Fisheries Newsletter

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Editorial

During the last quarter, several technical meetings were held in Noumea: the FAO Pacific Islands Regional Workshop on Fisheries Statistics, the 14th meeting of the Standing Committee on Tuna and Billfish, and the highpoint, the Second Heads of Fisheries Meeting in July. This issue of the Fisheries Newsletter provides you with a summary of these discussions and the technical policies that SPC member countries and territories wish to see implemented by the Marine Resources Division over the coming months.

Paul Dalzell from the Western Pacific Regional Fishery Management Council takes stock of the longlining situation in Hawaii 18 months after certain fishing grounds were closed. The closure was in response to an expansion of longlining, particularly in terms of vessels targeting swordfish, which led to bycatches of marine life protected under the US Endangered Species Act. The situation is quite complicated and lawsuits are still pending. Watch this space.

Our faithful contributor, Steve Beverly, takes a look at a shipbuilding yard in Fiji that has built a number of vessels, including a longliner for a New Caledonian company.

And, of course, you'll find all your favourite columns. Happy reading!

Jean-Paul Gaudechoux
Fisheries Information Adviser (jeanpaulg@spc.int)

Jipé LeBars

in This Issue

The Second Head of Fisheries Meeting was held in Noumea from 23 to 27 July 2001. Moses Amos, Director of the Vanuatu Department of Fisheries chaired the Meeting.

SECRETARIAT OF THE PACIFIC COMMUNITY
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SECOND HEADS OF FISHERIES MEETING

The 2nd SPC Heads of Fisheries Meeting (HOF) was held in Noumea from 23 to 27 July 2001. The change of name from the "Regional Technical Meeting on Fisheries (RTMF)" reflects the increasingly senior nature of the representation and indeed the increasing importance that SPC member administrations themselves give to fisheries. At the time of the first SPC fisheries meeting in 1952, there were no specialised fisheries services in the region at all.

Although RTMF/HOF was originally the only regional meeting with fisheries as its subject, its role has become more specialised over the years. The main forum for Pacific Islands to discuss tuna fisheries management has now become the Forum Fisheries Committee, and the main forum for discussion of tuna fisheries science has become the Standing Committee on Tuna and Billfish (see later). The subject matter of RTMF/HOF is thus now concentrated on domestic and non-tuna fisheries, but also covers Oceanic Fisheries work-programming issues, and maritime/fisheries interactions, as necessary.

HOF is the only Marine Resources Division meeting to receive SPC core funding, but this is not budgeted if non-core funding is available to provide for the participation of member countries at intervals that are more frequent than triennial.

The purpose of the meeting was to enable Heads of Fisheries to review and discuss issues arising within the local fisheries sector for the information of each other; for the guidance of the Secretariat; and for the information of the world at large.

During the course of the 2nd HOF, the following statements (see below) were discussed and agreed on by Pacific Community island member representatives to be included in the record of discussion of the meeting, for the guidance of the secretariat of the Marine Resources Division and/or the benefit of other SPC or international processes.

1. Noting the capacity of several Pacific Community members in certain specialist areas, particularly aquaculture, the meeting reminded the regional and international community that when carrying out research within the Pacific Islands, to use expertise, capacity or facilities already present within the Pacific Islands themselves wherever feasible.

2. The meeting noted the recommendations of the FAO Pacific Islands Regional Workshop on Fisheries Statistics, 16-18 July 2001, and agreed that reliable quantitative information about the status of coastal fisheries was of vital importance for sound national and regional policy planning, and in management processes that required governmental intervention.

3. The meeting further noted the report of the 4th Meeting of South West Pacific Ministers of Agriculture held in Vanuatu, 23-24 July 2001, and urged FAO to coordinate its efforts with that of the SPC Marine Resources Division and other organisations that support PICTs in their efforts to strengthen capacity on statistics on coastal and subsistence fisheries and aquaculture.

