) in the 1998/99 season relative to 1997/98. Troll-caught albacore in the New Zealand EEZ declined by about half over the same period. In this latter case, low prices were given as an explanation by the fishing industry, rather than low availability.

There has not been any dedicated field research on albacore since the OFP research programme in 1991/92. Biological data on albacore is regularly collected, however, via observer and port sampling programmes in the region, although some of these data have not been compiled. Length frequency data from port sampling is a critical input to the length-based, age-structured stock assessment model (MULTIFAN-CL). This model has been extended to cover the period 1961–1998, to incorporate tag-recovery information, and include the Samoan longline fishery.

Results from this model are strongly influenced by the small number of tags recovered (135 recoveries) and hence are highly uncertain. Results, however, suggest a decline in biomass from 1961 to 1989/90 (about 50%) followed by an increase which continues to 1998. These results are regarded as highly uncertain, due to the influence of the tagging data and the lack of information on tag reporting rates.

An alternative stock production model examined stock sustainability from a theoretical perspective. The results of this model were also considered to be highly uncertain as several key parameter estimates were unrealistic and there was no basis for confirming results, including reference to similar species. A new attempt to incorporate environmental factors (with appropriate time lags) in modelling biomass suggests a possible link between recruitment and El Niño Southern Oscillation (ENSO) events. This approach requires further work to confirm this interpretation.

A number of areas requiring further work before the next SCTB meeting were identified. These tasks include: incorporating data from additional fleets; reviewing the adequacy of observer coverage; conducting an economic analysis in relation to changes in effort; analysing longline data to determine if retention practices have changed in some fleets; analysing depth of longline sets in relation to albacore size; developing further extensions to the MULTIFAN-CL model; developing procedures for standardising CPUE; evaluating the need for a further tagging programme; and evaluating the use of reference points in assessing stock status.

No information was presented to suggest a change in interpretation of stock status of South Pacific albacore. Although model results are considered highly uncertain, exploitation rates appear to be moderate and current catches are likely to be sustainable.

Billfish and By-catch Research Group Summary Statement

Unlike the species-specific research groups, the BBRG reviewed information on a diverse range of species and issues. While research on catch and effort statistics, biology, population dynamics and assessments of the main billfish species was reviewed, the impacts of commercial fishing on by-catch species such as turtles, sharks and seabirds were also considered. The BBRG also reviewed the activities on billfish and by-catch issues conducted by both the IATTC and the ISC.

Following on from the information on billfish species presented at SCTB12, new data on the catch of these species in the WCPO was reviewed. This was assisted by records of the catch of these species now being included in the National Fishery Reports presented to SCTB.

During 1999, the total commercial catch of billfish was estimated to be around 32,600 mt (consisting of 16,700 t of swordfish, 10,500 t of blue marlin, 4,200 t of striped marlin and 1,200 t of black marlin). Nearly all of this

catch is taken by longliners. Catch statistics on billfish caught (and released) by recreational fisheries throughout the WCPO were also compiled and reviewed for the first time. The catch of billfish in these fisheries is estimated to be around 3–5 per cent of the commercial catch of these species, with black marlin and blue marlin being the largest catch component. Assessment of the status of blue marlin in the Pacific indicates that present catches are below maximum sustainable yield.

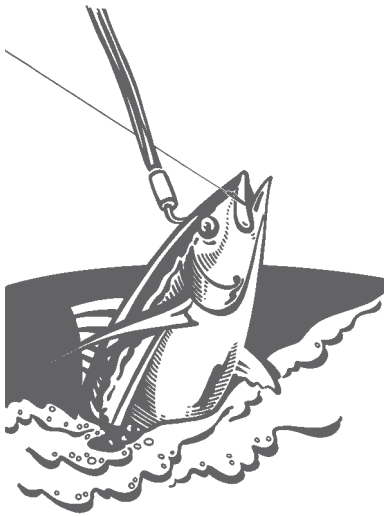
However, this work is preliminary and many gaps in the information required for the development of quantitative stock assessments on all billfish species still persist. Major gaps include information on age and growth, mixing rates and natural mortality, together with an understanding of the influence of targeting practices and changes in oceanographic conditions on catch rates. Consequently, the status of billfish stocks in the WCPO remains uncertain.

A comprehensive review of the fisheries that catch swordfish in the WCPO was undertaken. There has been a 50 per cent increase in the catch of swordfish in the WCPO during the 1990s, a rapid increase in the catch in the southwest Pacific in recent years (mainly due to developments in the Australian fishery), and there exists potential for further developments in other countries. Overfishing of this species in other oceans has also been acknowledged. New research on stock structure postulates three stocks in the Pacific (one in the northwest, one in the southeast and another in the southwest). A sub-regional management approach is therefore necessary.

Quantitative stock assessments have yet to be completed, and the present status of swordfish stocks in the WCPO remains uncertain. However, a number of research projects are presently underway to increase understanding of the biology and population dynamics of swordfish. Indicators of possible overfishing, based on information gathered from similar fisheries in other oceans, should be identified and monitored.

The BBRG also reviewed information relating to the status of the blue shark stock in the northern Pacific. The results indicate that the stock is increasing after a large decline during the 1980s, though this work remains preliminary as many uncertainties remain both in the data and biology of this species.

