

FISHERIES

Newsletter

NUMBER 72
JANUARY — MARCH 1995

IN THIS ISSUE

SPC ACTIVITIES	Page 2
NEWS FROM IN AND AROUND THE REGION	Page 20
ABSTRACTS AND REVIEWS	Page 28
CORAL REEF TROUBLES IN AMERICAN SAMOA by P. Craig, A. Green and S. Saucerman	Page 33
MOTUPORE ISLAND RESEARCH DEPARTMENT by T. Beeching	Page 35



The SPC Fisheries Development Adviser undertook a trip to FSM to follow the development of longlining operations. The photo shows a Chinese longliner unloading bigeye from its hold in Chuuk.



South Pacific Commission
Prepared by the Fisheries Programme Information Section
Printed with financial assistance from the Government of France

■ RESOURCE ASSESSMENT SECTION

Workshop on the Management of South Pacific Inshore Fisheries

The South Pacific Commission (SPC) will be hosting a 10-day workshop on the management of coastal fisheries in the Pacific Islands, in collaboration with the Forum Fisheries Agency (FFA), from 26 June to 7 July 1995.

The workshop will be attended by fisheries managers from each of the SPC/FFA member countries and other invited keynote speakers, under financial sponsorship from the United Nations Development Programme South Pacific Regional Fisheries Capacity Building Project, the Australian Centre for International Agricultural Research and the Governments of France and the United Kingdom.

This is an invitation to all individuals and organisations who would be interested in attending this workshop, and who are able to support their own travel costs or to obtain financial sponsorship from other sources. Registration is free, and a set of meeting papers will be provided to all participants.

For those who cannot attend the workshop in person, we also invite the submission of papers and case-studies relevant to the management of coral reef/lagoon/slope artisanal fisheries in small tropical islands, for discussion and inclusion in the proceedings.

Background

The sustainable management of marine resources is an item very high on the agenda of island governments.

The United Nations Conference on the Law of the Sea (UNCLOS), the United Nations Conference on Environment and Development (UNCED), the Agenda 21 blueprint that resulted from UNCED, the 1994 Forum Leaders Meeting in Brisbane and several other international agreements, have greatly increased the resource management responsibilities of SPC member governments and administrations in recent years.

Resources which were formerly considered to be unencumbered natural assets and a source of disposable national income, may now, or in the near future, start to assume greater liabilities both in financial terms, through the cash and manpower that is needed to manage them for maximum long-term yield, and in diplomatic terms, if the dwindling of these natural resources leads to a failure of compliance with international agreements or if it provides an excuse for additional conditions to be imposed alongside international or bilateral financial obligations.

The practical management of tropical small-island coastal fisheries (such as trochus shell, coral reef fish, sea-cucumber, ornamental coral, etc.) is still a very young and unexplored field.

Most of these fisheries are small in scale and, while they affect a considerable proportion of the population in small island states, they do not generate large enough cash revenues to facilitate specific national research programmes.

Regional programmes thus play an important role in this area, allowing research resources to be pooled, and the results of national experiences to be shared more easily around the region.

Both the Forum Fisheries Agency Research Coordination Unit and the South Pacific Commission Coastal Fisheries Resource Assessment Section have been working since 1988 on various aspects of coastal fisheries resource management.

A major workshop in March 1988 bench-marked the current state of the art in Pacific Islands coastal fisheries resource research and identified the most appropriate directions for future work.

The workshop proposed here will assess progress six years down the track but, more significantly, will provide the first comparative overview of the most effective and appropriate management methods for the most important inshore fisheries resources of the Pacific Islands region.



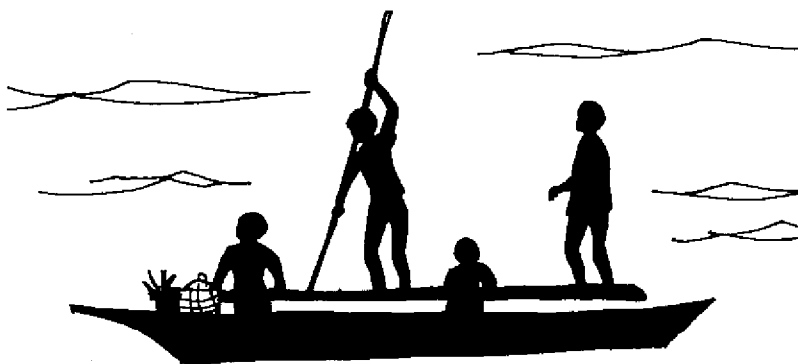
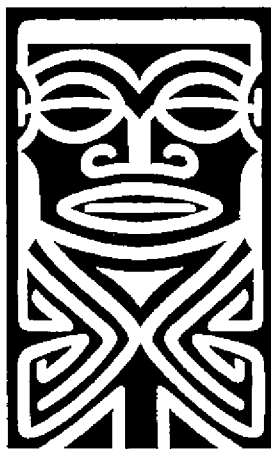
The workshop will be attended both by practical fisheries managers from Pacific Island governments and administrations, and by recognised experts on different resources and management strategies from both within and without the region.

The main output of the workshop will be an integrated volume on management strategies for different resources, discussing the pros and cons of different methods, and their appropriateness to Pacific Island lifestyles, traditional tenure systems, legislative systems and development plans, as well as their biological effectiveness—a volume that is expected to be an essential reference to Pacific Island fisheries managers for many years to come.

It is also planned to discuss a draft Pacific Islands Regional Fisheries Research Review at the workshop and, hopefully, to arrive at a consensus regional coastal fisheries research strategy.

Working papers

Each country representative will prepare a country statement summarising the main coastal fisheries management problems and the priorities for action in their respective country.



All participants will be encouraged to submit working papers consisting of case studies or experience papers giving details of fisheries management problems and approaches to solutions in their respective member countries. These papers will then be addressed during the plenary sessions.

Background and information papers containing experiences and results of management initiatives will also be welcome.

Although there may not be time for discussion of these documents in the plenary session, they will be distributed to all participants and may be included in the published workshop proceedings.

We ask everyone submitting papers to provide 100 copies for distribution during the workshop.

Contributions should focus on the management of coastal fisheries and papers that deal solely with biological aspects of a given resource are not encouraged.

This is in contrast to the 1988 Workshop on Pacific Inshore Fishery Resources, where it was necessary to determine how much was known about the biology of the target species of coastal fisheries in the region. A much clearer picture of this has

emerged following the contributions to the 1988 Workshop and the publication of the FFA-ICOD book, *Nearshore marine resources of the South Pacific*.

Language

The workshop will be conducted in English and French, with simultaneous interpretation between the two languages.

The Workshop will be organised 'horizontally' on the basis of the components of fisheries management, rather than 'vertically' by specific resources like the 1988 Inshore Fisheries Resources Workshop. A provisional agenda for the workshop is attached, based on the likely interest in the various topic headings.

However, the timing of sessions needs to be flexible, depending on the interest expressed in each topic. Sessions which attract a lot of contributions will be allocated more time than others and this final allocation will be made shortly before the meeting.

There will also be additional sessions on topics that do not fit neatly into this categorisation, such as updates on new stock assessment methodologies, as well as social, economic, post-harvest, legal and enforcement issues.

The intention is not to run a workshop for biological researchers, but for the benefit of practical fishery managers, and, as stated earlier, it will not be possible to accept papers or presentations that describe purely biological research which does not have a clear and tested application to the practical management of a fishery.

Each topic will be introduced in a keynote paper delivered by an invited specialist, who will also moderate the session.

This keynote paper, taking into account subsequent discussion and any other presentations on the topic, will form the basis of chapters in the resultant book on 'Nearshore Marine Resource Management in the South Pacific'.

Other contributions under each topic heading might include, for example, the results of experiments in management of

specific resources, descriptions of the pros and cons of applying a management measure under particular conditions, or case-studies on the management of a Pacific Island fishery or resource. Reviews of management topics or of information necessary for management are particularly welcomed.

As well as an overview of those management measures that would be useful and appropriate to the region, it is also hoped to benchmark the current status of nearshore fisheries management activities and policy at the national level.

We hope that each country delegation will table a statement on local initiatives, policy, and future plans in inshore fisheries management.

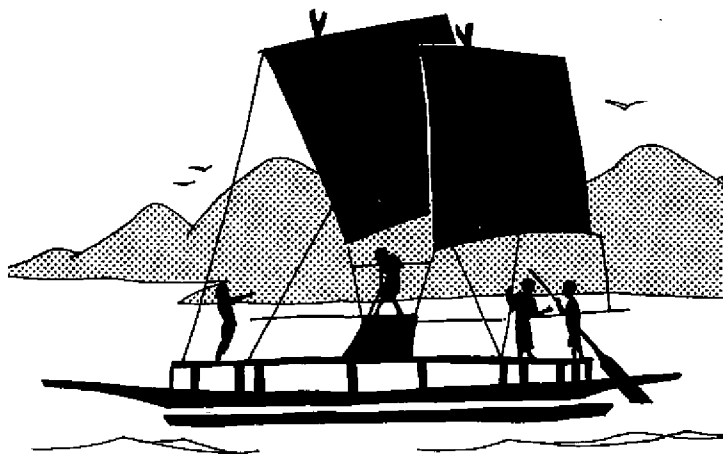
As well as being of great value in guiding the future of certain SPC fisheries projects, this information might be summa-

rised in time for a regional overview to be discussed at the meeting.

Comments, expressions of interest, or submissions from potential contributors are welcomed, and should be addressed to:

Dr Tim Adams
Fisheries Resource Adviser
South Pacific Commission
B.P. D5
98848 Noumea Cedex
New Caledonia
Fax: (687) 263818
E-mail: tbap@bix.com
(for the attention of Tim Adams).

I would also be most grateful if copies of this notification could be sent to other individuals or institutions who might be able to take part in this workshop.



WORKSHOP AGENDA

1. *Management information needs and sources*
 1. Stock assessment and biological information
 2. Economic, trade and processing information
 3. Feedback to and from the fishing community
 4. Deciding financial and human resource needs for management
 2. *Potential management measures (pros and cons, case-studies)*
 1. Protected areas, sanctuaries and reserves
 2. Closed seasons
 3. Restricted entry and quotas
 4. Resource ownership (including customary marine tenure (CMT) and individual transferable quota (ITQ))
 5. Artificial enhancement/reseeding and introduced species management
 6. Size limits and gear restrictions
 7. Economic management/trade restrictions
 8. Laissez-faire, free-market, boom-bust and miscellaneous/novel measures
 3. *Management policies and regulation*
 1. Summary of country statements on national management policy and problems, and any broad national case-studies
 2. Mitigating adverse short-term economic effects of management
 3. Legal measures, compliance and enforcement
 4. Crisis management (emergency measures and prioritisation of response)
 5. Integrating fisheries management into coastal zone management
 6. Roles of community, national, regional and global institutions in fisheries management advice and research: 'who should do what'?
 4. *Conclusion*
 1. Discussion of reports of relevant special sessions
 2. Clearing of record of discussion
- Special sessions (evening or weekend)*
1. Problem fisheries. What are currently the main coastal fisheries management problems in the region, and what crises are most likely to break in the near future?
 2. Computer programs in fisheries stock assessment and management. Demonstrations and discussion.
 3. Drafting committee for an action plan for regional fisheries research, taking into account the SPC/FFA regional overview of fisheries research to be finalised in May 1995, and the summary of country statements tabled at this workshop. This committee also to draw up a list of regional needs and suggest ways of addressing them; the prioritisation of these needs to be addressed later in the plenary session.
 4. Identification of appropriate specific country sub-projects for implementation in future by the SPC Integrated Coastal Fisheries Management Project.

■ TRAINING SECTION

Hugh Walton has left the Commission after almost three years of service to take up the position of Head of the School of Fisheries at Nelson Polytechnic, New Zealand. Before leaving the Commission he and Michel Blanc, Fisheries Training Officer, undertook a three-day sabbatical retreat, to consider the future activities of the Training Section. Hugh tells us below about the lighter side of this retreat.

Training the trainers

With my departure from the Commission looming and a wide range of activities underway, Michel Blanc, Fisheries Training Officer, suggested we undertake a break from the office, a sort of retreat to review the three years of work we have done together and to plan the ongoing activities of the Fisheries Training Section.

Armed with a supply of books, a larger supply of fishing gear, and sufficient food and liquids to feed a small army for a week, we eventually retreated to Michel's small weekend bach on the island of Puen, some 2 hours by car and boat from Noumea and just 15 minutes by boat from the very impressive passage of St Vincent, a wide sweeping break in the outer reef, back-dropped by the vista of New Caledonia's substantial mountains and rolling hills.

Under gas light on the first night we planned the next day's fishing—the objective: to set and retrieve a small 40 hook horizontal longline from Michel's 19 ft (6 m) Yamaha boat. The weather was perfect when we set out at first light next morning for the north end of the pass. It took just 20 minutes to deploy the 1 km longline about one mile off the pass and return to the reef edge to troll fresh bait for 'tazard' (Spanish mackerel). The trolling got off to a bad start, with me losing the first four strikes before Michel hooked up and showed me how to do the job!

Following a quick trip back to camp for breakfast, we returned to the longline and, with high hopes, commenced hauling. With only 40 hooks in the water it is not too difficult to feel a fish on the line and after just 10 hooks, the shout from Michel of 'Fish!' had us both pulling in earnest at the line.

We were rewarded with a plump 20 kg yellowfin flapping on the deck. With the first fish safely in the slurry, it took just over an hour (and another 3 yellowfin tuna rolling in the slurry) to complete the longline set. By lunchtime we were tucking into the first of the sashimi.

This was certainly, an encouraging result—60 kg of prime yellowfin safely on the ice for just \$60–\$70 in expenses—particularly encouraging when local retail prices reach \$9.00 per kg or perhaps \$5.00 to the fisherman . . . \$300 for four hours on the water, not to mention the tazard trolled while the longline soaked.

In the cool of the afternoon breeze, we turned our attention to the work of the Section and, without the interruption of telephone and fax, made a good start on the review and plan of the Section's programme.

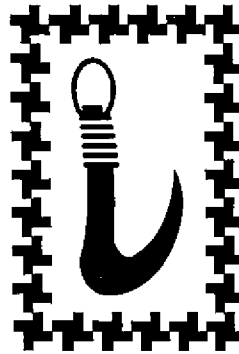


The evening saw the arrival of the Oceanic Fisheries Programme Coordinator, Tony Lewis and some quiet hours casting for the tasty 'bec de cane' (emperor) on the seagrass and reef flats. Anybody who has visited Noumea and had the opportunity to fish with Tony will know him as a master of light-gear fresh-bait trolling and indeed the next morning afforded us some fine photographs of the master in action on a glass-calm sea, smiling as he gaffed and landed a 25 kg tazard.

But the surprise of the day had yet to come and our curiosity was aroused when we found the previously set longline had been end-for-ended. The north-end float stretched to the south and the south-end faced north. Tides? No. It had to be a fish, and a very big one, so once again we hauled the line in earnest.