4. Incorporating and carrying forward the sense of recommendations 1, 2 and 6 from the first HOF, the meeting highlighted the continuing gap in support at the regional level for post-harvest aspects of fisheries: aspects which are a priority for many SPC members. Heads of Fisheries welcomed the growing capacity of the Pacific Islands Forum Secretariat to address the needs of members in trade aspects of fisheries. It also noted the valuable work already undertaken with regard to tuna fisheries, and urged SPC to further address post-harvest aspects of small-scale fisheries and to continue collaboration with other agencies, including FFA and USP, in a concerted effort to provide a service to member countries that would assist in maximising the value of fishery exports.

5. The meeting urged the Director of Marine Resources to continue seeking ways to improve SPC's capacity in providing a full range of practical advice—from community consultation to legislative drafting—to promote the better management of inshore and reef fisheries. The meeting recognised that management and conservation planning for fisheries would occur at an increasingly fine scale in future, and require increasing commitment from fisheries administrations. It was also noted that the Marine Resources Division should consider regional and national capacity building in fisheries management planning to be one of its priority themes in the development of its work programme.

6. Heads of Fisheries commended the collaborative work of the Live Reef Fish

Trade Initiative and encouraged SPC to continue to develop its role as a clearing house for information useful to members, and collaborative action on international and regional standards for the conduct of the trade.

7. The financial problems likely to face the SPC / Nelson fisheries training course in 2002 were noted with concern by the meeting. Pacific Island fisheries administrations had already signalled the high priority they afforded this type of comprehensive practical specialist training for their fisheries staff – the only training of its kind available – by contributing local funds towards part of the cost of running the course. The meeting again reiterated its perception of the value of this course in the induction of new generations of fisheries officers, including the real prospects for improving the number of women professionals in fisheries management. The meeting strongly commended the value of this course to SPC's partners and urged SPC to seek means for its continuation.

8. The meeting noted with great concern the further erosion of SPC core funding devoted to fisheries work. Representatives of Pacific Community fisheries administrations requested that the SPC Governing Council direct attention towards the basis of the mechanism of SPC core funding allocation. The meeting pointed out that external funding was generally pre-programmed and did not allow SPC work programmes to respond flexibly to rapidly arising sectoral issues and changing priorities.

9. The meeting strongly recommended that SPC prioritise financial resources to enable SPC sectoral meetings, like HOF, to be held biennially. Noting that the standard SPC staff contract was three years long, the meeting pointed out that under a triennial meeting cycle there was a strong likelihood that SPC's sectoral programmes would not be able to form an accurate view of the regional needs of their primary clients.

10. Pacific Community fisheries administrations welcomed the information and notification about the forthcoming World Summit on Sustainable Development. The meeting agreed that any multi-sectoral regional submissions should highlight the:

a) high level of dependence of Pacific Islands on the living resources of the ocean, both for food security in the case of inshore resources, and for environmentally sustainable economic development in the case of offshore resources;

b) strong tradition of stewardship of living marine resources already existing in the region;

Alofa Tuaumu (American Samoa), John Talbot (Australia) and Alava'a Navy Epati (Cook Islands) were among the participants.

Jipé Le Bars

Jipé Le Bars

Being Yeeting, SPC Live Reef Fish Specialist, presenting the Pacific Regional Live Reef Fish Trade Initiative to the participants.

c) record of strong and effective cooperation and collaboration between Pacific Island governments in the governance of shared fishery resources;

d) relative vulnerability of Pacific Island fishery-based livelihoods to externalities, including land-based impacts, geographic difficulties of external trade, and dependencies on external fishing interests;

e) sheer scale of the ocean area being managed by Pacific Island nations – an area that includes the majority of the world's coral reefs and what is now the world's largest tuna fishery;

f) increasing effect of modern social structures on subsistence lifestyles and the implications for traditional fishery management mechanisms;

g) concrete example of progress since the Rio Earth Summit embodied in the finalisation of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean.