Research on the incidental catch of turtles and seabirds in the Hawai'ian longline fishery was also reviewed. The BBRG took particular note of the recent U.S. court-related actions in this fishery on the issue of turtle by-catch. The BBRG expressed concern that fisheries are being singled out and possibly closed when the threat from fisheries to sea turtle populations are relatively small in comparison with those from other human activities, especially those that result in the degradation and loss of eggs and nesting sites.



The BBRG highlighted the complexity of fishery interactions where highly migratory species, protected species, and a range of impacting activities are involved. Fishery by-catch species often have a wide distribution.

Furthermore, seabird and turtle populations, because of their land associations, are often impacted by a wide range of non-fishing activities. As management decisions applied to a fishery can generate large economic and social impacts, it is important to ensure that they achieve the desired outcome of resource sustainability. The BBRG noted that the full impact of all human activities should be taken into account in assessing the effect of fishing on these populations. Consideration should span the range of scientific information available, including species population parameters, the range of the fishery and non-fishery impacts, and measures in place to mitigate by-catch.

Finally, the BBRG reviewed the research relating to billfish and by-catch. While noting the range of ongoing research, the collection of data needed in support of stock assessment, particularly observer data for which coverage in recent years has been less than one per cent for almost all fleets, was seen as a priority.

To this end, a better understanding of catch (both present and historical and for all commercial, artisanal and recreational fisheries) was seen as a high priority issue, particularly for by-catch species. Research on understanding the biology of these species (age and growth, reproduction and movement) is also required. The need for collaborative international research on many of these issues was identified and strongly encouraged.

PACIFIC NATIONS ADOPT TUNA TREATY

Fishing nations from throughout the Pacific adopted an agreement on 4 September 2000 to establish an international fishery commission to ensure the long-term conservation and sustainable use of tuna and other highly migratory fish stocks in the central and western Pacific.

"The adoption of the convention was a culmination of five years of long negotiations on some very difficult issues," said Ambassador Satya Nandan of Fiji Islands, Chairman of the Multilateral High-Level Conference (MHLC) on Highly Migratory Fish Stocks in the Western and Central Pacific. It reflects a fair balance of interests, in particular between developing Pacific countries, in whose national areas large stocks of tuna fish are found, and distant-water fishing states, which fish in the Central and Western Pacific."

The two-thirds vote required for adoption of the convention was cleared with 19 nations voting in favour; Japan and Korea in opposition; and China, France and Tonga abstaining. The 24 nations, as well as other Pacific territories and fishing entities, had been meeting at the Hawai'i Convention Center in Honolulu since 30 August in the seventh and final session of MHLC.

Japan expressed concern about the decision-making process, the northern boundary, the observer programme and dispute settlement, among other issues. Korea said there are many outstanding issues that the convention does not address.

China argued against membership status by fishing entities. Such membership has been proposed for Taiwan. Tonga said the decision-making process was unacceptable, as a body of three can veto a majority consensus.

The convention shall enter into force 30 days after the deposit of instruments of ratification, acceptance, approval or accession by three States north of 20°N latitude (i.e. the distant-water fishing nations) and seven States situated south of the 20°N latitude (i.e. the Pacific island nations in whose waters the fishing predominantly occurs).

A preparatory conference will convene within the year so that functioning of the commission can begin immediately upon the convention's entry into force. Among key issues resolved by the delegations during the final MHLC session were the following:

Decision-making

Decisions of the commission will be made by consensus as a general rule. If consensus cannot be reached, decisions by voting on question of procedure will be taken by a majority of those present and voting.

Decisions on question of substance shall be taken by three-fourths majority of the members of the South Pacific Forum Fisheries Agency present and voting and three-fourths majority of non-members of the South Pacific Forum Fisheries Agency present and voting and provided further that in no circumstances shall a proposal be defeated by two or fewer votes in either chamber.

Taiwan/ROC

Fishing entities, such as Taiwan, whose vessels fish for highly migratory fish stocks in the convention area may, by written instrument, agree to be bound by the regime established by the convention. Any such fishing entity shall participate in the work of the commission, including decision-making on matters stated in the convention.

Participation by territories

American Samoa, French Polynesia, Guam, New Caledonia, Northern Mariana Islands, Tokelau, and Wallis and Futuna are entitled to be present and to speak at the meetings of the commission and its subsidiary bodies. Separate rules of procedure will be developed by the contracting parties on the extent and nature of participation by these territories.

Boundaries

The northern and western boundaries of the convention area are not fixed, but will encompass the range of the stocks within the Pacific Ocean; It is not intended to include waters in Southeast Asia that are not part of the Pacific Ocean, nor is it intended to include the waters of the South China Sea.

The southern and eastern boundaries of the convention are fixed as follows: from the south coast of Australia due south along the 141° meridian of east longitude to its intersection with the 55° parallel of south latitude; thence due east along the 55° parallel of south latitude to its intersection with the 150°meridian of east longitude; thence due south along the 150° meridian of east longitude to its intersection with the 60° parallel of south latitude; thence due east along the 60° parallel of south latitude to its intersection with the 130° meridian of west longitude; thence due north along the 130° meridian of west longitude to

its intersection with the 4° parallel of south latitude; thence due west along the 4° parallel of south latitude to its intersection with the 150° meridian of west longitude; thence due north along the 150°meridian of west longitude.