Slowly, the untouched baits came aboard and the line, getting heavier with every hook returned to the basket, came grudgingly aboard. Eventually, with only five hooks to haul, the


line came up in a knotted tangle and gradually from the depths emerged the form of a large tiger shark, caught outside the teeth by a single hook and monofilament line.



Tiring after having towed the line end-for-end, the tiger (we reckon it topped 4 m) neared the boat in lazy circles while we watched in fascination and rigged a noose to try to land the monster. No such attempt would have been made had it not been for Tony's presence in a second boat; twice we went for the knife to cut the line when the tiger, head down, swam for the depths and we surged through the water, half expecting the bow cleat holding the fish to rip from the hull of Michel's boat.

I had caught a large tiger shark once during one of the Nelson Course practical modules. From the security of a 10 m boat, with six people to help, it had still taken two hours to land it, so I must confess, I was not sorry after a half-hour battle to see the tiger snap the mono line and, with a flick of its great tail, return to the depths.

With more fish in the cooler than available ice, we curtailed fishing activities, and returned to the back to carry on with the substance of the retreat. With pages of notes and a firm plan and set of objectives for 1995, it was all too soon time to pack up and return to the office.

I must confess that the retreat was more pleasure than work, but the opportunity to combine the two and to try, with success, a variation on small-scale longlining, was a highlight of my time with SPC. I thoroughly recommend a fishing retreat as an excellent way to begin the working year. 

■ POST-HARVEST SECTION

In 1989 the Post-harvest Section produced two videos on chilling fish and chill storage of fish. These were respectively called: 'An icy tale—chilling fish on-board' and 'A chilling story—handling fish in the processing plant'.

These videos have proved to be very popular—not only as training tools in workshops for fishers and fish traders but also as general interest videos. They have been shown on TV in Fiji, New Caledonia, Cook Islands, and other Pacific Island countries.

Copies of these videos have found their way to other international organisations—FAO being one—and used in training courses in countries and regions such as China, Africa and the Caribbean. The popularity of the videos is attributed to a blend of humour and a simple story to demonstrate technical information.

Four more post-harvest fisheries videos are currently in production. It is hoped that these will be just as popular and useful as the fish-chilling videos. Like these, the new videos are

being funded by the Canadian Government through the Canadian-South Pacific Ocean Development Project. The topics being filmed include:

- A visit to the fish market—towards better facilities for selling better seafood;
- Once upon a fish stall—improved seafood selling style and techniques;
- On-board handling of sashimi-quality tuna;

- Air-freighting of chilled fish.

The popular story approach of the two chilling videos has been repeated in the two videos on fish retailing. These are aimed at a wider audience: seafood retailers and consumers alike. The other two videos are straight technical demonstrations on how to handle tuna on board longlining fishing vessels and what procedures to follow to ensure that chilled fish destined for overseas markets get there in good condition.

The following are brief outlines of the content of each video:

A visit to the fish market—towards better facilities for selling better seafood

The main characters in this video are a wise and caring mother and her inquisitive ten-year old daughter. The story is told at a good fish market, with shots of poor retailing condi-

tions inserted to demonstrate the technical differences between a well-designed market and one where retailers have to make the best of a poor situation.

The main points that are discussed are hygiene, quality and how good facilities can help improve retailing methods by offering clean running water, ice-making facilities, good retailing benches, proper drainage, etc. Advice is given on how to choose a good fish for the family's next meal. The video was filmed in Suva and Noumea.

Once upon a fish stall—improved seafood selling style and techniques

This is another simple story, featuring a fish retailer (Peter) who has had a stall at a fish market for some time and has been doing well. One day a new retailer (Louisa) comes along and sets up a stall opposite his.

This changes everything for him. Louisa does everything the right way; customers quickly stop buying his fish and buy from her instead.

The video shows Peter slowly learning the difference between the way he used to do things and the way he should be selling his fish. Two main factors in selling are emphasised: correct technical procedures and how to attract and deal with customers. The video ends with both businesses doing well. It was filmed in Noumea.

On-board handling of sashimi tuna

This is a straight technical demonstration of how to handle tuna that are destined for the sashimi export markets of Japan or the US, from the moment they are caught through to on-board chilling and storage. Step-by-step explanations are provided which show the following important procedures:



Filming one of the retailing videos at the Noumea Fish Market

- bringing the tuna on board carefully, proper use of a gaff, laying the fish gently on a padded mat;
- stunning the tuna, spiking the brain, coring the spinal cord, bleeding;
- special gilling and gutting procedure, washing and cleaning, protecting the skin with a mutton-cloth sock;
- chilling in sea-water/ice slurry and ice.

The more complicated steps are supplemented by graphics and drawings that clearly demonstrate each procedure.

Air-freighting of chilled fish

This shows all the steps needed to ensure that proper procedures are followed for getting chilled sashimi-quality fish to overseas markets in the best possible condition.

The video follows on naturally from 'On-board handling of sashimi tuna', with fish being off-loaded from the hold of a long-lining fishing vessel.

Sashimi tuna is again the main fish species used in the video but other species of fish are covered (e.g., mahi-mahi, non-sashimi tuna species and bill-fish).

The video demonstrates:

- handling procedures when off-loading fish, transport to the packing plant, off-loading at the packing plant;
- sorting, grading, processing/preparation, washing;
- weighing, boxing, chilling methods, storage;
- record keeping, documentation, booking space on the aircraft, transport to the airport.

Where required, drawings have been used to help explain procedures. The video was filmed in Suva, Fiji at the Feeders Seafood fish packing plant.

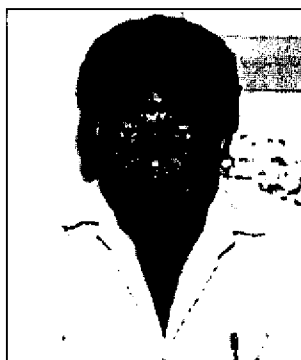
All videos were planned and produced by the Post-harvest Section and Pasifika Communications Ltd of Fiji, with the exception of 'On-board handling of sashimi tuna' which was done by the Fisheries Training Section and a Noumea-based video company, Imag'in.

Copies of the videos will be sent to each of the region's national fisheries contact points and fisheries education and training institutes. In the first instance they will be in the English language. The French versions will be distributed shortly after. Anyone else interested in obtaining copies can contact the SPC Coastal Fisheries Programme at SPC. Copies of the two chilling videos are still available in both English and French versions.

■ CAPTURE SECTION

Satalaka Petaia joins SPC as Fisheries Development Officer

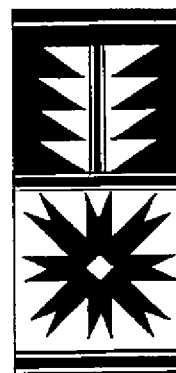
Before taking up the position of Fisheries Development Officer with the South Pacific Commission in October 1994, Satalaka Petaia worked with the Tuvalu Fisheries Department for ten years.



For the first six years, he was Fisheries Extension and Development Officer, responsible for the department's training, development and extension activities.

He then became Project Manager for the Outer Island Fisheries Development Project and two years later was appointed Technical Officer with the National Fishing Corporation of Tuvalu. Immediately before joining SPC, Satalaka worked with an American-based company, RDA International Inc., for three years as Marine Resource Adviser.

Satalaka was educated at Lelean Memorial School in Fiji, the University of the South Pacific (USP) and the Humberside College of Higher Education in Grimsby, England.



FSM's National Fisheries Corporation shows the way

Leading the way in the development of national fisheries which export fresh chilled tuna to the sashimi markets of Asia and elsewhere, the Federated States of Micronesia's National Fisheries Corporation (NFC) operates a fleet of five domestic longline vessels and manages seven others in joint venture with Okinawan interests.

In addition, NFC has interests in state-of-the-art fresh tuna landing and handling plants in the FSM states of Yap, Chuuk and Kosrae and assists in their management.

The NFC domestic fleet is made up of two traditional Japanese-style FRP vessels using monofilament basket gear, a new Japanese vessel using monogear on a cassette drum system, and two US-built FRP boats fitted

with Lindgren Pitman hydraulic hauling systems. All these vessels are skippered and crewed by locals who have learned their skills on the job, working with Japanese and US masterfishermen, or through seamanship and longline training courses conducted by the Micronesian Maritime and Fisheries Academy in Yap State.

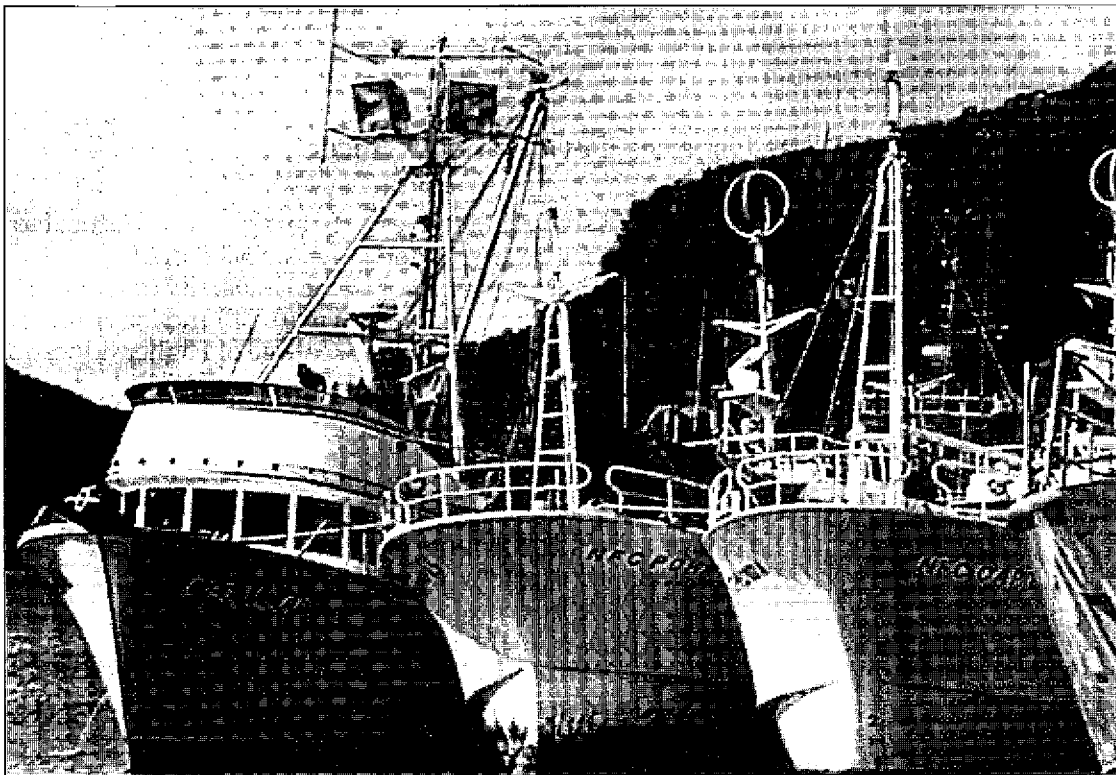
A major reason for NFC's success has been its policy of establishing close working relationships with foreign tuna longlining interests operating under access agreements in FSM waters.

In this way NFC has been able to take advantage of Japanese and Taiwanese expertise in this specialised fishery and, most importantly, has been able to make use of the airfreight ser-

vices established by the foreign operators to move their catches to market. At the same time foreign operators have benefited through the major fishing port and handling plant developments sponsored by the states and NFC.

Other Pacific Island states which hope to establish domestic tuna fishing capability have paid close attention to NFC's operations. Of particular interest has been NFC's operational strategy, its approach to the training of local crew, and its choice of vessels and gear.

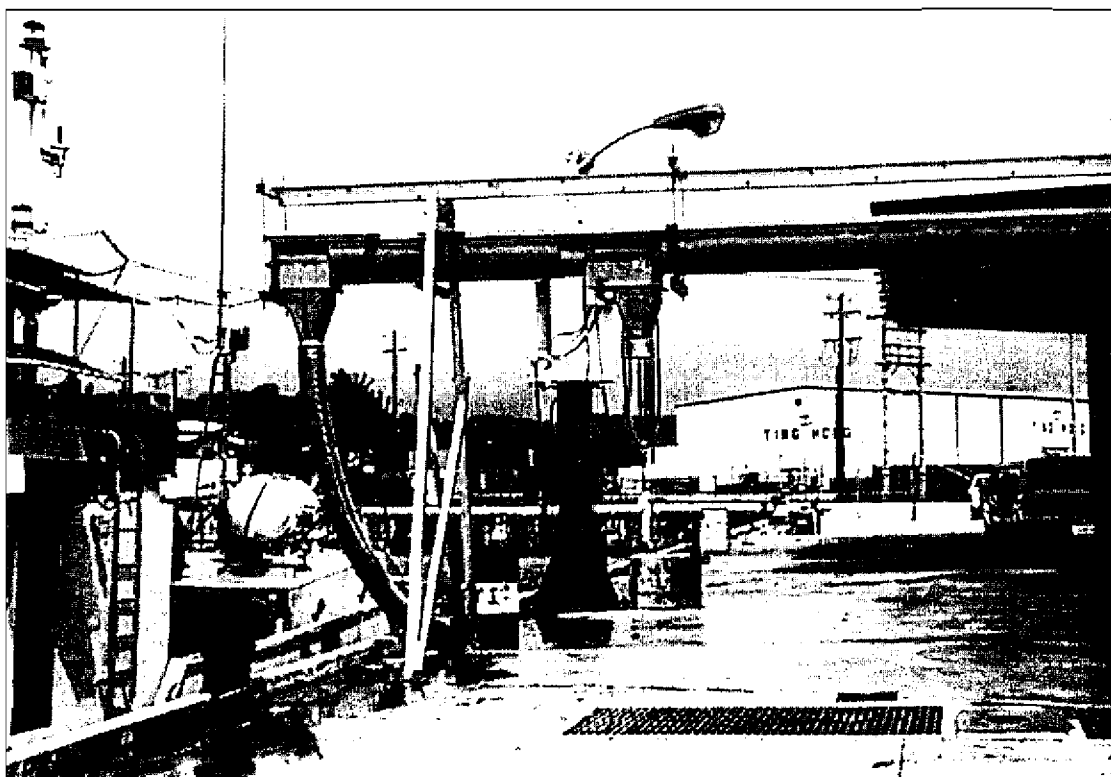
Given the major investment required to establish domestic tuna fishing fleets, making the correct choice of boats and gear is of great importance to the viability of domestic fishing operations.



Part of NFC's fleet in Pohnpei. The US-built NFC Waab, at left, lies alongside two Japanese-built vessels: the older NFC Pohmpei and the latest addition to the NFC, NFC Captain Honda.



Looking forward on board *NFC Waab*, the Lindgren Pitman longline drum is seen mounted on the port side just behind the wheelhouse.



Yap Fresh Tuna Inc. new wharf and tuna landing plant. The hydraulic lift for unloading catches and the ice conveyor streamline operations.

Experience in the Pacific has shown that opting for boats and gear that have proven effective for Asian and other fishing fleets is not necessarily a guarantee of success.

NFC's decision to include both Japanese- and US-style longlin-

ers in its fresh tuna fleet provides a good opportunity to compare the effectiveness of the two vessel styles and the two gear types.