11. The meeting noted that discussion on funding priorities for the region, arranged by the Global Environment Facility under the auspices of a Country Dialogue Workshop (CDW), would be convened in Samoa in September 2001. Noting that the Oceanic Component of the Pacific Islands International Waters Programme (IWP) was scheduled to finish in 2003, the meeting encouraged national and regional representatives to the CDW to assign high priority to building on the outcomes of the Oceanic Component of the IWP in future funding support to the region. The meeting also felt that the Oceanic component had already provided valuable support to regional initiatives in promoting the sustainable management and conservation of the Western Central Pacific pelagic large marine ecosystem. The meeting hoped that due consideration would be given to the representation of the fisheries sector, and that fisheries interests would be properly represented at the CDW.

12. Pacific Community Heads of Fisheries appreciated the opportunity to review the work in progress on the Pacific Islands Regional Ocean Policy that had been directed by the Pacific Islands Forum. In addition to the comments provided in plenary on the draft, participants decided to provide additional comments as necessary, after taking the time for considered appraisal and consultation.

13. The meeting widely acknowledged the significance of the longline bycatch issue to PICTs. Heads of Fisheries recognised the need to be proactive in the matter of dealing with bycatch and fundamental to this was the need to determine the extent and nature of the issue. At a regional level, there was agreement that additional data collection and expansion of the current observer programme was needed, particularly on the high seas.

14. The meeting welcomed the significant progress made by SPC towards the establishment of a regional aquaculture programme since the first HOF. The recommendations of the SPC/ACIAR aquaculture workshop were endorsed by the meeting, which asked that SPC now forge ahead in providing a regional pool of advice and expertise to enable a strategic approach to the problems of aquaculture with the Pacific Community.

15. Pacific Community Heads of Fisheries thanked the representative of the Network of Aquaculture Centers in Asia (NACA) for his comprehensive presentation, and asked SPC to investigate the costs and benefits of membership to NACA and circulate a report for consideration.

16. Several participants noted that the lack of local capacity in pearl seeding techniques had significant impact on local economic opportunities. The meeting recommended that USP and SPC, in collaboration with the Cook Islands government, investigate ways of addressing this training need for the benefit of the region.

17. Heads of Fisheries noted the potential synergies between aquaculture and community-based management and requested SPC to bear these potential linkages in mind during the strategic planning of both the aquaculture and the community fisheries sectors.

18. The meeting strongly endorsed the value of community-based mechanisms in the management of their fishery resources and noted the high demand by SPC members for the services of the SPC Community Fisheries Section.

19. As a regional activity, the meeting requested the Community Fisheries Section to work with member countries and territories to develop ways in which local

rules of village communities may be given legal recognition under different regulatory systems, in order to facilitate monitoring, governance and enforcement by communities.

20. Heads of Fisheries drew attention to the number of different agencies working with communities, noting problems both of agencies promulgating potentially conflicting mechanisms, and of the burden placed on some communities by the frequency of consultation and expectations of collaboration. The meeting recognised the progress made through the Council of Regional Organisations in the Pacific (CROP) towards better interagency communication, but asked that regional agencies liaise particularly closely with respect to community-oriented work, especially in the communication of fieldwork plans with each other. The meeting also recognised the role that official contacts and national focal points could play in communicating or coordinating potentially overlapping activities of different intergovernmental agencies in their countries.

21. The meeting agreed that it would be timely to hold a broadly based regional consultation or workshop on community-based management of Pacific Island coastal fisheries.

22. Pacific Community Heads of Fisheries welcomed observer representation by the East Timor fisheries administration for the first time in a Pacific Islands intergovernmental fisheries meeting, and looked forward to sharing experiences in future.

(Note: the issues highlighted here are in no particular order and do not constitute a full prioritisation of the work programme of the SPC Marine Resources Division. They are presented separately in this way because they are issues that required particular consensus agreement in plenary, or the attention of authorities or partners outside the scope of the meeting. A context within which to judge the prioritisation of issues is provided by the Record of Discussion of the meeting, which also gives additional guidance to the SPC Marine Resources Division work programme.)