(Source: *Pacific Islands Fishery News*, Fall 2000)

NEW CALEDONIA'S MARINE TRADES TRAINING SCHOOL ACQUIRES NEW NAVIGATION SIMULATOR

The simulator at the Marine Trades Training School in Noumea is a professional model designed for teaching purposes which creates a virtual ship's bridge and its equipment: navigation instruments, rudder and engine controls, repeaters, etc.

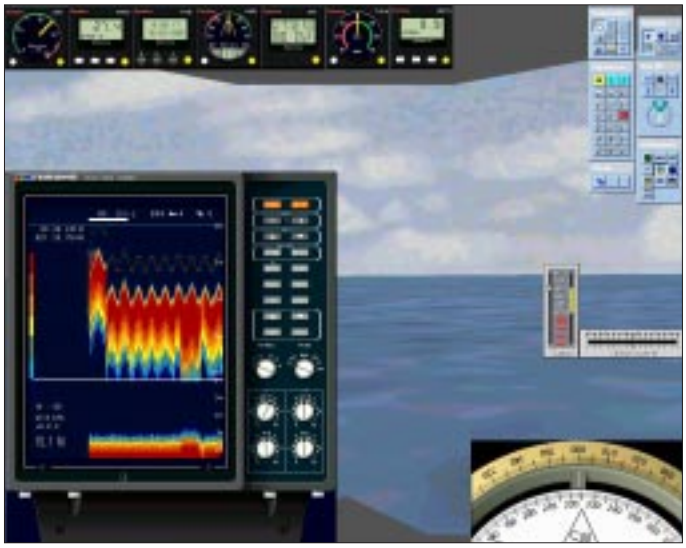
This tool is perfectly suited to the School's needs in terms of both initial training and continuing education.

It runs on PC-compatible computers and makes it possible to easily put sailors and future sailors into real-life situations through a variety of scenarios and navigation exercises: e.g. cross-fixing, instrument navigation in open or congested water, evasive manoeuvres, training in lights and signalling, navigating channels, entering port.

In a few months, a fishing module will be added to the navigation module. This will allow trainee fishermen to learn and practise using a variety of fishing gear including longlines. The longline module is currently being developed by Nicholas Chapman of the Faros Company (contact: marine@faros.com) with the assistance of Steve Beverly, SPC's Fisheries Development Officer.

The simulator is based on a standard PC architecture using a Windows 95/98 environment. Espace Bureautique, a company in Noumea, is in charge of service for it.

This simulator, which meets STCW95 criteria, has allowed the School to gain approval from the General Inspectorate for Maritime Training at the French Ministry of Equipment, Transport and Tourism to include simulator sessions in its training programme.



Steve Beverly

Controlling the navigation instruments and the depth sounder from the computer screen

Steve Beverly

Approaching the harbour entrance in bad weather (note the radar, GPS and autopilot on the lower screens)

This unit allows trainees to experience real-life situations and gives them the impression of being "immersed" in the simulation due to its:

- 3D bridge which includes a 180° three-dimensional panoramic view.
- 3D visual of navigation zones corresponding to the French navigation (SHOM) charts for the regions of North Brittany and Normandy. A model of the area around Noumea (corresponding to SHOM chart 6687) is currently being prepared.
- "navigation instruments" screen, which can display:
  - ♦an X band radar (Raytheon R41XX with mini-ARPA functions);
  - ♦an X band ARPA radar (Sindel);
  - ♦a colour video depth sounder (Furuno FCV362);
  - ♦a GPS receiver (Furuno GP50);
  - ♦an automatic pilot (Robertson AP45);
  - ♦a B class magnetic compass (Cassens & Plath);
  - ♦a daytime running lights and signals command interface;
  - ♦an alarm command interface;
  - ♦a helm control command interface;
  - ♦a engine command interface
- "repeaters" screen, which can display:
  - ♦log (Dataline Robertson);
  - ♦tachymeter (Dataline Robertson);
  - ♦watch (Dataline Robertson);
  - ♦GPS repeater (Dataline Robertson);
  - ♦Sounding device (Dataline Robertson);
  - ♦Turn rate (Dataline Robertson)

The simulator's functions are divided into three groups:

1. Scenario preparation
2. Student simulation under instructor's supervision
3. Simulation analysis

Students participate in a "network" simulation run by the instructor, who also supervises it. At will, the instructor can change the route of an automatic ship or the weather conditions in the area or freeze / interrupt the simulation for additional explanations.

At the end of the simulation, the instructor can analyse and comment on each student's trajectory.

The Marine Trades Training School, which already collaborates with SPC as part of the Nelson Polytechnic Practical Modules, is studying the possibility of making its simulator available for training sessions designed for Pacific countries and territories. For more information, interested parties can contact the School at the following address:

École des Métiers de la Mer
BP 36
98845 Noumea
New Caledonia

Fax: +687 274754
E-mail: emm@offratel.nc

(Source: J.C. Dajoux-Bouron, instructor at École des Métiers de la Mer)

Nicholas Chapman, from the company FAROS, is developing the longline software.