Under the UNDP-sponsored Offshore Fisheries Development Project, Capture Section

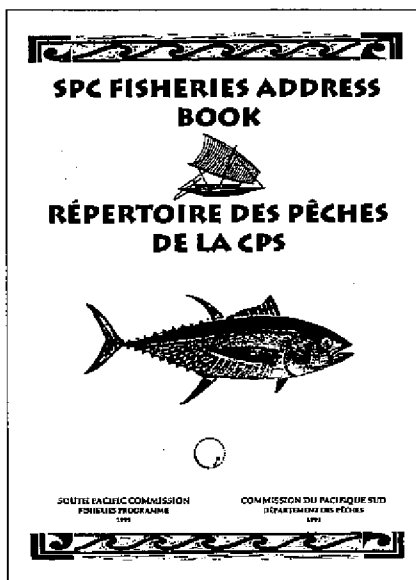
staff are following the development of the NFC fleet and other emerging longlining operations in the region with the aim of developing practical guidelines for the specification of vessels and gear suited to fresh tuna fisheries in the region.

■ INFORMATION SECTION

SPC Fisheries Address Book published

Our readers will remember that the FAO/UNDP Regional Fisheries Support Programme (FAO RFSP) used to publish annually the well-known 'Addresses useful to Pacific Islands fisheries personnel'. This publication was very appreciated in the region.

In 1992, the FAO RFSP ceased its activities and the South Pacific Commission decided to carry on publication of the address book.



The 1995 issue is now ready and has been distributed widely in the region.

In addition to some 900 addresses covering 48 countries and territories, basic fisheries statistics and a map are included for each Pacific Island country or territory.

We trust this document will remain popular and we are always open to suggestions for making it even more useful.

Errata:

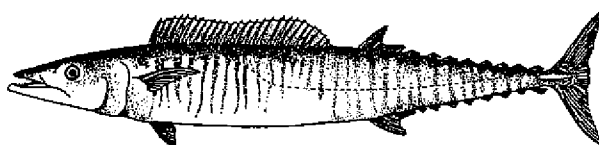
In the Fiji section, United States Agency for International Development (USAID) should read:

USAID Trade and Development Centre, Tabatolu House, 6 Goodenough Street, P.O. Box 2413, Government Building, Suva, Fiji. Fax: 305668 (Elisala Pita, Fisheries Adviser).

In the New Zealand section, James Crossland and Associates' address should read:

James Crossland and Associates, Fisheries Consultants, 220 Springfield Road, St Albans, Christchurch, New Zealand. Telephone: 64 3 3559433 Fax: 64 3 3555041.

Also in the New Zealand section, the fax number for the New Zealand School of Fisheries should read: 64 3 5462456.



Aymeric Desurmont and Henry Yule join Fisheries Information Section

Before joining SPC as the new Fisheries Information Officer, Aymeric was working as a master-fisherman for the Territorial Merchant Marine and Fisheries Department (*Service de la marine marchande et des pêches maritimes*) of New Caledonia, where he spent the last ten years.

Part of his work was to experiment new fishing techniques and to train local fishermen aboard the fisheries 11 m catamaran *Dar Mad*.

He was also responsible for the FAD programme of New Caledonia, a duty that led him to work as a consultant for SPC in the Cook Islands, American Samoa and Wallis and Futuna.

Leaving the helm of a fishing vessel to join SPC is a challenge that Aymeric is happy to take up, with the help of a few sailing races (his favourite hobby) for holidays.

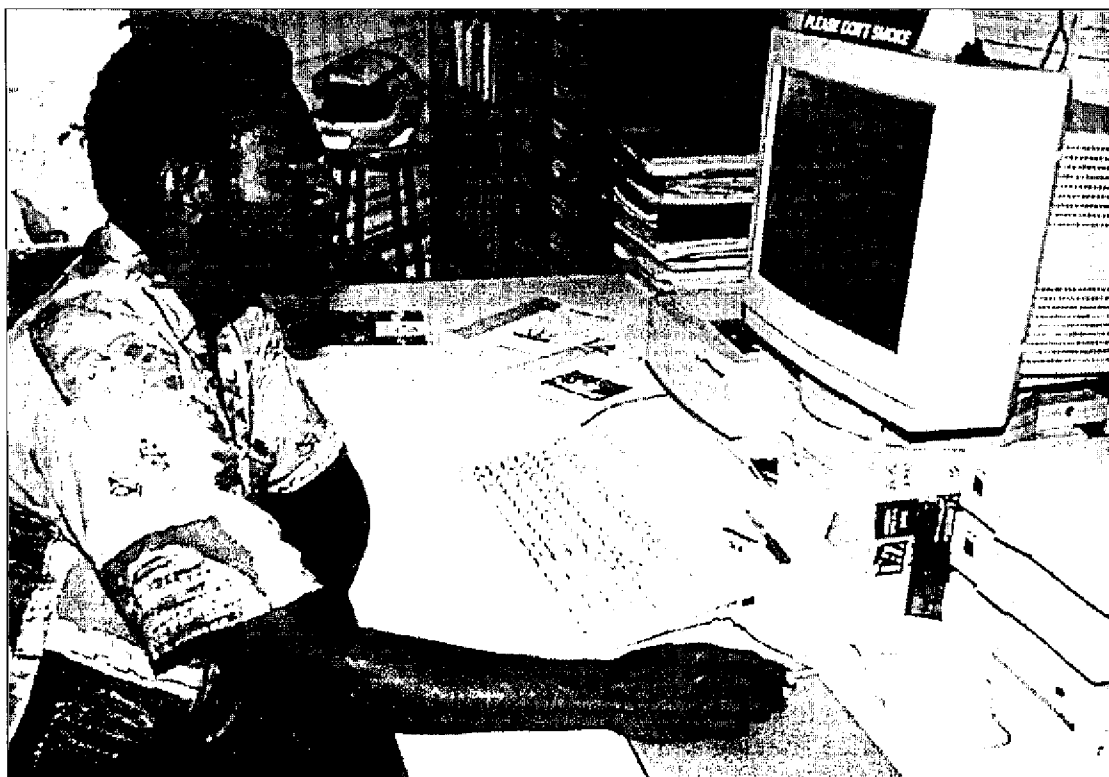
Henry Yule, the new SPC Fisheries Information and Training Associate, is originally from the Gumine District in Papua New Guinea. Henry was educated at the Faculty of Library and Information Studies at the University of Papua New Guinea.

Henry joined the Department of Fisheries and Marine Resources (DFMR) in 1991 and was in charge of the Library and the Information Service. During his work at DFMR, he attended

several training courses, including an attachment within the Pacific Islands Marine Resources Information System Coordination Unit based at USP, Suva, Fiji.

Henry is already familiar with the South Pacific Commission, following his four-week attachment in 1994 with the Information Section and the Library.

Henry personally believes that this challenging new opportunity will allow him to gain more experience and training and help to sustain the fisheries information network within the region.



Henry Yule, the new Fisheries Information and Training Associate, using desktop publishing computer to lay out a newsletter

Current professional establishment—SPC Fisheries Programme (at 31 March 1995)

The regular readers of our *Newsletter* will remember that the last time we published a Fisheries Programme staff listing was in the January–March 1993 issue.

Since then there has been a significant staff turnover and new projects and activities have been implemented.

The list below will show the current professional establishment and we hope it will help our readers to better understand the structure of the SPC Fisheries Programme.

Administration

Manager, Fisheries

Julian Dashwood

Coastal Fisheries Programme

Coastal Fisheries Coordinator

Vacant

Capture Section

Fisheries Development Adviser
Fisheries Development Officer
Masterfisherman #1
Masterfisherman #2
Masterfisherman #3
Masterfisherman #4

Peter Cusack
Satalaka Petaia
Vacant
Vacant
Vacant
Vacant

Post-Harvest Section

Post-Harvest Fisheries Adviser
Post-Harvest Fisheries Officer
Women's Fisheries Development Officer

Steve Roberts
Vacant
Patricia Tuara

Training Section

Fisheries Education and Training Adviser
Fisheries Training Officer

Vacant
Michel Blanc

Resource Assessment Section

Fishery Resource Adviser
Inshore Fisheries Scientist
Remote Sensing Specialist
Inshore Fisheries Management Associate

Tim Adams
Paul Dalzell
Vacant
Vacant

Information Section

Fisheries Information Adviser
Fisheries Information Officer
Fisheries Training and Information Associate

Jean-Paul Gaudechoux
Aymeric Desurmont
Henry Yule

Oceanic Fisheries Programme

Oceanic Fisheries Coordinator
Computer Systems Supervisor

Antony Lewis
Russell Price

Fisheries Statistics Section

Fisheries Statistician
Fisheries Database Supervisor
Research Officer/Analyst

Timothy Lawson
Peter Williams
Emmanuel Schneider

Tuna and Billfish Research Section

Principal Fisheries Scientist
Senior Fisheries Scientist (Visiting)
Fisheries Research Scientist
Programmer/Research Officer

John Hampton
Vacant
Vacant
David Burgess

South Pacific Regional Tuna Resource Assessment and Monitoring Project (SPRTRAMP)

Port Sampling/Observer Supervisor
Scientific Observer
Scientific Observer
Scientific Observer
Scientific Observer
Senior Fisheries Scientist (Biology)
Senior Fisheries Scientist (Modeller)
Data Research Officer

Peter Sharples
Felipe Viala
Deirdre Brogan
Vacant
Siosifa Fukofuka
Patrick Lehodey
Michel Bertignac
Babera Kaltongga

■ OCEANIC FISHERIES PROGRAMME

Second FAO Expert Consultation on Interaction of Pacific Tuna Fisheries

The Second FAO Expert Consultation on Interaction of Pacific Tuna Fisheries was held from 23 to 31 January 1995 in Shimizu, Japan.

The meeting was organised by the Food and Agriculture Organization of the United Nations (FAO) and hosted by the National Research Institute of Far Seas Fisheries.

Partial funding for the meeting was provided by the Government of Japan through an FAO Trust Fund project. The agenda included the following items:

- ☛ types of tuna fisheries interactions;
- ☛ review of studies on tuna fisheries interactions;
- ☛ extent of tuna fisheries interactions; and
- ☛ unresolved problems, and research guidelines for their resolution.

Several papers related to tuna fishery interactions in the SPC region were presented, including:

Fournier, D.A., W.J. Hampton & J.R. Sibert. A method for estimating fishery interactions from South Pacific albacore catch-at-length data using the SPARCLE model. Paper No. 5-20.

Hampton, W.J., T.A. Lawson, P.G. Williams & J.R. Sibert. Case study of fishery interaction in a Pacific Island country: Kiribati. Paper No. 5-21.

Kleiber, P. Formulation of model for studying interactions of yellowfin tuna fisheries in the western Pacific. Paper No. 5-19.

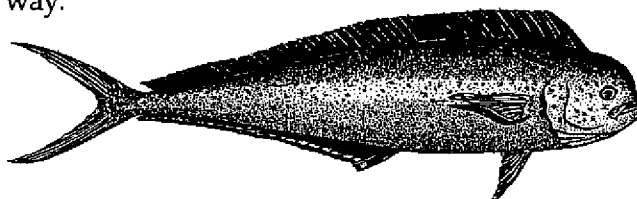
Sibert, J.R., W.J. Hampton & D.A. Fournier. Skipjack movement and fisheries interaction in the western Pacific. Paper No. 5-17.

The paper by Hampton et al. is of particular interest in that it presents evidence of interaction between the industrial purse-seine fishery and the artisanal fishery in Kiribati.

Statistically significant correlations between purse-seine catches of yellowfin and catch rates by trollers in the artisanal fishery in the Gilbert group were found.

The analysis, which utilised purse-seine logbook data and landing surveys of the artisanal fishery, resulted in positive correlations for large distances between purse-seine and troll catches, e.g. 300 and 600 nmi, which suggests that, on this scale, variations in the abundance or catchability of yellowfin affect both purse seiners' and artisanal catches in the same way.

However, for small distances, e.g. 50, 60 and 120 nmi, statistically significant weak to moderate negative correlations were found. The negative correlations suggest that gear competition for yellowfin may be occurring on a local scale when purse-seine effort is concentrated near the islands in the Gilbert group.



FFA—SPC Observer Workshop

The FFA—SPC Observer Workshop was held from 21 to 23 February 1995 in Brisbane, Queensland, Australia. Participants from Australia, Federated States of Micronesia, Kiribati, Marshall Islands, New Caledonia, New Zealand, Palau, Papua New Guinea, Solomon Islands and the United States of America attended the meeting.

The Indo-Pacific Tuna Development and Management Programme (IPTP) and the Inter-American Tropical Tuna Commission (IATTC) were also represented.

The meeting was organised by the South Pacific Forum Fisheries Agency (FFA) and SPC, with partial funding from the Australian International Development Assistance Bureau (AIDAB) and the European Commission.

The main objectives of the meeting were to allow individuals involved with tuna fishery observer programmes to share their experiences for their mutual benefit and to provide guidance to participants from agencies which intend to imple-

ment observer programmes. The workshop coincided with the entry on duty of four individuals recruited to the South Pacific Regional Tuna Resource Assessment and Monitoring Project (SPRTRAMP) of SPC.

The agenda for the workshop included the following items:

- ☞ country statements;
- ☞ observer programme objectives;
- ☞ recruitment and training of observers;
- ☞ data collection forms;
- ☞ placement procedures and conditions on board;
- ☞ relationship between observer programmes and port sampling; and
- ☞ harmonisation of regional and national observer programmes.

The workshop represented the first occasion for the managers of observer programmes in the

region, which at present consist of those of Australia, Federated States of Micronesia, New Zealand, FFA and IATTC, to compare the programmes. The exchange of information was generally felt to be extremely worthwhile. The participants supported the proposal for a biannual newsletter on port sampling and observer programmes in the region, which will be edited by SPC, with contributions from each of the observer programmes.

The participants agreed that future meetings would be worthwhile if they moved beyond the general approach of the first workshop and focused on particular issues.

One such area, which was recognised several times during the workshop as needing further attention, concerns the determination of the sampling design and coverage rates required for obtaining accurate and reliable estimates of by-catches and discards on a fleet-wide basis.

Sixteenth session of the Coordinating Working Party on Fishery Statistics

The Coordinating Working Party on Fishery Statistics (CWP) was established by the FAO Conference at its Tenth Session, in 1959; its original name was the 'Continuing Working Party on Fishery Statistics in the North Atlantic Area'.

Five meetings of the CWP were held before the FAO Council, at its fifty-first Session, in 1968, altered the name to the 'Coordinating Working Party on Atlantic Fishery Statistics'.