Jipé Le Bars

The meeting was interesting and productive, covered a wide range of topics and provided important guidance for SPC's future work in fisheries.

TENTH PACIFIC ISLANDS MARINE RESOURCES INFORMATION SYSTEM STEERING COMMITTEE MEETING

The 10th PIMRIS Steering Committee Meeting, held on 10-11 July 2001 at the Marine Studies Facility, USP, Suva, was officially opened by Prof Rajesh Chandra, Deputy Vice Chancellor of USP. The meeting was coordinated and chaired by Ganeshan Rao (PIMRIS Coordinator). The University Librarian, Dr Esther Williams, provided a brief history on PIMRIS and extended a special welcome to all delegates.

The meeting noted that over the past decade considerable effort had been made towards improving regional arrangements to strengthen PIMRIS. The PIMRIS Coordination Unit has established direct links with a selected number of institutions from outside this region for information sharing and document delivery. Prof Chandra said the international links were quite impressive and acknowledged the support of Marine Studies and the University Library for sustainability of this service.

Participants came from SOPAC, SPC, USP, FAO, Fiji Islands, Samoa, Tonga, Vanuatu, Solomon Islands, American Samoa and Tuvalu. The meeting discussed various issues pertaining to marine information needs, services, products and access.

The main topics included reviewing regional partners' activities; country fisheries library / information units' status; means of assisting countries in their capacity building; information services; document delivery; Aquatic Sciences and Fisheries Abstracts participation; education and training in information management; country assistance; information sharing and cooperative projects within PIMRIS partners; International Association of Aquatic and Marine Science Libraries and Information Centres (IAMSLIC); and a review of the PIMRIS Memorandum of Understanding.

The meeting produced a number of recommendations and agreements to fulfill the expressed an perceived needs of the region in marine resources information. A report from this meeting was presented to the 2nd SPC Heads of Fisheries Meeting on 23 July in Noumea to bring issues to HOF participants.

Jean-Paul Gaudechoux

From left to right: Edward Honiwala (Solomon Islands), Ulusapeti Tiitii (Samoa) and Natalie Macawaris-Ele (FAO SAPA) during the 10th PIMRIS Steering Committee Meeting.

Jean-Paul Gaudechoux

Ganeshan Rao, PIMRIS Coordinator shows participants how to search for marine information using Internet

The meeting was followed by a workshop covering:

- Basic skills in Internet searching using Netscape
- Searching for marine/fisheries information using Internet
- Searching on ASFA online i.e. Cambridge Scientific Abstracts Internet Database Service (IDS)
- Searching ASFA on CDROM using WinSpirs
- Sources of information, referal services, assistance available with PIMRIS
- Basic skills in marine/fisheries library operations
- Use of the fisheries library manual developed by PIMRIS covering collection development, organisation, weeding, processing and shelving
- Reviewing practices and issues of countries
- Basic skills in WIN ISIS database software
- Database structure, searching, data entry, backup, export/import
- Practical exercises to cover all the above aspects

(Information provided by Ganeshan Rao, PIMRIS Coordinator)

FAO PACIFIC ISLAND REGIONAL WORKSHOP ON FISHERY STATISTICS

The FAO Pacific Islands Regional Workshop on Fishery Statistics was held in the Conference Room (Jacques Iekawe Hall) of the Secretariat of Pacific Community in Noumea, New Caledonia, from 16 to 18 July 2001 in collaboration between FAO and SPC. A total of 40 participants, including 17 participants from Pacific Island countries, attended the workshop.

Background

The status of fishery statistics in the South Pacific was identified as one of the key areas requiring further improvement at the Third Meeting of FAO South West Pacific Ministers of Agriculture held in Nuku'alofa, Tonga, April 1999.

The importance of timely and accurate statistics was recognized as a basis for formulating strategies for sound management and sustainable use of fisheries resources as well as policy making and planning. In light of the above recommendation, FAO has recently commenced a five-year regional project on fishery statistics titled 'Support for Improvement of Statistics on Coastal and Subsistence Fisheries and Aquaculture'.