PAFCO BUZZES AS OUTPUT INCREASES

A five-year agreement between PAFCO and Bumble Bee Seafoods of the United States is taking shape with the appointment of a Canadian expert in quality assurance. With Bumble Bee taking responsibility over tuna projects from PAFCO, the quality assurance manager will oversee the operation.

Bumble Bee has begun buying fish which PAFCO processes into loins for the American company – the world's second biggest supplier of skipjack tuna. Previously, Bumble Bee bought the loins directly.

On technology, Bumble Bee has acquired new equipment to improve the quality of the products and boost the recovery per tonne of fish. "At this point we are still getting other machinery in place and running properly. Right now we are running approximately 60 tonnes a day and we would like to increase our albacore production next year significantly" said Michael McGowan in Suva on a follow-up visit to the formalisation of the agreement between PAFCO and Bumble Bee in May 2000.

In a bid to increase operational efficiencies, Bumble Bee has also led to PAFCO increasing productivity and introducing measures to control costs.

"In future we will be looking for a young accountant with good computer skills that we can train as a cost accountant," said McGowan.

"We would like to find somebody here locally and then send him abroad to train. We also have three currently working at the Levuka cannery that we believe have a lot of potential and, at Bumble Bee's cost, we are going to send them to our large plant in Central America for further training."

PAFCO employs over 450 workers but this is likely to increase to around 750 with the expansion in a year or two.

PAFCO expects to take more tuna from FCF, a Taiwanese company and the world's largest supplier of tuna, as the Levuka operation expands.

The new partnership with Bumble Bee faces competition from processors in American Samoa, Thailand, the Philippines and Indonesia.

New tuna processing ventures under construction in Papua New Guinea, the Marshall Islands and Samoa will compete for the same markets.

(Source: *The Fiji Times*, Saturday, 30 September 2000)

FISH SELLER TAPS INTERNET TO EXPAND SALES

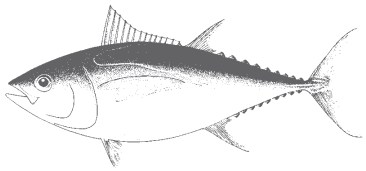
The Honolulu Fish Co. is testing new waters by entering the online, direct-to-consumers market. Company spokesman Charles Stableford says the company's e-commerce Web site <www.honolulufish.com> went live in May 2000, servicing the company's existing restaurant customers, and last week the company started offering four-pound (1 pound = 0.454 kg) packs of sashimi grade *ahi*, caught by the company's own boats and home-delivered anywhere in the United States for USD 60.

The move combines two huge markets — the USD 50 billion-a-year seafood market and online retailing, which a study says it could hit USD 30 billion in 2000. Stableford calls the consumer packs a completely new thing, both for the company and the market as a whole. "There are a couple of competitors based in Seattle, but they are distributors and they are not unloading their boats," Stableford says. "I am comfortable saying that we are the first in Hawai'i that are online and unloading our own boats."

<Simplyseafoods.com>, based in Seattle, advertises *ahi* tuna for USD 48 for 2.25 pounds. The fish is bought in Honolulu each Tuesday, flown to Seattle, then cut and delivered to customers.

<Freshseafood.com>, also based in Seattle, advertises yellowfin tuna steak, from Honolulu, for USD 84.50 for three pounds. Delivery is overnight within the continental United States.

Honolulu Fish Co. has not yet started advertising the new consumer packs, and Stableford says when it does, the initial focus will be in Hawai'i." We are going to be advertising in in-flight magazines, and we are going to create a marketing figure — Mike the Mahi — which will be used to grab the attention of visiting tourists, with the hope they will take the taste back home with them," he says.



The fish is shipped in layers of insulation, thermal blankets and Gel Ice refrigerant gel in a "thermal guard packaging system" the company has developed two years ago for its sales to mainland restaurants.

"We are going to compete on both quality and price," he says. The company is also hoping its commercial customers will use the site to place orders, instead of the current phone or fax system, with restaurants getting a 5 per cent discount for ordering through the Web.

A just-released Gartner Group study says the North American Internet retailing segment is set to exceed USD 29.3 billion in 2000, up to 75 per cent over 1999's USD 16.8 billion. The study says online retail activity currently represents less than 1 per cent of overall consumer spending in North America, but by 2004, it will grow about 5 per cent to 7 per cent of total retail sales in North America, with the strongest growth coming from the entertainment and home consumables categories.

(Source: Pacific Business News, 8/4/00; <www.bizjournals.com/pacific>)

FISHING IS THE MOST DANGEROUS OCCUPATION IN THE WORLD

Fishing at sea is probably the most dangerous occupation in the world. Data from those countries who collect accurate accounts show that occupational fatalities in their fishing industries far exceed their national average.

For example, in USA the fatality rate is over 25–30 times the national average[1]; in Italy over 21 times[2]; in Australia, the fatality rate for fishermen is 143 per 100,000 compared with 8.1 per 100,000 nationally.

However, very few countries are able to supply this data; although the members of IMO decided that the collection and analysis of statistical information on casualties, including fishing vessels and fishermen, should be prepared on an annual basis[3], they acknowledged in 1999 that there has been a very limited response[4].

FAO estimates that of the 28.5 million engaged in fishing and fish-farming, roughly 15 million fishermen are employed aboard decked or undecked fishing vessels operating in marine capture fisheries, of whom more than 90 per cent are working on vessels less than 24 metres in length.