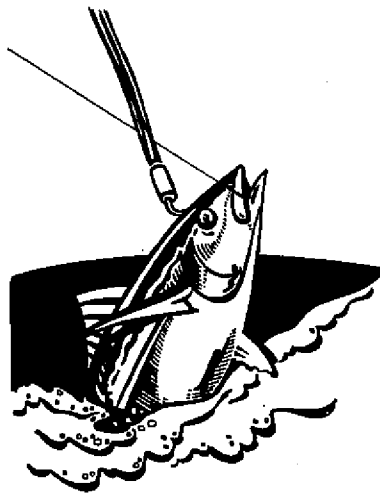
Participation at the CWP has included the following regional fisheries agencies: the International Council for the Exploration of the Sea (ICES), the International Commission for Northwest Atlantic Fisheries (ICNAF) which was predecessor to the Northwest Atlantic Fisheries Organization (NAFO), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the North Atlantic Salmon Conservation Organization (NASCO), the Organization for Economic Cooperation and Development (OECD), and the Statistical Office of the European Communities (EUROSTAT). The Fisheries Department of FAO acts as the secretariat for the CWP.

The CWP, supported by the participating agencies, has served since 1960 as the sole international and inter-agency forum for establishing common definitions, classifications and standards for the collection of fishery statistics.

It has provided technical advice on fishery statistical matters to participating agencies and has facilitated the publication of

methodological and reference documents of general interest. In the process it has influenced the statistical programmes of all participating agencies, and those of the FAO in particular.

The statistical programme of FAO is concerned with the collation of global statistics on catch and production from over 220 countries for over 1,000 species of aquatic organisms of significant commercial importance in all inland and marine fishing areas.



Most member countries and territories of SPC provide fisheries statistics to FAO, using the CWP definitions, classifications and standards. The CWP, as the primary review body for the FAO statistical programme, has therefore influenced the fisheries statistics programmes in all SPC member countries and territories.

In recent years, the global significance of the work of the CWP has expanded:

- ☛ The CWP has contributed to the establishment of definitions, classifications and standards for aquaculture, which now represents 15 per cent of global production, and which continues to expand within the SPC region.
- ☛ The CWP has influenced the development of the programme recently established by FAO to collect statistics on high seas fisheries; this programme was established in response to recommendations made at the FAO Technical Consultation on High Seas Fishing, Rome, Italy, September 1992, which in turn was convened following the United Nations Conference on the Environment and Development (UNCED), Rio de Janeiro, Brasil, July 1992. The main source of data for the high seas database will be the regional fisheries agencies. The fisheries monitored by the SPC Oceanic Fisheries Programme will be a major component of that database.
- ☛ The CWP has also concerned itself with the reconciliation of fisheries statistics held by several regional agencies and those held by FAO, thereby fostering consistency and quality in global fisheries statistics.
- ☛ The CWP has also influenced the workings of recent international initiatives concerned with fisheries and fisheries statistics, including the UN Conference on Highly Migratory Fish Stocks and Straddling Fish Stocks, the Agreement to Promote Compliance with Internationally Agreed Conservation and Management Measures by Fishing Vessels on the High Seas, and the Code of Conduct for Responsible Fishing.

The need for a mechanism like the CWP, but with global jurisdiction, was recognised by the *Ad Hoc* Consultation on Global Tuna Statistics, Colombo, Sri Lanka, December 1985.

That meeting agreed that some form of inter-agency collaboration was essential if improved coverage and more reliable global tuna statistics were to become a reality and that there was a need to establish a mechanism for the coordination of statistical programmes for agencies concerned with tuna statistics.

The Fifteenth Session of the CWP, Dartmouth, Nova Scotia, Canada, July 1992, recognised that most of its agenda was of global significance and that participation in the CWP by agencies outside the Atlantic should be reinforced.

In addition, the *Ad Hoc* Consultation on the Role of Regional Fishery Agencies in Relation to High Seas Fishery Statistics, La Jolla, California, United States of America, December 1993, noted the global nature of many of the issues which are considered by the CWP and recommended that the CWP should extend its brief to a global scale.

As a result, the CWP's Statutes and Rule of Procedure were revised at the *Ad Hoc* Inter-Agency Consultation on Atlantic Fishery Statistics, Madrid, Spain, July 1994, to accommodate changes in membership and to reflect changes which had already taken place in participation.

In the revised statutes, all references to the Atlantic have been dropped and the geographical area of the CWP is defined by the regional responsibilities of the participating organisations.

The revised statutes allow for regional fishery agencies from areas outside the Atlantic to participate in the CWP, thereby formally expanding the area of concern of the CWP.

The revised statutes were subsequently adopted by NAFO and ICES in September and October 1994, and the FAO Council is expected to consider them in June 1995.

As a result, invitations to participate in the Sixteenth Session of the CWP were extended to several regional fisheries agencies outside the Atlantic, in addition to SPC, including the Inter-American Tropical Tuna Commission (IATTC), which is responsible for tuna fishery statistics in the eastern Pacific Ocean, and the Indo-Pacific Tuna Development and Management Programme (IPTP), which is responsible for tuna fishery statistics in the Indian Ocean.

The Sixteenth Session of the CWP (CWP-16) was held at the headquarters of the International Commission for the Conservation of Atlantic Tunas (ICCAT), Madrid, Spain, from 20 to 25 March 1995.

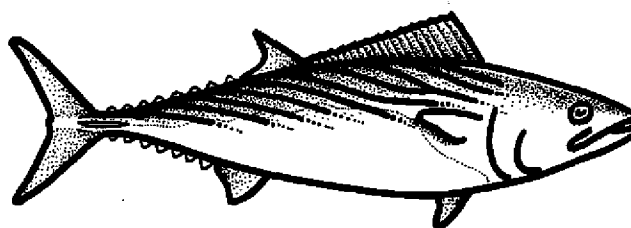
Twenty-four experts from the following member or observer organisations participated:

- ☞ Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR);
- ☞ Commission for the Conservation of Southern Bluefin Tuna (CCSBT);

- ☞ Food and Agriculture Organization of the United Nations (FAO);
- ☞ General Fisheries Council for the Mediterranean (GFCM);
- ☞ Indo-Pacific Tuna Development and Management Programme (IPTP);
- ☞ International Commission for the Conservation of Atlantic Tunas (ICCAT);
- ☞ International Council for the Exploration of the Sea (ICES);
- ☞ Northwest Atlantic Fisheries Organization (NAFO);
- ☞ Organisation for Economic Cooperation and Development (OECD);
- ☞ South Pacific Commission (SPC);
- ☞ Statistical Office of the European Communities (EUROSTAT); and
- ☞ Western Central Atlantic Fishery Commission (WECAFC).

Three major topics were considered. The first concerned the future role of the CWP following its reconstitution and the adoption of new statutes and rules of procedure.

The second major topic concerned international initiatives of relevance to the CWP, including:



- (1) a follow-up to the *Ad-hoc* Consultation on the Role of Regional Fishery Agencies in Relation to High Seas Fishery Statistics;
- (2) the UN Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks;
- (3) the Agreement to Promote Compliance with Internationally Agreed Conservation and Management Measures by Fishing Vessels on the High Seas; and
- (4) the Code of Conduct for Responsible Fisheries.

The third major topic concerned the improvement of the reliability of fishery statistics, including consideration of the consequences and extent of the problem of non-reporting and mis-reporting.

Other topics considered included a review of recommendations from the Fifteenth Session of CWP:

- ☞ modifications to programmes in relation to fishery statistics;
- ☞ exchange of national fishery statistics on electronic media;
- ☞ modifications to STATLANT questionnaires;
- ☞ discrepancies among agency databases;
- ☞ bycatch and discard data;
- ☞ recreational and subsistence fishery statistics;
- ☞ fleet statistics;
- ☞ aquaculture statistics;
- ☞ conversion factors;
- ☞ the *Handbook of Fishery Statistics*; country and nationality issues; and
- ☞ economic statistics.

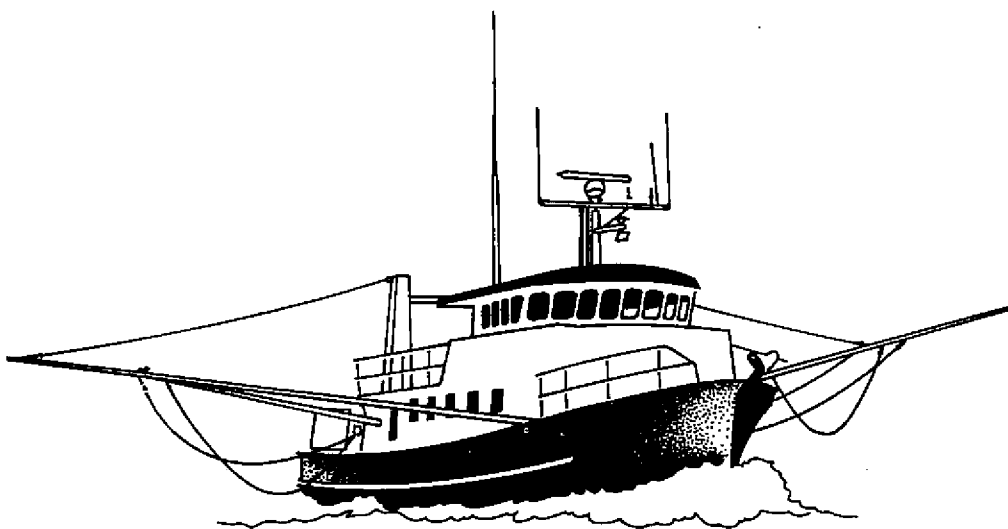
Under the agenda item concerning the UN Conference on Straddling Fish Stocks and

Highly Migratory Fish Stocks, discussion focused on Annex 1, Minimum Standard for Collection and Sharing of Data, from the Chairman's Draft Agreement (UN General Assembly A/CONF.164/22, 23 August 1994).

At the outset of the discussion, the Annex was attacked as being overly detailed and thus impractical.

However, the attack was countered with the observation that while some items, such as bycatch and discards, were not currently collected by many fleets, they should still be included in the minimum standards because of their obvious importance for stock assessment.

The outcome of the discussion was a strong statement of support for Annex 1 by CWP. This was subsequently distributed to delegates at the fifth session of the UN Conference, which began on 27 March 1995, immediately following the close of CWP-16.



■ 1995: YEAR OF THE TURTLE

Participating countries and territories

All twenty-six Pacific island countries and territories have dedicated 1995 to sea turtle conservation by naming 1995 the 'Year of the Sea Turtle'. Nineteen of these are actively participating through national campaign activities.

These are: American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, Guam, Kiribati, New Caledonia, Niue, Palau, Papua New Guinea, Solomon Islands, Tonga, Tokelau, Tuvalu, Vanuatu, Western Samoa, Hawaii (USA) and New Zealand.

The South Pacific Regional Environment Programme (SPREP) is coordinating the campaign at the regional level, including the production of resources such as special 'Year of the Turtle' posters; stickers, videos—even a rap song promoting turtle conservation.

The campaign has twin goals of education and awareness of the need for turtle conservation, and changes needed in turtle management. Banning commercial trade in turtles is the most important goal for improved turtle management.

Campaign slogan and key messages

The campaign slogan 'Let Our Turtle Family Live' embodies the need for the Pacific family of nations to work together to conserve these species, which range thousands of miles to feed and breed. Turtles tagged in the Pacific Islands region have been caught as far afield as the Philippines.

Key communication messages aimed at Pacific audiences emphasise that sea turtles are under threat as too many turtles are being killed.

Over-harvesting of turtle populations is the key factor in their decline. Research has shown that female turtles have to be at least 20 years old, sometimes up to 50, before they can lay their first clutch of eggs.

This extremely slow breeding rate compounds the problem of over-harvest.

In addition, genetic studies are revealing that turtle populations are fairly isolated, with populations not interbreeding between different nesting sites. Thus, different nesting turtle populations are unique; if they are completely harvested from

a particular island site, other turtles will not come from elsewhere to replace them. They could be gone from that nesting beach forever.

SPREP's role—The regional campaign

SPREP will be undertaking a number of regionally-based communication and awareness activities to promote turtle conservation during the Year of the Sea Turtle.

In addition, through its donors (the Canadian and Australian Governments, the Global Environment Facility and the United Nations Development Programme), SPREP is resourcing many national campaign initiatives.

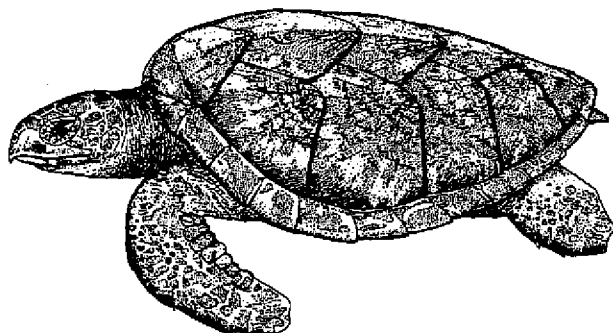
The campaign is part of SPREP's ongoing Regional Marine Turtle Conservation Programme (RMTCP) which runs research, survey, monitoring, policy and awareness activities to support the management of member nations' turtle resource.

The RMTCP's goal is to conserve marine turtles and their cultural, economic and nutritional values for the coastal populations of the countries served by SPREP.

National campaigns

Activities planned in participating countries include poster and song competitions, village/market theatre, school visits and special turtle conservation days and weeks.

A range of media work using radio, newspapers and TV is also planned. Using local languages is a key theme, as is promoting traditional controls



on turtle use to conserve them. In many countries this work is complementing ongoing surveying, monitoring and tagging of turtle populations.

Individual country events are too numerous to list here. People interested should contact the country turtle network person concerned.

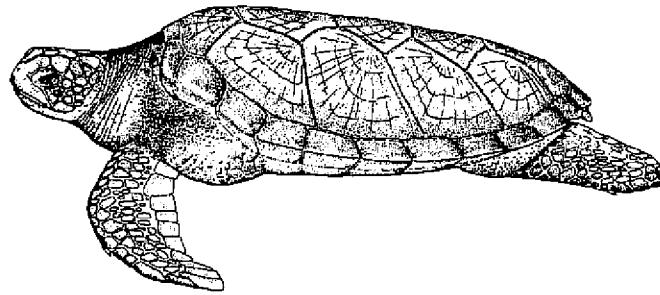
For more details, please contact:

Sue Miller
Species Officer/Turtle
Campaign Coordinator
or
Wes Ward
Information Officer
South Pacific Regional
Environment Programme
(SPREP)
P.O. Box 240 - Apia
Western Samoa
Fax: (685) 20231
Telephone: (685) 21929

(Source: SPREP)

The Year of the Sea Turtle—Key Events to watch for...

March	Region-wide campaign launch
April	'Year of the Turtle' video launch
May	'Turtle Rap Song and Music' video launch
June–August	'Don't Buy or Sell Out Turtles' sub-campaign
October	'Great Turtle Migration Mystery Competition' combined with turtle satellite tag research
November	Focus on turtle eco-tourism opportunities in the Pacific
December	Campaign wrap up—Pacific turtle future...



■ FIJI BANS TURTLE MEAT SALES

Supporting a campaign by the South Pacific Regional Environment Programme (SPREP) to save the sea turtle from extinction, the Fiji Government has banned commercial sales of turtle. Turtle meat is regarded as a delicacy in the islands and also used for customary and ceremonial purposes.