The project is trust-funded by the Government of Japan, and is implemented by the FAO Sub-Regional Office for the Pacific Islands (SAPA) with an annual budget of USD 50,000. As the first activity of the regional project, the Pacific Islands Regional Workshop on Fishery Statistics was organized by FAO/SAPA.

Three main topics were discussed in the workshop:

1. Current status of fishery and aquaculture statistics in the country;
2. Strengthening of regional cooperation through utilizing sound and harmonized methods for data collection in the region; and
3. Improvement on the collection, compilation and dissemination of fishery and aquaculture statistics.

Jipé Le Bars

Adele Crispoldi, FAO Senior Fishery Statistician, giving an overview of FAO's programme of fishery statistics

Outcomes

As a result of discussions, the following actions were recommended by the workshop (see table below).

The outcomes of the workshop were reported at the Fourth Meeting of FAO South West Pacific Ministers of Agriculture held in Port Vila, Vanuatu, 23-24 July and also at the Second Heads of Fisheries Meeting in Noumea, New Caledonia 23-27 July 2001. Under the newly commenced, above-mentioned regional project, follow-up activities (e.g. working group meeting, training / workshop etc.) of the regional workshop, will be undertaken. The workshop report will be available at FAO / SAPA in Samoa soon.

(Based on information papers presented by FAO at the 2nd SPC Heads of Fish-eries Meeting, Noumea, 23-27 July 2001)

Constraint	Recommendation
Increasing gaps between national and regional/global agencies are noted	A regional forum should be established to ensure statistical coordination and cooperation in the region, and to discuss harmonisation and standardisation of approaches and definitions A mechanism in the form of regular (annual) meetings or study tours should be put in place whereby the exchange of experience between countries in all areas of fishery statistics as well as fisheries policy, planning and management is encouraged and supported. National technical staff should be involved in the formulation of priority areas for fishery statistical projects.
Limited national capacity to establish an independent unit that specifically coordinates statistical issues for fisheries	Central governments should recognize the importance of fishery statistics and should consider the establishment of fishery statistical unit within its appropriate structure. Incentives (financial or otherwise) to retain staff, especially qualified staff should be considered in order to maintain the quality of the statistical output.
Weakness in national systems for fishery statistical coordination in a broader form	Central governments should consider developing committees or working groups in country to address fishery statistical issues. Areas within government statistics departments and fisheries statistics that overlap each other should be identified to increase efficiency and cut cost due to duplication of effort.
Limited resources allocated to support national fishery data collection systems	Public awareness campaigns should be considered in order to improve relations between the government sector and fishers and other stakeholders.
Lack of sufficiently trained staff	Computer as well statistical skills should be improved for fishery statistical staff through short (sub-) regional training courses.
Insufficient data on non-target species	Catch statistics should be improved to increase coverage for non-target species through observer programmes.
Lack of data for the subsistence fisheries sector	External funding (and technical assistance) is needed to assist the Pacific Island countries in the collection of data for subsistence Assistance is needed for the design of methodologies for the coverage of subsistence and artisanal fisheries, either in the form of regular sample surveys or the use of household/fisher logbooks. Involvement of communities in data collection should be encouraged.
Outdated hardware and software that hinder data processing and analysis	External funding is needed for upgrading software and hardware within the fishery statistical offices.
Badly maintained databases	There is an urgent need for assistance in upgrading national databases.
Incomplete knowledge on statistical coverage at a regional level	A review should be carried out to establish gaps in statistical coverage and those sectors of the fisheries where existing coverage

AQUACULTURE SECTION

SPC–ACIAR Aquaculture Workshop, 20–21 July 2001, Noumea

A two–day workshop dedicated to aquaculture was jointly arranged by SPC and the Australian Centre for International Agriculture Research (ACIAR). About forty delegates participated in the workshop, and many Pacific Island country representatives stayed on to participate in the 2nd Heads of Fisheries Meeting held the following week. Among the participants were several observers from East Timor.