If one were to argue that those countries having the will and ability to collect and report casualty data were also those countries most concerned with the welfare of their fishermen, one might conclude that the fatality rates of some of the non-reporting countries might be higher than those mentioned above, and that the number of global fatalities might be considerably higher than the figure of 24,000 deaths worldwide per year estimated by ILO.

The consequences of loss of life fall heavily on the dependents. In developing countries, these consequences can be devastating: widows have a low social standing, there is no welfare state to support the family and with lack of alternative sources of income, the widow and children may face destitution.

Of particular concern to FAO are the reports from fishing administrations and fishermen's organisations which indicate that fatality rates are increasing in the artisanal sector of developing countries. In most cases, the increase in fatalities can be traced back to a number of underlying causes which have led to changes in the basic nature of fishing operations: overexploitation of coastal resources; advances in vessel and fishing technologies, including motorisation and new types of fishing gear; lack of training, experience and skills; commercial pressure; and new fisheries management regimes.

Where there is overexploitation of inshore resources, fishers are often opting to work farther away from shore, sometimes for extended periods of time, in fishing craft that are often unsuitable because most of them were built to designs, or based on designs for inshore fishing and limited to daily operations.

Furthermore, they are often built by untrained builders who copy traditional and imported craft but, due to cost-cutting practices and lack of experience,

[1] USA Bureau of Labor Statistics

[2] ILO Yearbook of Labour Statistics, 1998

[3] IMO MSC/Circ.539/Add.2 and FSI 6/6/1

[4] IMO FSI 7/6/2

end up building vessels which are basically unsound.

Frequently, these vessels do not comply with national regulations (where they exist) for lack of enforcement.

Additionally there is a shortage of traditional experience which can be passed on to the present crews from previous generations who have not themselves fished offshore. Such experience would include navigation, weather forecasting, communications, extended life at sea (several days instead of day fishing) as well as the vital culture of safety at sea.

This problem is compounded by fishing being a potential source of income to casual workers and the unemployed landless or city dwellers; the fishing industry frequently provides an opportunity for employment to those who have no hope of finding an income elsewhere.

The various international voluntary guidelines do not have much effect on artisanal fisheries, largely because the standards are directed towards decked vessels over 12 metres.

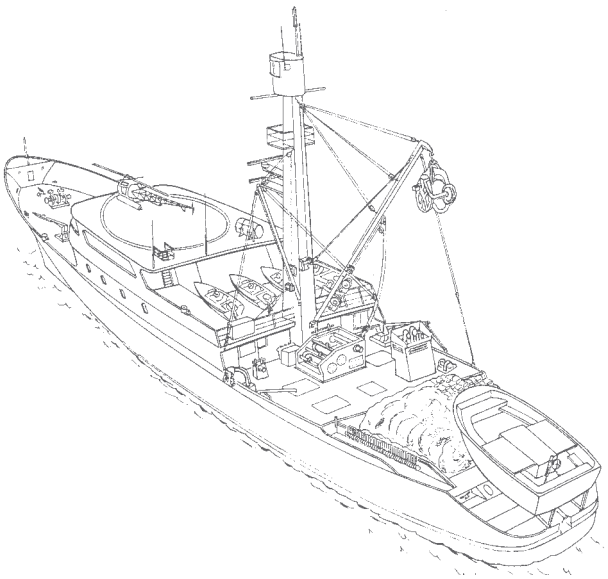
The Torremolinos Protocol, being the only international instrument formulated specifically for fishing vessels (decked fishing vessels over 24 metres in length,) is unlikely to come into force because its provisions are seen as being either too stringent or too lenient by the countries whose signatures are required to bring it into force.

This illustrates that a similar international instrument aimed towards artisanal fisheries, which are to be found in both developing and developed countries, would never be drafted, let alone enter into force.

In the absence of such an international instrument, fishermen must often rely on national legislation to ensure the safety of their craft particularly when the vessel owner does not participate as a crew member. While most countries have regulations concerning the design, construction and equipment of their vessels, these regulations in developing countries are sometimes outdated, inappropriate and not enforced.

In developed countries, the application of evermore stringent regulations has not always led to any significant decrease in fatalities; it seems that as the vessels are made safer, the risk barrier taken by the operators is pushed further towards the limits in the ever increasing search for good catches.

(Source: J. Turner, Senior Fishery Industry Officer, FAO [extracted from *Samoa longline newsletter*, number 2, August 2000])



LIVE REEF FISH TRADE MEETING AND VISIT TO HONG KONG

by Being M.Yeeting
Live Reef Fish Specialist
SPC, Noumea
New Caledonia

I was in Hong Kong between the 4th and 19th August 2000 in order to attend the 2nd Asia-Pacific Live Reef Fish Trade Conference, organised by the International Marinelife Alliance (IMA) and the World Resource Institute (WRI).

Fifty participants attended the four-day meeting, mostly from Asian and Pacific countries. They represented governments, international organisations, NGOs, private consultancy firms, and the LRFT industry people, mostly from Hong Kong. The Pacific region was represented by Felix Nguyen from Vanuatu Fisheries, Estephan Santiago from the Federated States of Micronesia Department of Economic Affairs; and Karness Gusto from the Marshall Islands, working for IMA in Majuro.