AFP reports from Suva that about 18.6 t of turtle meat was sold in Fiji markets in 1992, ac-

cording to the most recent statistics. This represents about 600 average-sized turtles. However, the turtles caught and eaten by villagers on many islands do not figure in any statistics. Acting Director of Fisheries, Simone Tuilaulala, said data collected by his department showed a reduction in market sales of the meat, but policing the ban would be difficult because of the remoteness of some Fiji islands.

Turtle meat now sells in Suva at about US\$ 2.95 a kilo, twice the 1992 price. Fiji has given some protection to the animals over the years, making it illegal to kill them between November and February, their nesting season.

(Source: *The South Sea Digest*)

■ SCIENTIFIC SURVEY IMPROVES UNDERSTANDING OF SUBSISTENCE FISHERIES

Subsistence fishing is an important aspect of daily life for many people in the Pacific Islands.

However, as their activities do not contribute directly to the economy

in terms of measurable cash flow, attempts to monitor the catch and effort from this sector have hitherto been limited.

In Fiji, a better understanding of the subsistence fishery has become necessary with increased pressure on the marine environment from commercial developments and continued con-

cerns about decreasing catch rates. Fisheries managers and planning departments require information on present catch and effort in order to assess the impact of changes on fisheries.

During the Australian Centre for International Agricultural Research (ACIAR) baitfish research projects, methodologies were developed in the Solomon Islands and Fiji to collect data on fishing activities from island locations.

Project scientists required the data to assess the impacts of bait fishing by commercial pole-and-line vessels on the fishing practices of communities living close to the baiting grounds.

The Fiji Fisheries Division realised that the information being gathered could serve as a baseline study of subsistence fisheries. ACIAR gave a small grant for the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Fiji Fisheries Division to undertake a survey of the fishing activities of the rural population of the main island of Viti Levu.

Project work was carried out between July and December 1993. It consisted of three major components—a questionnaire survey, a creel survey and a fish consumption survey.

The project team based the sampling design for the questionnaire survey on the 1986 population census of Fiji. The sample area was stratified to divide the population into four groupings based on their distance from the coast. Overall there were about 51,500 households in the sample area. During the survey interviewers gained responses from 2,252 households.

The team carried out separate creel surveys at four coastal communities around the island. Each village was located in a different type of habitat and its people had already taken part in the questionnaire survey.

Several team members remained in each village for one week to monitor the daily routine of the people who were fishing and to record their catches. They recorded 123 fishing trips during this period, which represented an effort of 1,522 hours. The catch record was 7,177 individuals, totalling 1,683 kg and drawn from 193 different species.

The fish consumption survey covered the same locations as the creel surveys. Each household received a form inviting people to record what marine products they ate at each meal. Fifty households returned the forms, which gave details of 943 different meals. The results from the creel survey agreed closely with the questionnaire returns from the same sites, giving confidence in the overall data.

Major findings were:

- ☛ 50 per cent of households have members who go fishing, but levels differ, depending on distance from the coast.
- ☛ Coastal communities are more active fishers and sell a greater proportion of their catch, whereas inland communities are less active and fish mainly for their own consumption;
- ☛ Fijian women are the most active fishing group.
- ☛ 16 per cent of households sell marine products.

☛ The population distribution means that most fishing trips are undertaken in estuaries and rivers.

☛ Invertebrates (shellfish and crustaceans) were more important than fish for sale and also made up 50 per cent of the subsistence catch.

☛ The most important fishing techniques are generally simple. Villagers use hand-lines, push nets and spears, or simply collect. They carry out these activities in close proximity to the village, usually from the shore.

Estimates of the overall catches by coastal villagers on Viti Levu were 470 t for subsistence purposes and over 2,600 t for sale, worth approximately A\$ 7.2 million or an average weekly income of about A\$ 35 per household per week.

The report, *A survey of the subsistence and artisanal fisheries in rural areas of Viti Levu, Fiji* by N.J.F. Rawlinson, D.A. Milton, S.J.M. Blaber, A. Sesewa and S.P. Sharma, was presented to representatives from many government departments of Fiji at a meeting held in Suva.

From this meeting came agreement that the survey had produced information which would be valuable to a wide range of users and that Fiji Fisheries Division would continue to use the techniques in other areas of the country.

Staff were trained in all aspects of the methodologies used during the course of the project and should be in a good position to carry out such work.

(Source: *Australia-South Pacific Newsletter*)

■ UN WORKSHOP ADDRESSES COASTAL AND OCEAN MANAGEMENT TRAINING

A two-week workshop organised by the United Nations and aimed at the training of trainers in coastal area and ocean management began on 23 January at the Marine Sciences Research Centre of the State University of New York (SUNY) at Stony Brook, Long Island.

Entitled 'Course Developers Workshop', it brought together some 21 participants from nine countries and three United Nations organisations for the purpose of training them to the same standard in the preparation of advanced training course materials, according to a common methodology.

The participating countries and organisations were Brazil, Costa Rica, Fiji, India, the Philippines, Senegal, Thailand, the United Kingdom, the United States, the International Maritime Organisation and the Universal Postal Union.

The participants from Costa Rica, Fiji and Senegal came from institutions in their respective countries affiliated with the International Ocean Institute, whose headquarters are in Manila.

The workshop was the first operational activity under the 'Train-Sea-Coast Programme' launched in 1993 by the United Nations and other organisations involved in course development.

The programme responds directly to the call of the 1992 UN Conference on Environment and Development (UNCED) for enhanced human resources development through training and education in integrated

coastal and ocean development. It aims to establish an international, decentralised programme for the coordinated development and sharing of high-quality standardised course materials.

Through a cooperative network between developed and developing countries, it will facilitate the exchange of materials, information and instructors in order to allow their maximum utilisation worldwide, thus avoiding duplication of effort and reducing the costs of developing training programmes.

The programme is an outgrowth of the 'Train-X-Strategy', whose application dates back to 1975 when the International Telecommunication Union (ITU) adopted the methodology as an effort to facilitate global cooperation in telecommunications training.

The 'Train-Sea-Coast' approach, like that of its predecessors in the ITU, the United Nations Conference on Trade and Development (UNCTAD), and the International Civil Aviation Organisation (ICAO), consists of a training network made up of academic and training institutions from developing and developed countries that are willing and able to participate in the programme and to cooperate with each other.

Thus, the Course Developers Workshop marks the latest phase of a far-reaching collaborative venture. It extends a course development and sharing system that has been carefully worked out and improved over the last 20 years, not only by a coalition of United Nations system agencies, but also by

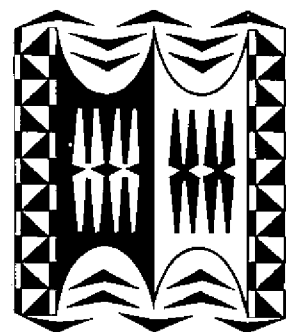
world-class experts, donors and most important, developing country practitioners whose creative energy gives life to the programme.

The workshop is supported by a generous grant from the Government of Japan. The SUNY Marine Sciences Research Centre has kindly provided facilities free-of-charge for the conduct of the workshop.

Among the United Nations units and organisations that helped to launch the 'Train-Sea-Coast' programme in 1993 are: the Divisions for Ocean Affairs and the Law of the Sea of the United Nations Office of Legal Affairs; and the Science, Technology and Private Sector Divisions (formerly Division for Global and Interregional Programmes), Bureau of Policy and Programme support of the United Nations Development Programme (UNDP).

Fiji is represented by three officials of the University of the South Pacific: Professor Robin South of Marine Studies Programme and International Ocean Institute, Joeli Veitayaki of the Ocean Resource Management Programme, and Ms Irene Yee, Chief of the University Extension.

(Source: USP)



■ ASIAN SHIPS BEGIN TRANSSHIPMENT OF TUNA

Following the announcement of Papua New Guinea's tuna domestic policy, the first round of port calls and transshipments began in December 1994.

Minister for Fisheries, Titus Philemon said 'I commend both local and domestic foreign tuna companies for their decisions to begin transshipments out of PNG ports.'

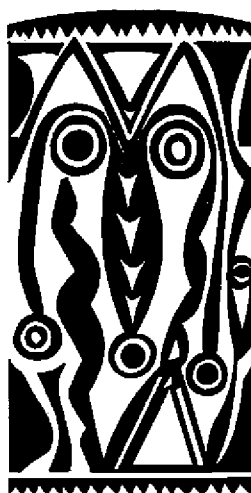
Port calls and transshipments in Wewak were done by a locally registered company, Niugini Fishing. Originally from Taiwan, the company owns two purse-seining tuna boats, *Niugini 101* and *Niugini 102*. Both vessels have domestic licences and are required by licence conditions to make port calls and transshipments at any designated port in Papua New Guinea. The company transshipped about 300 t of tuna out of Wewak in December.

Mr Philemon said Niugini Fishing Company will carry out further transshipments of about 500 t out of Kavieng. The company intends to continue its transshipments there because of Kavieng's proximity to the fishing grounds.

The Frabelle Fishing Company of Philippines has started transshipments out of Lorengau. About 500 t were transshipped in November and December 1994.

The impact of transshipment out of Manus has been significant. The trade stores were emptied as a result of purchase of large volumes of foodstuffs. The supply of local market food in Lorengau could not meet the boat's requirements.

Another Philippines company, the Mar Fishing Company, has transshipped 125 t out of Kavieng and 280 t from Kokopo. The Mar vessels will require more food supplies and fuel to be purchased from Kokopo. Given Mar's interest in basing its operations at Kokopo and, in particular, in using it as a base to operate a local company, it will contribute enormously to the economy.



The minister said he was particularly pleased with the New Guinea Marine Fishing Company, 'being the first local tuna longline company to be established in Papua New Guinea, with its base in Port Moresby.'

'The company was the first to transship, as early as October last year, out of Port Moresby via Cairns to Japan. It was the first local company to implement the new tuna domestic policy and I commend the efforts in developing a local tuna venture'.

He said it was anticipated that there would be a sudden increase in transshipments at the end of January when the new fisheries regulations came into force.

The regulations make it mandatory for transshipments to take place in Papua New Guinea and this will be strictly enforced by the Department of Fisheries and Marine Resources.

Mr Philemon recently negotiated and signed an access agreement with Taiwanese tuna boat owners on behalf of the Papua New Guinea government. This agreement has increased pressure on Taiwanese vessels to transship in Papua New Guinea.

Similar agreements were scheduled to be negotiated and signed with the Korean Deep Sea Fishing Association in Guam in the first week of February. It is anticipated that the Korean vessels will comply with the new transshipment requirements. The Minister was also due to negotiate and sign an access agreement in the Philippines during the same week, to ensure that Philippine boats transship out of Papua New Guinea.

Mr Philemon said: 'I believe that transshipment will generate more revenue from distant-water fishing vessels than the income currently received from licensing fees. All foreign vessels will spend more on purchase of fuel and food supplies, as well as stevedoring and other services required by the tuna boats and their crew'.

'I maintain that each of the distant-water fishing vessels must make at least three port calls in Papua New Guinea designated ports. Initially only one of these port calls will be for transshipment purposes.

'However, if the boats do make port calls they are bound to

purchase supplies and services from Papua New Guinea', he said.

'I urge all maritime provinces, especially those near the fishing grounds, to prepare and meet the demands of fishing vessels

that are calling in port for transshipment and inspection. Already there are complaints that the required supplies and services are not available in Papua New Guinea ports and towns. I further urge that the government and local suppliers must

offer prices that are compatible to neighbouring Pacific Islands, to invite more transshipment on PNG shores', he said.

(Source: *The Times of PNG*)

■ GULF VILLAGERS WANT MORE PARTICIPATION IN MARINE INDUSTRY

Coastal villagers from the Gulf Province of Papua New Guinea are pushing for more active participation in the management and utilisation of their marine resources. At the same time, they are determined to preserve their resources from undue exploitation.

The people of the Gulf Province no longer want to be spectators while their marine resources are harvested by foreign developers without giving any tangible benefits back to the resource owners.

The resource owners made known their grievances in two different meetings with the provincial and national authorities. The first was held in Ihu district and the latest was at Uritai village.

The meetings were held following the villagers' apprehension of a number of fishing vessels in recent months for allegedly fishing inside the three-mile fishing zone.

The Gulf Premier, Paul Apio, addressing the meeting at Uritai, said the involvement of

coastal villagers in these meetings was also a recognition of the villagers' traditional ownership rights to the stocks of fisheries resources in their waters.

He told resource owners to resolve their differences through consultations and forums and not to resort to acts of disruption and confrontation.

He said recent actions of the villagers in apprehending the fishing vessels had threatened the marine industry and even placed the lives of the crews of these vessels at risk.

Mr Apio said that, though his government encourages free enterprise, companies must have greater respect for the resource owners and their inherited assets. He said there are traditional methods of resource management and conservation, such as restricting people from fishing at the breeding grounds.

Meanwhile the provincial government has come up with several proposals for a better deal for equal local participation in the marine industry.

They include increased participation of resource owners in the prawn business; issuing of fishing licences to Gulf people only, licences to foreign vessels to be withdrawn unless the local people are offered equity participation; and both the provincial and fisheries authorities to conduct marketing research to identify marketable fish and prawn stocks for domestic and international markets.

The provincial government wants to see the revenues derived from the industry equitably shared between the national and provincial governments. In addition to the proposal, the provincial government is at present studying legislative options in the area of fisheries. This will require a joint effort between lawyers of the Gulf provincial government and the national fisheries department.

(Source: *The Times of PNG*)



■ PACIFIC ENSO APPLICATIONS CENTER

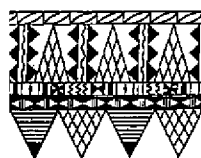
A Pacific El Niño-Southern Oscillation (ENSO) Applications Center has recently been established as a partnership among the University of Guam, the University of Hawaii, NOAA's National Weather Ser-

vice Office of Global Programmes, and the US-affiliated governments of the Pacific Region, through the Pacific Basin Development Council (PBDC).

The main purpose of the Center is the development and provision of information to advise government officials and other interested parties on cyclical changes in local weather, and their impacts within the Pacific

region, arising from the ENSO climate cycle. Information will be 'translated' into a format appropriate to support the decision-making processes undertaken in the Pacific region for coastal zone management, fisheries management, agriculture, water resource management,

natural disaster mitigation strategies, and other potentially affected economic sectors.



The Centre is currently located in the Prince Kujio Federal Bldg., 300 Ala Moana Blvd., Room 4328A, Honolulu, HI 96850 USA. The Outreach Director, LtJG Alan Hilton, can be contacted at (1)-808-541-3638, Fax: (1)-808-541-1655.

■ SCALLOP STOCK YIELDS ANTI-CANCER AGENT

Research at the Industrial Technology Development Center in Aomori Prefecture in southern Japan has shown that the liquid left over from scallop processing contains an anti-cancer agent, now identified to be glycogen poly-sugar.

Since 1978, it had been known that boiled scallop stock contained an anti-cancer agent, but the specific identity of the chemical was not clear. The recent identification of the substance is the result of cooperative research between the Center, commercial scallop processors and the University of Hirosaki.