The workshop was formally opened by Dr Tim Adams, SPC Director of Marine Resources and Barney Smith, ACIAR Fisheries Program Manager.

Three main items dominated the agenda: 1) trochus restocking projects; 2) cultured black pearls and 3) SPC's regional aquaculture project.

Trochus

This session was expertly chaired by Professor Chan Lee from Western Australia Department of Fisheries. It began with much discussion among countries about the status of their trochus stocks and industry. Dr Steve Purcell and Moses Amos presented the results of ACIAR trochus restocking projects in Australia, Vanuatu and Indonesia. The workshop concluded with a project concept submitted by ACIAR, which proposes to integrate trochus broodstock replenishment with community-based management in order to restore trochus fisheries.

Black pearls

This session was chaired by Ben Ponia. There continues to be widespread interest in the region in pearl culture and the workshop heard about significant recent developments in countries such as Solomon Islands, Kiribati and Fiji Islands.

Formal presentations were delivered by Dr Paul Southgate and Dr Jamie Whitford from Australia's James Cook University regarding ACIAR research. They reported on their joint efforts with the Government of Kiribati to successfully develop low cost and low technology pearl hatchery and nursery systems. This was followed by Idris Lane who gave an account of ICLARM's efforts in Solomon Islands.

Finally, Dr Ian Cartwright provided a summary of the many issues faced by the region for developing pearl culture industries.

SPC regional aquaculture initiative

Dr Tim Adams led this session and began by describing SPC's perception of its role in aquaculture. Ben Ponia presented a description of the main elements of the SPC-AusAID aquaculture project, which will form the basis of SPC's aquaculture work program.

This was pursued by Natalie McElewaris-Ele from FAO/SAPA, who outlined some of the essential elements (strategies, networking) required to put in place a regional framework for aquaculture development.

The formal proceedings of the workshop will be reported by SPC. Further enquires about the workshop can be directed to the SPC aquaculture section.

SPC–AusAID Aquaculture Project Update

AusAID has recently approved funding for a three-year aquaculture project (under a grant of approximately USD 250,000 per year) to be located at SPC Noumea.

The project mostly targets national aquaculture authorities with the goal of helping them develop aquaculture in an economical, and an environmentally and socially sustainable manner. The project will establish a focal point at SPC for aquaculture affairs in the Pacific Island region who will help strengthen ties with national aquaculture institutions and other key intergovernmental agencies such as FAO, ICLARM and USP.

Some major components of the project include:

- Establishing a technical network of aquaculturists to collaborate in: drafting policy measures; sharing information; identifying regional

priorities for research, training, etc; and facilitating collaboration efforts within the region. The first focal group meeting is expected to occur in early 2002.

- Providing an information service that will produce, disseminate and archive information. The project is also interested in acquiring unpublished reports (or 'grey literature') that often ends up filed away in obscure locations.
- Assisting member states to identify training needs and direct them to relevant training institutions. The project will also support nominated individuals who wish to undertake training attachments or participate in conferences / workshops.
- Providing technical assistance through an advisory resource of short-term consultants. The project also has available research funds for regional purposes or as small grants for national institutions.

The program has a strong interest in rural and gender development. AusAID has also expressed interest in providing additional funding towards community oriented aquaculture projects that may be identified through project activities.

COMMUNITY FISHERIES SECTION

Third fisheries module for SPC Community Education and Training Centre

In July, the Community Fisheries Officer travelled to Suva to assist with the third fisheries module for the SPC Community Education and Training Centre (CETC) programme, in collaboration with the University of the South Pacific's Post Harvest lecturer, Tony Chamberlain.