The Conference provided a great opportunity for all those involved in the LRFT to come together, share their experiences and problems in their areas, and learn from each other. It was particularly important for the LRFT source countries to actually meet with the industry people (HK market side), reach a good understanding of each others' concerns and form a basis for networking. A number of papers were presented, which ranged from country overviews by country representatives, to results of previous work conducted around Asia by IMA and the Pacific by SPC. I was invited to make three presentations based on work that I have done in the past. The first was a general overview of the Live Reef Fish Trade in the Pacific, followed by two case studies for Kiribati and the Solomon Islands.

It was particularly interesting to listen to the presentation from the Chairman of the Hong Kong Chamber of Seafood Merchants (HKCSM), Mr Patrick Chan, who highlighted their problems in the areas of marketing, market trends and factors that influence market prices and trends. Likewise, IMA and WWF with their offices in Hong Kong provided some very interesting facts and figures. All agreed with networking and sharing market information in order to make it more available to the source areas.

Being Yeeting

Participants at the Hong Kong Live Reef Fish Trade meeting, Miramar Hotel, Kowloon

Hong Kong is the main market for live reef fish coming mostly from nearby Asian countries as well as from the Pacific and the Indian oceans. It was therefore a great opportunity for me to visit the market centres and holding facilities to see how they operate. In addition I was able to meet with representatives from the industry, government fisheries department and the non-governmental organisations, who have been monitoring the trade, in order to get a better understanding of the dynamics of the trade from the market angle.

Being Yeeting

The fish-holding pens – Hong Kong

Fish Cages

I was able to visit one live fish-holding cage or grow-out facility, where there were 400 fish cages side by side, each cage capable of holding five tons of fish. A cage owner could have up to ten cages, with three workers who maintained the cages, and did the stocking, the feeding and catching of fish for sale. The workers are housed on the cage platform and therefore, assisted by usually three to four fierce dogs, are also on watch for thieves.

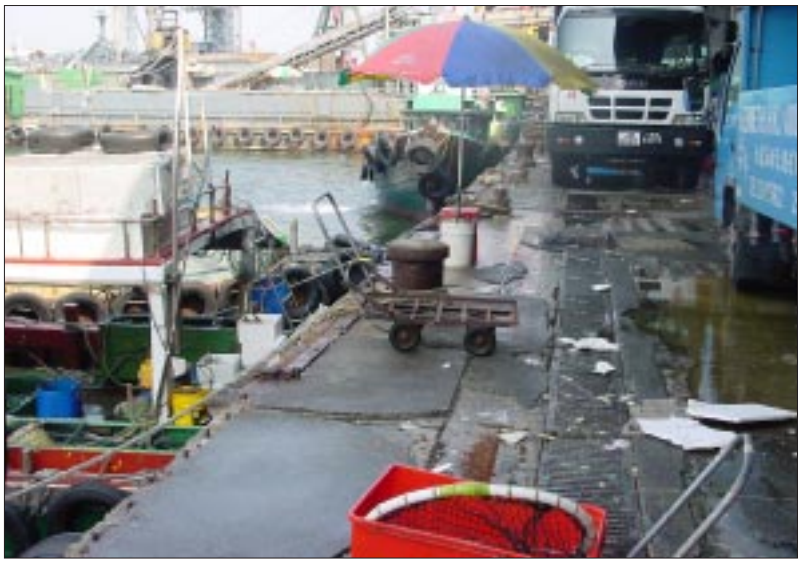
Being Yeeting

Most of the cages were stocked with the green grouper (*Epinephelus coioides*) supplied mainly from mariculture, mostly from Thailand and Malaysia. This fish species however does not fetch prices as high as do coral trout species (*Plectropomus* sp.), but compensates by incurring low handling and transportation costs. The other feature that really struck me was the number of security measures given to the live fish cages, indicating that a good amount of stealing of fish occurs.

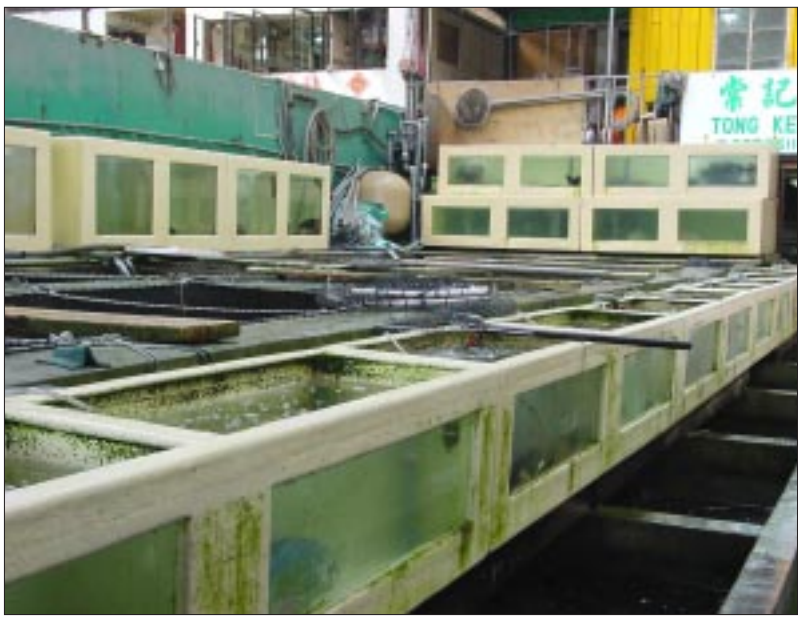
Being Yeeting

Workers and guard dogs living on the fish-holding pens – Hong Kong

There are about four such stations of fish cages around Hong Kong. The fish are purchased and collected directly from the fish-cage operators by nearby



Being Yeeting



Being Yeeting

Being Yeeting

seafood restaurants or by retailers who take orders from the bigger restaurants in the city. All live reef fish are generally considered to supply restaurants at the upper end of the market.