Condensed stock left over from scallop steamed at 120°C (this

being the normal method of commercial processing of scallop) was used for the experiments. Most of the stock is normally discarded after processing, except for a small proportion which is made into seasoning for soups, etc.

The anti-cancer effect of glycogen poly-sugar was checked by first implanting cancer cells in guinea pigs. Subsequently, the guinea pigs given 200 mg of glycogen poly-sugar were 100 per cent cured of cancer.

Since the identification of glycogen poly-sugar as an effective anti-cancer agent, a new method of extraction by means of enzymes (as opposed to conventional methods using acids

and alkalis) has been developed, and a patent applied for. Meanwhile, further research is required (for side-effects, efficacy, etc.) before the agent can be commercially produced and marketed.

Nevertheless, it may soon become possible to produce a low-cost anti-cancer medicine from scallop stock. As many shellfish species contain glycogen poly-sugar, it would also provide a novel way of utilising processing waste.

(Source: *INFOFISH International*)

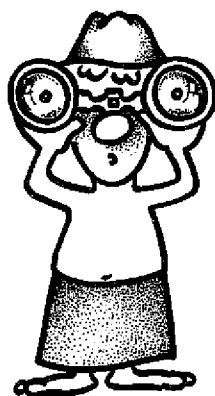
■ SEA RESCUES ARE COSTLY—RESCUE TIPS

A Search and Rescue and Maritime Law Enforcement Conference focusing on techniques and planning was held in Guam recently. It was sponsored by the US Coast Guard and the Department of the Interior.

Participants included representatives from the Republic of the Marshall Islands, Federated States of Micronesia, Palau, the US Customs and the Royal Australian Navy.

Marshall Islands representatives were Port Captain, Joe Tiobech; Sea Patrol Chief of Surveillance, Thomas Heine; Assistant to Chief

Secretary, Bot Lang; Chief Secretary, Philip Kabua; Police Commissioner, Norman Jennings; and Sea Patrol Advisor, Mark Humphreys.



With impetus from the Chief Secretary's office, draft plans have been approved to tie together all Marshall Islands' assets for a national search and rescue organisation. The Chief Secretary's office is in charge of determining how resources will be used.

Costs involved in rescue are considerable. Humphreys said that he did not wish to sound as if everything was reduced to dollars, but in fact the cost always comes back to the taxpayers.

A ship like the *Lomor* or a *Micro* costs US\$ 3,000 – US\$ 3,500 per day to operate. A small twin-engine plane like AMI's Domiers costs US\$ 900 per hour. A C-130 from Hawaii costs the U.S. government US\$ 5,000 per hour. The round trip alone from Hawaii to Majuro is 16 hours; then there is the search time.

'Mind you', Humphreys said, 'searches will be done regardless, for humanitarian reasons. But ultimately the people pay'. Businesses like AMI and the *Micro* boats could literally go bankrupt, and they don't have to be involved in rescue at all.

As a way to make searches, and therefore rescues, more successful, Sea Patrol Advisor Mark Humphreys recommends the following to fishermen and other boaters: 'When you go out in a boat, tell your family or friends where you plan to go as specifically as possible. The smaller the search area, the better the chance of rescue. Let people know what equipment you have with you and when you plan to return'.

When should authorities be notified that a boat is overdue? 'If a boat is one or two hours late', Humphreys said, 'start letting people know. We would far rather call an operation to a

halt because the people have shown up, than go out an entire day after they are missing and have half the chance of finding them. After two days, there is only about a 25 per cent chance of finding someone'.

'If at all possible, people should take a VHF radio with them. Better yet would be an EPIRB, an Emergency Position Indicating Radio Beacon. Both the *Lomor* and the *Micro* boats have direction finders which could help locate a boat with an activated beacon', he said.

(Source: *The Marshall Islands Journal*)



■ FISHERIES CO-MANAGEMENT AND SMALL-SCALE FISHERIES: A POLICY BRIEF

This document, published by the International Centre for Living Aquatic Resources Management (ICLARM), appears to be the first in a new series from this organisation.

The policy brief is one of the outputs from the Fisheries Co-management Project, an initiative involving ICLARM and several Danish institutions: namely the Danish International Development Agency (DANIDA), the North Sea Centre (NSC) and National Aquatic Research Systems (NARS).

The Fisheries Co-management Research Project conducts research in coastal, coral reef, lake and river/floodplain aquatic resource systems in Asia, Africa and the Pacific. The purpose of the project is to determine the prospects for successful implementation of fisheries co-management strategies.

In the developing world, 14 to 20 million people are directly involved in fisheries and aquaculture. With continued population expansion over the last four decades, fisheries resources in the coastal zones, particularly in developing countries, are becoming grossly overfished.

The authors of this policy brief, Drs Robert Pomeroy and Meryl Williams, outline the problems that face small-scale or artisanal fishers in the developing nations of the tropics.

Small-scale fishers suffer extremes of poverty and depriva-

tion as they have low social status and limited incomes. The growth of human populations means that small-scale fishers are competing with each other and often with larger-scale fishers for increasingly scarce resources.

Many of the solutions that would improve the lot of small-scale fishers lie outside the fisheries sector, but there is still an urgent need for better management of small-scale fisheries. One of the approaches to improving resource conservation is co-management.

Co-management is briefly defined as the sharing of responsibility and authority between the government and local fishers/community to manage a fishery or other natural resource. In effect this means the devolution or decentralisation of some government authority to local communities.

Many of the present centralised fisheries resource management arrangements have failed to coordinate and restrain the many users, leading to depleted resources and conflicts. Such resource conflicts may be diminished and resources better managed when fishers and other use groups are more involved in management of resources.

As the authors point out, decentralisation of power is not always welcomed by fisheries administrators, who may resent the effective relinquishing of power.



Further, co-management systems are not a guarantee that resource use will be more effectively regulated nor are they appropriate in all situations.

However, the outcomes of this type of system, which has arisen around the world with fisheries and other natural resources, suggest that they can be an effective management alternative.

The authors outline a series of key conditions for co-management to be successful, based on the experience of co-management systems over the past four decades.

There is an increasing need for management of fisheries in the coastal zones of the Pacific Islands and much of the onus of regulating fisheries will be at the community level.

As the authors state, co-management is a political issue; thus, the publication of a policy document of this type, which can help governments guide the development of such systems, is very timely.

Pomeroy, R.S. and M.J. Williams. 1994. Fisheries co-management and small-scale fisheries: a policy brief. International Center for Living Aquatic Resources Management, Manila. 15 p.



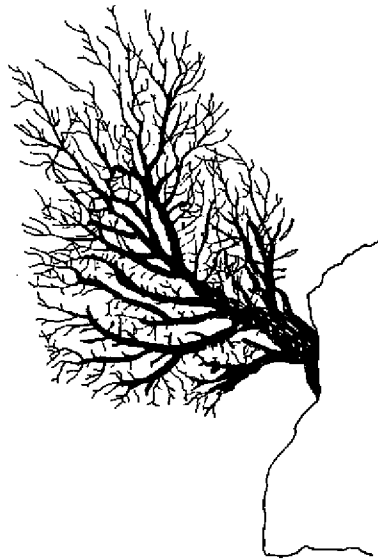
■ CORALBASE

CoralBase is a database being developed at the Australian Institute of Marine Science (AIMS) which contains all available data on coral taxonomy and biogeography. It includes a comprehensive bibliography; several thousand images; and a number of utilities for plotting distributions, viewing images, and carrying out some basic analysis and graphing functions.

CoralBase is based on research conducted by Dr J.E.N. Veron of AIMS during the past 20 years. The data are at species level in areas that have been personally studied, while in other areas, the data are from literature records and may be at genus or species level. Each species and site is linked to a bibliography, an image base, and a distributional plotting facility.

CoralBase consists of approximately 900 coral species names from about 350 locations worldwide, with 3,300 synonyms. Coral-species data include families, genus, and species names. Biogeographic data include site name, latitude/longitude, and, in the case of eastern

Australia, the Great Barrier Reef Marine Park Authority gazetteer reef identification Code. Taxonomic data for eastern Australian species from Dr Veron's monographs on Scleractinia of Eastern Australia will be included, with a link to the AIMS reference specimen collection.



CoralBase consists of a number of modules written for the Microsoft Windows™ environment. CoralBase is controlled from a master module, CoralBase, which contains controls to activate other modules: CoralDat, the coral database;

CoralMap, the species distribution plotting program; CoralImg, the image display model; and CoralBib, a bibliographic interface. CoralUty will contain a number of basic analysis and graphing utilities. CoralKey is an identification module for corals which allows a user to identify coral using a selection of characters displayed visually on the screen.

CoralBase is designed so that the species currently displayed in the database is the 'active' species. Choosing the image display button, for example in CoralBar, will display the appropriate images for that species. Each module can also be used independently, e.g., the CoralImg module can be used to browse through the image base or to search for a particular image without the database being open.

Version 1.0 of CoralBase was expected to be released for distribution on CD-ROM by the end of 1994. Because of its complexity, the CoralKey module will probably not be available in the first release.

(Source: *Sea Wind*)

■ REEFBASE—A GLOBAL DATABASE OF CORAL-REEF SYSTEMS

A project to develop a global database on coral reefs, to be called REEFBASE, was initiated at the Manila-based International Center for Living Aquatic Resources Management (ICLARM) in November 1993. The Commission of the European Communities (CEC) has provided funding for the first two years, and the database will be developed in collaboration with the World Conservation Monitoring Centre in Cambridge, United Kingdom, as well as other na-

tional, regional and international institutions.

Coral reefs, the marine equivalents of tropical rain forests, are under threat in many parts of the world as a result of habitat degradation, overexploitation and, possibly, global climate change. Although fragile, coral reefs are highly productive and can support high levels of sustained fishing if the fishing is sensibly regulated.

If they are in good condition, they also have great value as tourist attractions. In many parts of the world these economic benefits are being eroded by siltation from poor land management, nutrient enrichment from sewage, other forms of pollution, destructive fishing practices, and intensive use by tourists.

However, the magnitudes of these impacts are largely undetermined and undocumented.

Basic questions such as 'what is the total area of coral reefs in the world?' and 'what is the contribution of reefs to the world's fisheries?' are still unanswered.

As currently envisaged, REEFBASE users, through a global map on their computer screen, will be able to focus on any country, reef system or individual reef to obtain details of reef area; species composition; coral cover; catch rates and composition of reef fish and invertebrates; recreation and other forms of resource use; human impacts; management efforts; and indigenous knowledge.

Current discussions among reef scientists on common methodologies and terminology are being used as a starting point for designing the data entry fields.

The preliminary focus will be on obtaining estimates for reef areas, which in many cases will necessitate literature searches and correspondence with a wide range of individuals. Initial figures may well be approximate, but will be replaced with more reliable data as the project progresses.

Information on other aspects will initially be entered on a more *ad hoc* basis, the emphasis being on linking with other data collection programmes, rather than collecting and inputting raw data. Each data entry will

be flagged according to its reliability, and will be referenced and acknowledged.

REEFBASE will provide data from which it should be possible to quantify changes in reef health at national and global levels, thus providing conservation organisations, governments and the media with the statistics and information that are needed to implement policy changes.

REEFBASE will also be useful in identifying future research priorities and could serve as a framework for the development of analytical tools. This has been done on a small scale in Australia, where data compiled for the Great Barrier Reef are being used to identify patterns of ecology and structure, and as a management tool.

REEFBASE will draw on the experience gained from FISHBASE, a large database on fish biology, also developed at ICLARM with CEC funding. It will link with this database as well as national and regional databases (such as the ASEAN-Australia Living Coastal Resources Project, a regional reef monitoring programme in Southeast Asia, and CORALBASE, a coral-taxonomic database being developed at the Australian Institute of Marine Science) and other data-gathering programmes as they are developed.

In order to accomplish these objectives, ICLARM will develop a global network of collaborating scientists and institutions.

In developing countries, where coral reefs are most extensive and most threatened, means will also be sought to provide technical assistance in data acquisition and to enable developing country scientists to fully develop their skills by further training or appropriate linkages with advanced research laboratories and universities.

It should be possible for researchers who can obtain appropriate funding to work on particular areas of REEFBASE, benefiting from the global context that the database will provide and augmenting and contributing themselves to the information that is stored—an activity for which they will be fully credited.

The first version of REEFBASE will be distributed to all collaborators in about 1996. The software will run on IBM-compatible microcomputers, which are now available in most offices and laboratories. Subsequent revised and updated versions will be distributed at nominal cost to all relevant national and international research and management institutions and individuals.

(Source: *Sea Wind*)

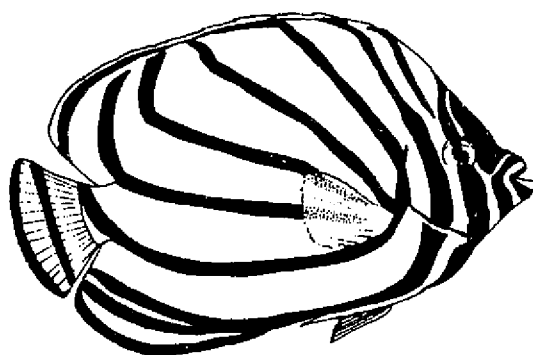
FISHBASE—A DATA SOURCE WITH KEY INFORMATION ON INDO-PACIFIC FISHES

FISHBASE, a large biological database on fish, is a joint project between ICLARM and FAO, funded by the Commission of the European Communities (CEC).

This global database contains key information on fish populations, including information on nomenclature, ecology, population dynamics, aquaculture, genetics, physiology, and occurrence of fishes. FISHBASE uses published literature (in-

cluding journal articles, technical reports and theses) and recent revisions of fish species and families such as those produced by FAO.

Key information on the above topics is extracted and entered



by a group of research assistants, all with graduate degrees in marine biology, based at the ICLARM headquarters in Manila, Philippines.

Collaborators around the world participate in data entry through data collection forms. Some collaborators have developed similar electronic databases on specific topics (*see below*) and have opted to make their databases available by incorporation and distribution through FISHBASE. Contributions are given proper citation and acknowledgement in FISHBASE.

This ensures the compilation of taxonomic, morphological, biological and ecological information on fishes, and of occurrence and abundance data from a wide variety of sources (e.g. museum records, research vessel surveys, national angling records, tagging experiments and scientific literature).

The quality of the information in the database is monitored in-house through several loops of verification by the research assistants, who check each other's work, and also through collaborating scientists who offer to check the information in FISHBASE for their different fields of expertise.

By January 1994, after just over three years of operation, the FISHBASE team has been able

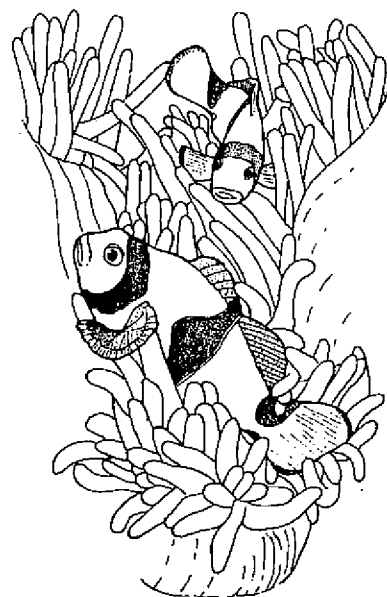
to incorporate more than 8,000 species extracted from more than 6,000 references representing a third of the estimated 24,000 species of fish in the world.