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

In 1999, USP's Post Harvest Fisheries Development Project (PHFDP) in collaboration with the SPC Community Fisheries Section developed and delivered a pilot fisheries module. Tony Chamberlain of USP and Patricia Tuara of SPC, as the main resource people, developed a draft manual to support the training. The module was offered as an elective and included theoretical and practical skills in sustainable harvesting techniques, gear technology, seafood processing, seafood preservation and marketing. The pilot module was successful and the fisheries elective has now become a regular part of the CETC course.

This year, the one week Fisheries Elective Module was conducted from 16 to 20 July at the Marine Studies Center, USP.

Fifteen trainees attended the workshop conducted by Tony Chamberlain, Post Harvest Fisheries Lecturer, USP and Lyn Lambeth, Community Fisheries Officer, SPC.

Other resource people included Jone Maiwelagi, Fisheries Officer, USP; Johnson Seeto, Marine Biologist, USP; Samasoni Sauni, PhD Student, USP; Aliti Vunisea, Social Scientist, USP; and Jope Lesavua, Post Harvest Fisheries technician, USP.

Theory sessions were held at the new "Seafood Village", which was built at the Marine Studies Center for the purpose of community-level training. The open building with gravel floor proved to be a good venue for such activities.

The workshop was opened by Dr Ken MacKay, from the Canada-South Pacific Ocean Development Program, which partly funded the workshop. Participants took part in participatory exercises aimed at raising awareness on fishing methods, gender issues, destructive fishing methods and the sustainable harvesting of marine resources.

On day two the participants tried their luck at beach seining and spent some time identifying and collecting reef and lagoon resources, including shellfish, sea plants and sea urchins. They also practiced knot tying, rigging and net mending.

Days three and four were spent on laboratory and practical activities related to seafood spoilage, seafood-borne disease, quality, safety, handling and processing. Many products were made including smoked fish, tuna jerky, various sea plant dishes, shellfish meals and urchin roe.

Photo 1: ***Participants enjoyed the boat trip out of the reef***

Photo 2: ***Collecting shellfish for seafood chowder***

Photo 3: ***Setting out the beach seine***

Photo 4: ***Pulling in the beach seine***

Photo 5: ***Learning the figure eight knot***

Photo 6: ***Processing tuna for sashimi***

(All photos taken by Lyn Lambeth)

The workshop ended with discussions and activities on fisheries conservation and community management before being closed by Nu'ufou Petaia, CETC Principal, and Professor Robin South, Director MSP. This was the third successful year of the workshop and participants found the module useful (and fun). The closure and final words of thanks by participants and resource people were topped off by a feast of sample dishes prepared during the workshop — delicacies such as smoked fish, sea vegetable salad, *Gracilaria* relish, clear *Sargassum* and spinach soup, *Gracilaria* mould, seafood chowder and raw sea urchin roe.

Lyn Lambeth

Resource people and some of the participants at the closing of the workshop

Second Heads of Fisheries Meeting

The Second SPC Heads of Fisheries Meeting in July bought together regional fisheries representatives and observers to discuss a range of issues, including SPC's fisheries work programme, aquaculture, live reef fisheries, bycatch issues in domestic longlining, and community fisheries management.

As well as reporting on the work of the Community Fisheries Section since the last meeting in 1999, the Community Fisheries Adviser chaired a special session on community-based fisheries management in the region. Dr Mike King of the AusAID-supported Samoa Fisheries Project presented a paper on Samoa's experiences in involving villages in the management of subsistence marine resources.

After the presentation, there was a discussion that addressed the legal issues of enforcement of traditional or village rules, especially on people from outside those villages. Many delegates shared examples of the varying degrees and types of customary marine tenure and traditional regulations versus national management measures that exist in their countries.

Fatima Sauafea, head of the Community Fisheries Management Programme, presented a paper on a similar project recently started in American Samoa, with the assistance of SPC's Community Fisheries Section. The project is currently running in three of the six target villages for 2001.

Alava'a Navy Epati spoke about the traditional raui system used to set up marine protected areas in the Cook Islands, outlining the important role of women in initiating and ensuring the success of this form of marine resource management.