Kwun Tong Wholesale Fish Market

The Kwun Tong Wholesale Fish Market only sells live seafood. This is where the live seafood is picked up and distributed to retailers, restaurants and hotels. Patrick Chan, the Chairman of the HKCSM is based here; all operators in this market are registered and very cooperative in providing information.

Fish from vessels are landed here; they are transferred to the holding tanks and then, within a day, are transported to hotels and restaurants on trucks. The fish-carrying trucks, equipped with wooden holding boxes and battery-operated air pumps, enter the market by one door and go through the market area where fish is loaded.

The trucks then leave through another door, taking the fish for delivery. The number of trucks lining up when I was at the market was 60. On an average day, as I was told by one of the workers, 400–500 trucks collect fish and distribute them to restaurants and hotels.

The fish species that I saw were mostly coral trouts, groupers and maori wrasse. The maori wrasses I saw were mostly juveniles (not more than 25 cm

Top: The fish are transferred from the vessel to land-based holding tanks.

Middle: The holding tanks in the fish market where the fish await distribution

Bottom: Potential buyers inspecting the fish available

Being Yeeting

Fish in plastic baskets for transfer to the trucks

The live-fish carrying trucks lining up in the market waiting to be loaded

Being Yeeting

Being Yeeting

A close up of the fish-carrying truck equipped with an air compressor, fish baskets, and holding tanks

long). Other fish species I saw in the market were Lutjanids and Lethrinids.

Llama Seafood Restaurants

Llama is a small island located outside the Hong Kong City area. To get there you take a ferry from Hong Kong Central. It takes about 20 minutes to get there. The island is well known for its seafood restaurants and therefore people take the ferries to the island, at evenings and weekends, just to indulge in the fresh seafood offered there. The restaurants are reportedly much cheaper than the live seafood restaurants found in Hong Kong Central or in Kowloon.

All the seafood restaurants are lined up along the waterfront with the road going through them directly from the ferries. All seafood restaurants have big holding tanks for fish and shallow ones for shellfish, crayfish, prawns and crabs. All seafood are kept alive in these holding facilities, which have air pumps and flowing water.

General Comments

The trip was very interesting and useful to me. The workshop was useful for making new contacts with whom we can share LRFF trade information. The short meetings and visits to the facilities and restaurants gave me a realistic appreciation of the LRFF trade, its importance and market value.

The Chinese evidently love seafood, especially live fresh reef fish. I am convinced that the LRFF trade will continue in the future, irrespective of where the sources are and how much is available.

Being Yeeting

Being Yeeting

Fish-holding tanks at a restaurant

The mostly juvenile maori wrasse seen in the holding tanks in the Hong Kong restaurant presented disconcerting evidence of what is likely to continue to happen. The Pacific region is likely to therefore be increasingly targeted as demand and prices improves. There is an urgent need to get management plans and policies, as well as good monitoring programmes, in place as soon as possible, if we are to have a chance of conserving what we have left.

THE 2000 SPC–NELSON POLYTECHNIC PRACTICAL FISHING MODULE

by Steve Beverly
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Participants in the 2000 SPC–Nelson Polytechnic Pacific Islands Fisheries Officers Course once again attended the final session of their 23-week course in New Caledonia (see Fisheries Education and Train-ing Information Bulletin Number 10).

One week was spent in Le Grand Sud in Goro village (southeastern Grande Terre), while the remainder of the five-week practical module was spent in Noumea. Trainees practised a variety of fishing methods from three boats, Marine Marchande's F/V *Dar Mad*, École des Métiers de la Mer's F/V *Pop*, and a charter boat, F/V *Danse avec les Maquereaux*.

The Practical Fishing Module was organised by Training Section's Fisheries Training Specialist, Terii Luciani, who also accompanied trainees on F/V *Pop*, acting as tutor and fish master. Nelson Polytechnic's tutor, Brian Fosset, accompanied trainees on F/V *Danse avec les Maquereaux*, along with owner/operator Jean-Jacques Fogliani. Fisheries Development Officer, Steve Beverly, served as tutor on all trips aboard F/V *Dar Mad*.

Several practical sessions were held ashore on gear fabrication, FAD rigging, and fish handling and cutting. These were at Marine Marchande's workshop and at École des Métiers de la Mer.

The following is a brief account of some of the activities.