Of these, 534 are from fresh water in Asia and about 3,200 are from marine waters in the Indo-Pacific, which altogether make up 46 per cent of the entries available so far in FISHBASE. These were extracted from more than 2,000 references, a third of those already used in FISHBASE.

FISHBASE has also become the repository of several outstanding collections, the first four of which have been compiled in-house:

- 1) the largest collection of population dynamics data (growth parameters, natural mortality, length-weight relationships, maximum ages, sizes), entered in 3,680 records covering about 1,000 species;
- 2) the largest collection of ecological data (prey, predators, diet composition, food consumption), entered in 1,440 records covering about 1,400 species;
- 3) the largest available collection of electrophoretic data, entered in 3,200 records for about 300 species;

- 4) the largest collection of common names (by country and language), entered in about 40,000 records for more than 2,200 species;
- 5) a complete collection of genera of Recent fishes (from: Eschmeyer, W.N. 1990. *Catalogue of the genera of Recent fishes*. California Academy of Sciences, San Francisco. 697 p.);
- 6) the largest collection of data on fish metabolism, entered in 7,400 records for about 300 species (from: Thurston, R.V. & P.C. Gehrke. 1991. Respiratory oxygen requirements of fishes: description of OXYREF, a data file based on test results in the published literature. Presented at the Second International Symposium on Fish Physiology, Fish Toxicology and Water Pollution. Sacramento, California, September 1990. USEPA Environmental Research Laboratory, Athens, Georgia);



- 7) the largest collection of data on larval dynamics covering about 100 species (from: Houde, E. D. & C.E. Zartrow. 192. Ecosystem- and taxa-specific dynamics and energetic properties of fish larvae assemblages. *Contrib. Science*, Los Angeles Museum); and
- 8) the largest collection of data on introduced fishes, entered in 1,815 records covering about 360 species (mainly from: Welcomme, R.L. 1988. International introductions of inland aquatic species. *FAO Fish. Tech. Pap.* 294. 318 p.).

FISHBASE also contains black-and-white pictures which can be used as a pictorial guide to families.

Furthermore, a FISHBASE artist is busy preparing computerised colour pictures of fishes; about 500 accessible on screen with FISHBASE. These coloured

pictures can be printed in shades of gray.

MAPPER software, a low-level Geographic Information System (GIS) which forms part of the FISHBASE package, can be used to display a variety of maps based on the occurrence and abundance records in the database. This feature is especially useful in fish biodiversity research.

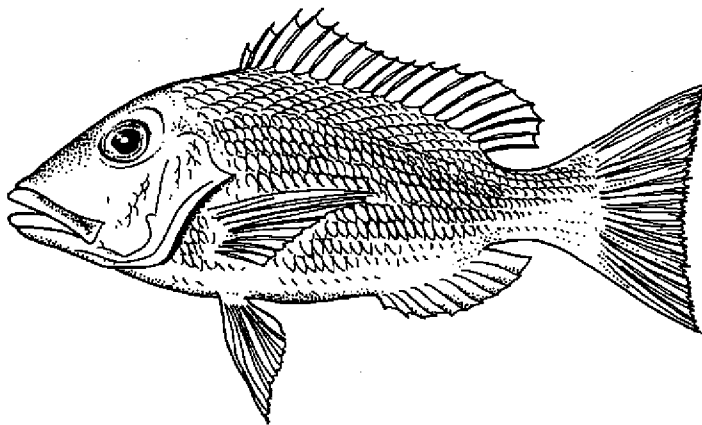
Maps showing the global occurrence of members of an order, family, subfamily, genus, or a species can be created. Once representative levels of occurrence and abundance records are reached, it will be possible to use FISHBASE to determine a theoretical status of threat for certain species or species groups by combining trends in distribution and abundance with a set of biological characters such as environmental tolerance, fecundity, longevity and age at first maturity.

The final CD-ROM version of FISHBASE will be released in late 1994 and will be distributed at nominal costs to fisheries institutions worldwide.

Special emphasis will be given to developing countries, which will also be supported in purchasing the necessary hardware and will receive training on how to use FISHBASE and related analytical tools.

The work, involving entry, verification and continuously scanning of available information from the scientific literature is even more demanding now, at the later stages of the development of the FISHBASE software. The key point is 'quality control' of the data entered. Although the 10-person FISHBASE team is progressing, there is still need for the expert's sharp eye.

(Source: *Sea Wind*)



CORAL REEF TROUBLES IN AMERICAN SAMOA

Like other South Pacific Islands, American Samoa finds itself caught in the whirl of rapid environmental change. Its human population growth is skyrocketing (see Figure 1), while its natural resources are declining.

Coral reefs in American Samoa were severely damaged in recent years by natural disasters and pollution. The reefs were hit by a major infestation of the corallivorous starfish *Acanthaster planci* in the later 1970s, and by devastating hurricanes in 1990 and 1991. More recently, the reefs experienced a major coral bleaching episode in 1994, which affected up to 80 per cent of the coral at some locations. As a result, live coral coverage around Tutuila Island has dropped from about 60 per cent to 10 per cent within the past two decades.

Coupled with this are major changes in the species composition and abundance of reef fishes. In the past 14 years, the species composition of the 20 most abundant species has changed dramatically and fish numbers have dropped 75 per cent (see Figure 2 on page 34). The 1994 subsistence catches of reef fish were the lowest on record.

A slow recovery is underway, however. Biologists note that many coral recruits are present on the reefs. What concerns us now is the interference with the natural recovery process by human disturbances.

by P. Craig A. Green
and S. Saucerman
Department of Marine
and Wildlife Resources
Pago Pago, American Samoa

Sedimentation

After every heavy rainfall, chocolate-coloured plumes of sediment are flushed out of the streams and onto the coral reefs. Poor urban and agricultural land-use practices are presumably the sources of this sediment. There is ample evidence in the literature to indicate that such high levels of sedimentation adversely impact coral growth, survival and recruitment.

Eutrophication

Only about 20 per cent of homes in American Samoa are hooked to a sewer line. An

abundance of filamentous algae in nearshore waters indicates that nutrient enrichment may be another problem for the coral to contend with.

Pollution

Recent surveys discovered that local nearshore fish in some areas are contaminated with toxic substances, particularly heavy metals. The most serious problem occurs in Pago Pago Harbor, where a health advisory notice was issued warning the public not to eat any fish caught there. Studies to locate the sources of this contamination continue.

Overfishing

Some highly prized resources such as giant clams (*Tridacna* spp.) have been overharvested. One species is locally extinct and the other two are scarce.

Several of American Samoa's government agencies have developed regulations, guidelines and educational activities aimed at reducing these impacts. De-

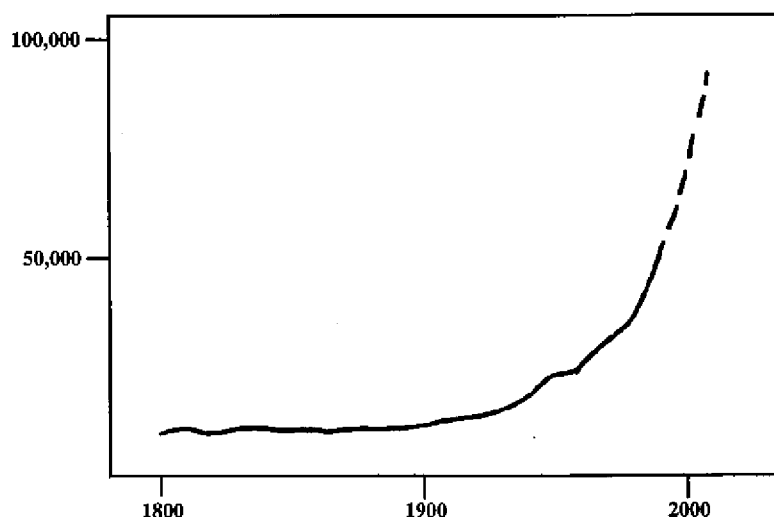


Figure 1. Human population in American Samoa

Peter Craig, Alison Green and Suesan Saucerman can be contacted at: Department of Marine and Wildlife Resources, P.O. Box 3730, Pago Pago, American Samoa. Tel: 684 6334456, Fax: 684 6335944.

spite the best efforts of these agencies, the reefs continue to decline.

It is apparent that there is no shortage of issues to address. But American Samoa, like most other small Pacific islands, has limited resources. Thus any approach must be realistic in

terms of what can and cannot be accomplished. Some data requirements can be met by local efforts, but other projects are beyond the capabilities of small island governments. Inter-agency meetings produced the following list of needs for American Samoa:

- ☛ A planning workshop with scientific experts to formulate realistic management strategies, suitable for small island staff, to monitor and protect reef health;
- ☛ Quantitative assessments of reef health;
- ☛ Determination of causes of reef fishery declines;

- ☛ Reduction of non-point sources of sedimentation and eutrophication;
- ☛ Increase in public awareness of reef value and vulnerability;
- ☛ Better enforcement of existing regulations.

Red warning flags of environmental stress are flying high in American Samoa, but the situation is not hopeless. The reefs will regenerate, if they are given a chance to do so.

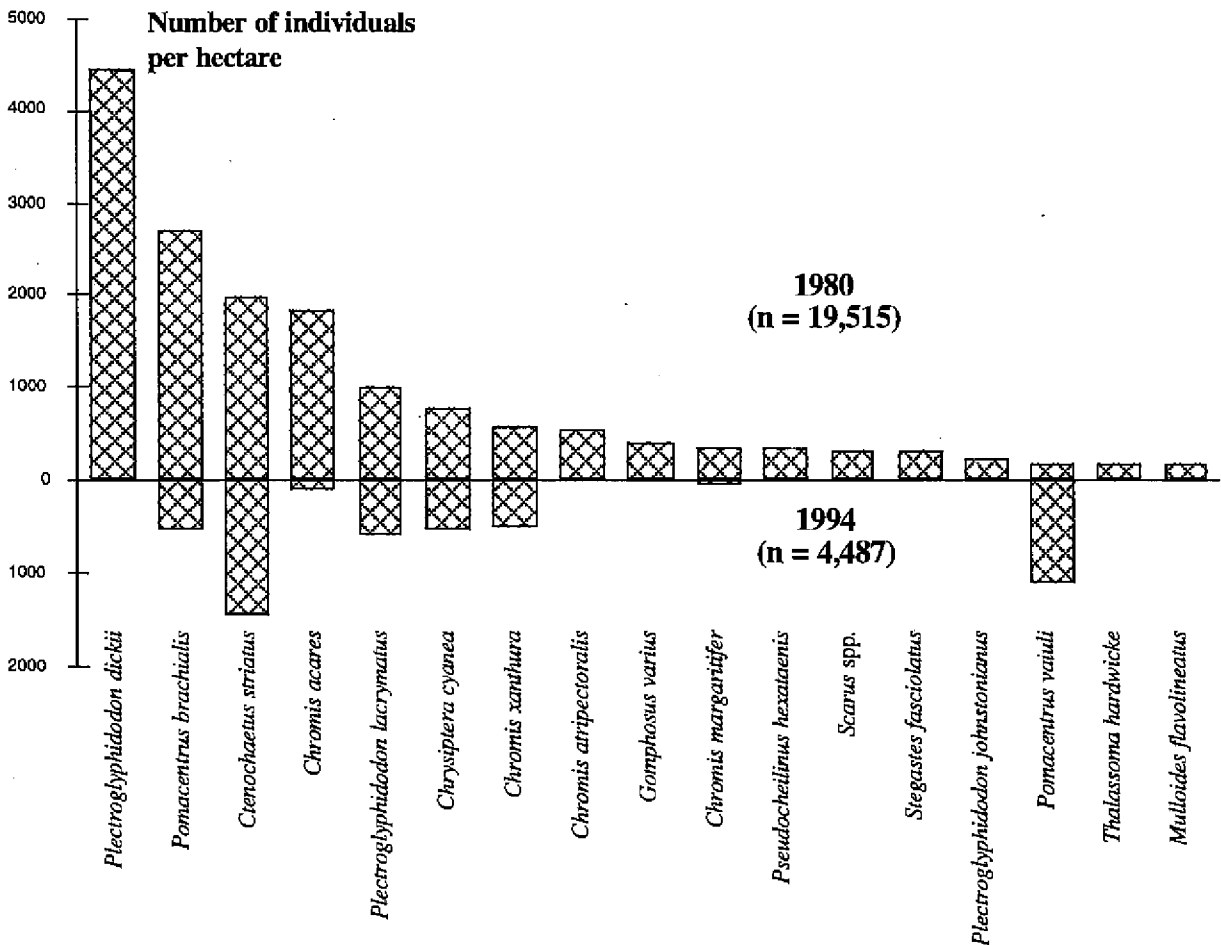


Figure 2. Relative abundance of the 17 most abundant reef fish species on the reef slope (10 m) on the north shore of Tutuila Island, American Samoa in 1980 and 1994

MOTUPORE ISLAND RESEARCH DEPARTMENT

Introduction

Motupore Island Research Department (MIRD) was established to service the needs of the University of Papua New Guinea (UPNG), to foster and support research, and to provide facilities for students in a variety of degree programmes. MIRD provides direct technical and teaching support for courses in the marine sciences.

The facility is based at Bootless Bay off the East Hiri Coast, some 15 km South-east of Port Moresby, the capital and international port of entry for PNG. Motupore Island is within the Papuan Barrier Reef, the lagoon of which is a submerged ancient coastal plain whose outer margin is defined by an impressive reef some 5 km offshore, paralleling the PNG coast for many kilometres to the South-east.

The small, hilly island of Motupore is about 800 m by 280 m, giving an area of 19 ha. Most tropical marine habitat sites are represented between Motupore Island and the barrier reef, including a variety of reef types (fringing, patch and barrier), sea-grass and algal beds, mangroves, and extensive intertidal and sublittoral carbonate and mud areas. The terrestrial vegetation is mainly eucalypt savannah, with pockets of monsoonal woodland and a limited strand formation.

The island is a national cultural property with archaeological significance. On it are a traditional burial ground and a kitchen midden with remains dating back 500 years.

by Tony Beeching
University of Papua
New Guinea
Port Moresby, Papua
New Guinea

Nationals from local villages may be observed fishing and collecting marine resources, often using traditional methods. Damage is minimal and there are no indications of use of explosives or coral mining in the vicinity of the research station. Tourist enterprises are slowly developing in the area, but have so far had a beneficial effect, being ecologically sound and forward-thinking.

The field station

The field station, located on the sheltered north end of the island, comprises wet and dry laboratories, two hostels for visitors, and houses for the resident technical staff and caretaker.

The facility is well-appointed with pumped seawater tanks and aeration systems. There are nine workboats, including T/V *Scomber*, a 10 m fibreglass trawler used for teaching and research in fisheries science, oceanography and other marine sciences.

Equipment includes depth sounders, GPSs, handheld and base-station VHF radios. Tertiary fisheries education/training is provided by the Fisheries Lecturer, Mr John Kasu of the UPNG Biology Department.

The department has a comprehensive dive locker. All equipment is checked, maintained

and serviced locally. Dive sites here are comparable with the best in the world. During the last fishery training exercise we saw manta rays (jumping), dolphin, and a leatherback turtle. On an earlier trip we saw a billfish clearing the water, inside the barrier reef! Under water the biodiversity is such that a new (for me) species is seen on almost every dive.

Projects

University staff visit on a regular basis, working on diverse projects, including research into sand bar mobility, recording meteorological data, determination of nutrient export through mangrove litter fall, cataloguing the flora of Motupore Island, and recording recovery rates after fire damage. As might be expected, the island is popular amongst students, who visit for science-based field trips.

Recent overseas visitors include Professor Eric Coppejans and his research team from Belgium, who have been on their third visit to Motupore, making a phycological collection for taxonomic purposes. Dr Wells of Cambridge University has made four visits to the island, continuing his long-term interest in nautilus.

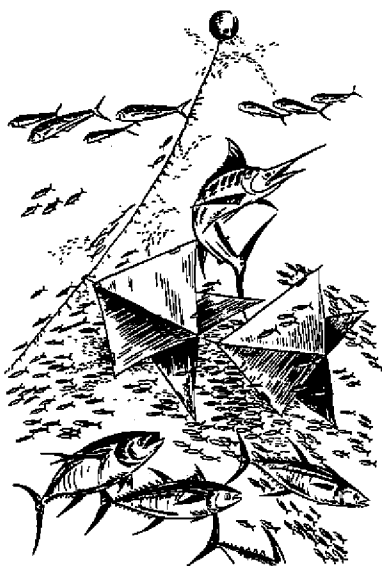


Several groups have taken advantage of the local high biodiversity to obtain a range of different species to be tested for biological activity that may be of use to the pharmaceutical industry.

Among them were a previous Director of Motupore Island, P. Colin, from the Coral Reef Research Foundation (Truk); and representatives of the Harbour Branch Oceanographic Institute (Florida), who collected invertebrates for cancer research.

A more specialised group from the University of British Columbia, Vancouver, which targets sponges for a similar purpose, was at Motupore in February of this year, obtaining additional examples of some promising specimens collected in 1994.

R.H. & H., an Asian Development Bank consultancy group from Denmark working with the Department of Environment and Conservation (DEC), has been based on Motupore Island for most of 1994 and early 1995.



It utilises MIRD facilities, equipment and expertise in its coastal survey work, diving with teams comprising DEC and MIRD staff. This crossing of institutional barriers is of tremendous benefit to all involved and has been extended with the development of a routine reef-monitoring programme off the East Hiri coast.

FAD-based research proposal

Institutional links were further developed through a joint proposal with the Department of Fisheries and Marine Resources (DFMR) for research based on the Fish Aggregation Device (FAD) at Daugo (Fisherman's) Island. The FAD, which was set up by the South Pacific Commission (SPC), suffered somewhat after a destructive fishing practice was employed in its vicinity and the aggregators were lost.

The basic thrust of the proposal was to collect CPUE (catch per unit of effort) data for different FAD fishing methods (vertical longlining and trolling) at different times of day and at varying distances from the FAD over one month.

Baseline data was to be collected over two weeks, following which the aggregators would be restored to the FAD and the effect of their presence assessed for a further two weeks.

A record of observed fishing activity in the area would have been logged. This would have been correlated with DFMR's ongoing catch data and with an additional shore-based survey of fishers' activity focused on the principal FAD users at Daugo Island.

It was planned that this research would continue over the next 12 months, at intervals to be determined empirically. It would also have been interesting to have used non-commercial capture methods to gain data on colonisation of species which are not recorded on fishery catch data sheets.

Although highly intensive, this concentrated effort was justified on logistical grounds, there being two time-windows when UPNG staff and equipment are available for a whole month (the academic breaks in January and July).

However, the project has had an unfortunate setback. The new aggregators were attached, at a time unknown, before the programme was due to start.

Since this time MIRD and DFMR have made a joint exploratory fishing trip to the FAD. Whilst trolling resulted in catches while en route to and away from the FAD, there were no bites in its vicinity, no fishermen were seen, nor were there any biological indicators of the presence of fish (birds or boiling of bait fish).

This may indicate that the FAD has once again suffered from a destructive fishing practice (it has been suggested elsewhere that jealous fishermen in the Pacific have been known to destroy FADs out of envy of FAD users' success!), or that the new aggregators are not working, or that resident large sharks around the FAD taking catches before they are landed have deterred fishermen (and fish).

Certainly the latter suggestion is supported by our loss of three terminal tackles through line breakage, a double hook snapped and a wire trace apparently bit-

ten through. If the aggregators have been lost, for whatever reason, then it may be possible to resurrect the research proposal in July.

Co-operation between DFMR and MIRD continues, with sharing of information and joint fishing exercises, including a recent vertical droplining session targeting deepwater snapper.

Collaborative training with Japan International Co-operation Agency

The fisheries lecturer, Mr John Kasu, as well as his normal teaching duties, organises a regional course jointly with the Japan International Co-operation Agency (JICA).

This is part of a fifteen-year coastal fisheries development programme. The programme is

in three five-year phases, the latter phases dependent upon the success and demand generated by the preceding ones. The first focused on fishing gear and methods, with an emphasis on netting techniques.

The second continued the theme of fishing gear and methods, but this time concentrated on line techniques and included some training in outboard-motor maintenance.

Now, with the eleventh JICA fisheries workshop, we have entered the third phase, which targets outboard-motor and hull maintenance, ice-box making, fish handling and preservation, and management principles and techniques.

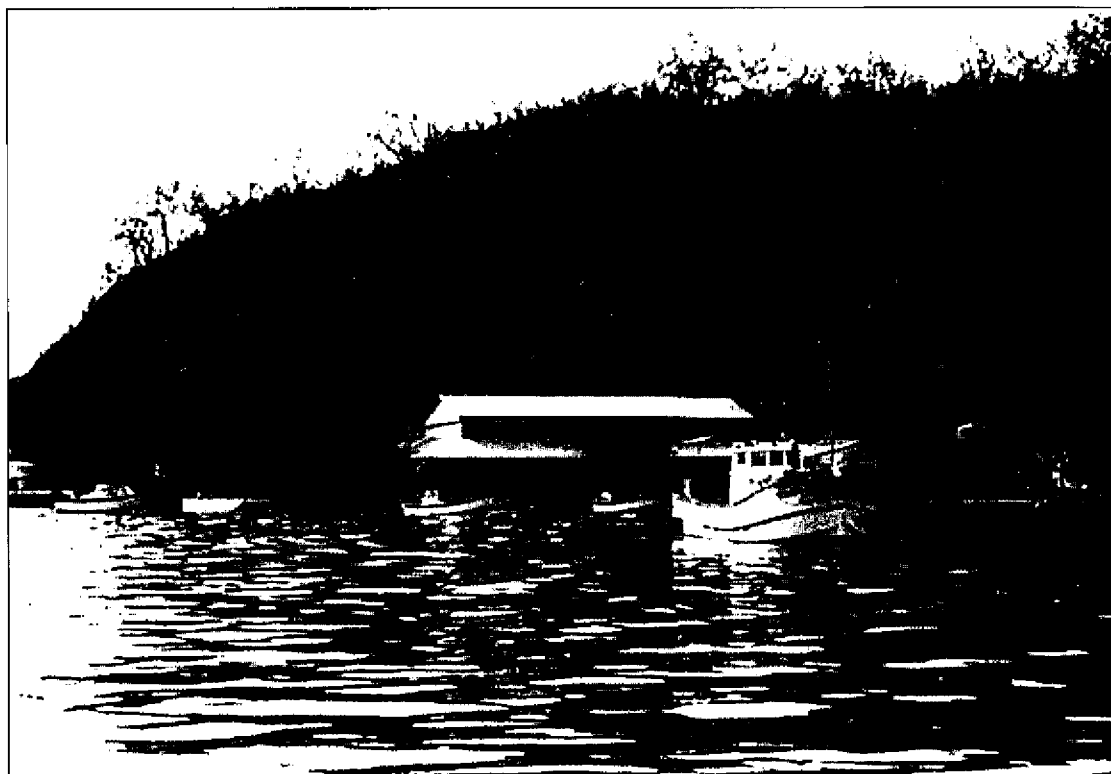
The eleventh JICA workshop was held at Motupore and UPNG from 14 November to 16 December 1994, and had par-

ticipants from Chuuk (FSM), Cook Islands, Fiji, Kiribati, Marshall Islands, Papua New Guinea, Solomon Islands, Tonga and Western Samoa.

Beyond the skills and techniques which the course imparts to its students, there is an opportunity for bonds to form between participants from different island groups. We hope there will lead to lasting professional and social contacts.

It is intended that future workshops will be based almost entirely at Motupore Island which is being developed through a European Union grant to improve accommodation, giving a new twelve-bed hostel. In association with this construction UPNG is funding the construction of an eight-bed annex.

This year, 1995, in addition to the twelfth JICA workshop,



Motupore Island Research Department (T/V Skomber in the foreground)

Motupore Island will be hosting the PNG TROMES (Tropical Marine EcoSystems) workshop.

The TROMES Project is organised through the International Tropical Marine Resource Centre (INTROMARC), an Australian consortium comprising the Australian Institute of Marine Science (AIMS), the Great Barrier Reef Marine Park Authority (GBRMPA) and James Cook University of North Queensland (JCU).

Funded by the Australian International Development Assistance Bureau (AIDAB), the course is designed to transfer to

the region resource management expertise gained in Australia.

Aquaculture

A Japanese JICA volunteer, Mr Atsushi Terada, has been working on a project involving the growing-on of grouper. The facilities are being moved to Motupore Island in order to take advantage of good-quality sea water. If the work goes as planned, it should be possible to develop a simple model which can be transferred to local villages.

JICA have advertised for a volunteer aquaculture specialist,

whom we expect to join our team in January 1996.

It is our intention to create an aquaculture facility which focuses on the development of a model for the growing-on of marketable reef fish.

The facility would be used to train UPNG students of fisheries and aquaculture, and to transfer appropriate culture techniques to coastal villagers. It would also be used to demonstrate applied aquaculture to visiting school parties.

In the very long term, it is hoped that spawning and rearing techniques would be intro-



Participants in the Eleventh Regional Training Course in Coastal Fisheries Development in the South Pacific Region (1994)

Back row: Joseph Aitsi (UPNG-staff), Terakura Tatuava (Cook Islands), Ronald Wala (PNG), John Gibson (UPNG-staff), Kaupa Kia (UPNG-staff); **Middle row:** N. Rajeswaran (DFMR-staff), Hera Naime (PNG), Malolo Maruoe (Western Samoa), Oega Boniface (Solomon Is.), Mike Gnokro (Solomon Is.), Jerry Rue (PNG), Rodney Rakum (UPNG-staff), John Kasu (Coordinator, UPNG-staff); **Front row:** Tin Tin Myint (DFMR-staff), George Hazelman (Fiji), Kau Kila (PNG), Timon Bauro Timon (Kiribati), Manau Marfin (PNG), Bernard Maragum (PNG), Pomale Palometa (Tonga), Ritang Iete (Kiribati)

duced and the facility would go on to supply local villagers with fingerlings of commercially attractive species (at cost price) for growing-on. This would provide opportunities for villages to generate cash incomes without increasing pressure on local marine resources.

Fish capture techniques have been developed by Mr Terada, and he has selected a local species (Honeycomb Rockcod—*Epinephelus merra*) which is sufficiently common and easily caught to allow a large stock to be kept in the facility. The fish grows to a good marketable size and is in demand in many parts of Asia.

The project will allow the fish to be grown at different stock densities and feeding regimes, to determine the optimum conditions for growth. A detailed record of water quality will be computer data-logged on a 24-hour basis. Food consumption and average fish growth/weight will be recorded at appropriate intervals.

There is a complication in the spawning of groupers, many of which have been shown to be protogynous sequential hermaphrodites; that is, when young they are female, but at a

certain stage in their life history a proportion of the population changes to males.

This change may be affected by stress, such as that imposed in aquaculture conditions. Hence it will be an important part of the project to compare rates of sex change between different treatments.

Although of theoretical importance, the practical significance of the sex ratio of males to females is also of concern, since in wild populations spawning aggregations of grouper may have a ratio in the region of 1.5 (M:F). It is anticipated that a similar sex ratio may be appropriate in an artificial spawning programme.

Work with schools

Recently MIRD has been more actively promoted, focusing initially on local schools, with the intention of making the younger elements of PNG more aware of marine life and emphasising the importance of PNG in terms of global biodiversity.

Whilst national and international conferences have their part to play, we feel that it is important that children and

youths have an opportunity to see and develop an interest in marine life first-hand.

This is especially valuable in PNG, where the majority of the population live in the highlands and may not have even seen the sea. To that end we have developed a small aquarium exhibit, and will be going on to make 'touch tanks', in which to display some of the more robust examples of life on the tropical shore.

For information and application forms for future JICA fisheries workshops, please write to:

Mr John Kasu
JICA Fisheries Workshop
Course Co-ordinator
Biology
UPNG

For further information about MIRD, please contact:

Head of Department
Motupore Island Research
Department
Box 320, University P.O.
Port Moresby
Papua New Guinea
Tel: 675 231315
Fax: 675 258093

© Copyright South Pacific Commission 1995

The South Pacific Commission authorises the reproduction of this material, whole or in part, in any form, provided appropriate acknowledgement is given.

Original text: English

South Pacific Commission, B.P. D5, 98848 Noumea Cedex, New Caledonia
Telephone: 687 (26-20-00) - Telex: 3139NM SOPACOM - Fax: (687) 26-38-18

QUESTIONNAIRE TO GATHER INFORMATION AND ESTABLISH A PACIFIC ISLANDS REGIONAL CDS/ISIS USER'S GROUP

CDS/ISIS is a database management system primarily used in setting up library information databases. It is produced by UNESCO. The Pacific Islands Marine Resources Information System (PIMRIS) Steering Committee at its 1993 meeting recommended that a survey of CDS/ISIS users be done in the Pacific Islands region and a users' group established. This will enable users to share ideas and discuss problems. PIMRIS at USP has access to an international users' bulletin on electronic mail via Internet, through which we have access to numerous questions and answers by various users.

We could have a regular column on ISIS in the PIMRIS Newsletter if there is a need. If you or someone you know in your country who uses CDS/ISIS, please complete this form and mail it or fax it to:

The Coordinator
PIMRIS - USP Library
P.O. Box 1168
Suva - Fiji
Fax: (679) 300830

Feel free to make copies of this and distribute.

1. Name of organisation
2. Name of contact person
3. Address of contact person
.....
.....
4. Name of person managing CDS/ISIS
5. Name of the database
6. Number of records in the database
7. How long have you been using CDS/ISIS?
8. What version are you using?
9. What training has been received by staff on CDS/ISIS?
.....
.....
10. Any other relevant information or comments
.....
.....