Thirteen trainees from 10 SPC member countries and territories attended the practical fishing module. They included: Mr Sione Tu'iniua and Mr Sauaki Talasinga from Tonga, Mr Teebwa Karotu and Ms Tirae Tabee from Kiribati, Mr Aisake Viala from Fiji, Mr Richard Maik from Papua New Guinea, Mr Clement Lulumani from Solomon Islands, Mr Mike Quadina from Nauru, Mr Erbai Yukiwo from Palau, Mr Solomone Tufuga from Samoa, Mr Anthony Flores and Mr Inocencio Ilo from CNMI, and

Steve Beverly


Steve Beverly


Steve Beverly

***Top: F/V* Dar Mad**

Middle: *F/V* Pop

***Bottom: F/V* Danse avec les Maquereaux**

Mr Marc Artero from Guam. The crew of F/V *Dar Mad* included: Captain Lucky Fogliano, First Mate Silivelio Famoetau, and Masterfisherman, Philip Simone.

F/V *Dar Mad* is an 11 m, twin-engine aluminium catamaran equipped with monofilament longline gear including a Lindgren-Pitman reel and line setter, bottom fishing reels, bottom longline gear, and trolling rods and reels. The wheelhouse is equipped with marine electronics including radar, VHF and SSB radios, echo sounder, GPS with plotter, and radio direction finder. F/V *Dar Mad* is able to accommodate up to six trainees at a time on day trips and overnight trips.

The first week of the Practical Module was spent in Noumea, rigging gear and preparing the boats for the first venture. The second week was spent in Goro, where the tutors and trainees stayed at a *gite* (local hotel). The *gite* had a small wharf that could accommodate F/V *Dar Mad*. The other boats were tied up each evening at the site of an old nickel mine close by. The weather was not co-operative during the week's stay at Goro.

All three boats fished inside the lagoon for lagoon bottom species. About 200 kg of mixed bottom species were caught, including two large red emperors. The fish were cleaned to market specifications under the instruction of Jean-Jacques and then sold at the local co-operative in Yate, ADEVY.

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Top: Lagoon fish caught near Goro

Middle: Jean-Jacques shows Sauaki how to clean a red emperor

Bottom: Trainees tour ADEVY Co-operative

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Teebwa lands a pink snapper

The trainees were given a guided tour of the ADEVY facilities that include a fish processing room, freezer and chiller, and retail store for fish—as well as a sorting room for agricultural products and a hardware and fishing gear store.

After the weather cleared, F/V *Dar Mad* ventured out into the open sea just east of Canal de la Havannah near Goro. Trainees used Alvey bottom fishing reels and Samoan hand reels to fish for deep bottom snappers using cut sardines for bait. The total catch for the day included 17 pink snapper (*Pristi-pomoides* sp.), 12 emperors (*Lethrinus* sp.), and 1 amberjack (Seriola sp.). At the end of the week F/V *Dar Mad* steamed back to Noumea to prepare for a FAD deployment.

During the first week of the practical module, under the supervision of the tutors, the trainees rigged a light FAD for deployment on the west coast in a depth of 1,500 m. The FAD and anchor were loaded on the boat and F/V *Dar Mad* steamed for Passe de Uitoe, northwest of Noumea. After reaching the pass, F/V *Dar Mad* continued on to Pass St. Vincent where the FAD was deployed.

The position of the latest addition to Marine Marchande's FAD programme is 22º 01.36' S and 165º 50.52' E in 1,480 m. This is almost the same position a FAD was deployed in during the 1999 practical fishing module. It is hoped that this FAD will be on station for next year's crop of trainees.

The following day, F/V *Dar Mad* made a trip to a previously deployed FAD at Passe de Boulari, just to the southwest of Noumea. Several luckless hours were spent trolling and handline fishing around the FAD.

The next day was spent bottom longlining. Four sets were made in the vicinity of Passe de Dumbea in depths ranging from 300 to 400 m. About 80 hooks baited with cut sardine were deployed on each set. The sets were allowed to soak for at least one hour. Total catch included 7 short-tailed snapper (*Etelis carbunculus*), 10 long-tailed snapper (*E. coruscans*), and 12 saumonette sharks (*Squalus* sp.).

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Sauaki, Richard and Clement load the FAD buoy

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Aisake and Velio load the FAD anchor

The highlight of the fishing activities came on the last day, however, when a tuna longline set was made. Two hundred hooks were set in 20 hook baskets, to the west of Passe de Dumbea. The line, set at 0600h in the morning with whole sardines for bait, was hauled back-in just after noon. To the surprise of everyone, the catch consisted of eight *opah* or moonfish (*Lampris guttatus*). There were no tunas or billfish and no sharks. The total catch was estimated to weigh over 300 kg.

The following day, Velio instructed the trainees in how to properly fillet an *opah* and everyone got a chance to try their hand at fish cutting. The fish were eaten at the annual barbecue for the Standing Committee on Tuna and Billfish at SPC headquarters.

After the fishing trials were completed there was a session at École des Métiers de la Mer's fish lab on how to handle sashimi grade tuna on board and how to cut tuna into sashimi. Discarded albacore tuna from the local longline fleet were used for the fish handling exercise, while fresh big eye tuna were used for the sashimi exercise. The trainees were able to utilise their new skills by cutting two 18 kg bigeye tuna into sashimi for the Friday night cocktail at SPC's bar.

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Setting the bottom longline

Steve Beverly

***Solomone expertly cuts an* opah**

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