The special session on community-based fisheries management was greeted with interest and enthusiasm by country and territory delegates and a number of draft recommendations were made endorsing and guiding SPC's work in this area.

Marshall Island's new community-based fisheries programme

In August the Community Fisheries Adviser travelled to the Republic of the Marshall Islands to assist the Marshall Islands Marine Resources Authority (MIMRA) in setting up a community-based fisheries programme. A draft summary report advising the Marshall Islands government on how to proceed with the programme was presented to the Board of Directors of MIMRA at the end of the Adviser's assignment. The MIMRA Board has indicated its support for this community fisheries development. The Community Fisheries Adviser is due back in the Marshalls to conduct training for MIMRA's staff as soon as preparations are completed by the Authority.

Ueta Fa'asili

MIMRA Director Danny Wase, the man behind the scenes

Eighth Triennal Conference for Pacific Women

In September, SPC's Pacific Women's Resource Bureau hosted the Eighth Triennial Conference for Pacific Women. The Community Fisheries Officer presented a paper on the Marine Resources Division, Linkages with the Pacific Platform for Action and the general advancement of women.

Initially, the Community Fisheries Section was asked to talk to the conference about the activities of the section, because of its strong emphasis on supporting women in their fisheries activities. But it was decided that, since other sections of the Marine Resources Division were also encouraging and including women in their work, it would be more informative to report on the entire Division.

The SPC Fisheries Training Section, for example, encourages the participation of women in many of its courses and holds other courses designed specifically for women; the Fisheries Information Section produces information that reaches both men and women; Reef Fisheries Assessment and Management addresses concerns and areas of great importance to men and women, and collects data on fisheries production and consumption; the new Aquaculture programme will offer economic opportunities to women as it encourages sustainable, community-based projects.

The Pacific Platform for Action (PPA) is a regional statement developed by Pacific women and men, and endorsed at a regional women's conference in 1994.

The document looks at key issues in the region that must be addressed if the goals of equality, sustainable development and peace are to be realised, and its aim is to accelerate full and equal partnership of women and men in all spheres of life. One of the 13 key issues listed in the document is agriculture and fishing, with the strategic objective being "to promote and support women's participation in agriculture and fishing (both paid and unpaid activities) and to recognise women's role in food security."

The PPA document assists women's agencies throughout the region to focus their work on addressing key issues and critical areas of concern.

Conference participants were interested in the presentation, but unfortunately time was short and there was no opportunity afterwards for discussion.

The Community Fisheries Officer later participated in a discussion panel on Community Education and Development, along with Nu'ufou Petaia, Principal of SPC's Community Education and Training Centre, and Nga Teao, Director of the Cook

Islands Women's Division. Discussion arising from that included the advantages and disadvantages of mixed sex training, benefits or otherwise giving women the opportunity to train in non-traditional areas, and problems in evaluating impacts of training, and following up trainees after their return home.

Several of the delegates took the opportunity to request follow-up work or new projects from the section including: a review of the Women in Fisheries Programme in Papua New Guinea; a follow-up workshop on net mending for the women of Wallis (a workshop was conducted on Futuna in 1999); further workshops for Palau; and an assessment of needs for Tokelau.

Jipé LeBars

Ana Teregeyo of CNMI (Chairperson) and Nga Teao of Cook Islands

FISHERIES DEVELOPMENT SECTION

Two projects were completed prior to the Second Heads of Fisheries Meeting. Fisheries Development Officer, Steve Beverly, finished work with the SPC-Nelson Polytechnic Pacific Islands Fisheries Officers Course (see SPC *Fisheries Newsletter* # 97).

Fisheries Development Officer, William Sokimi, completed his three-month assignment with members of the New Ireland Commercial Fishing Association. A total of 51 fishermen from the association received training in mid-water fishing techniques used in association with fish aggregating devices (FADs) and deep-water bottom fishing techniques during three workshops. A range of other activities was also completed during this project, including the construction and deployment of two FADs, and experiments with two types of commercial bait fishing nets. This assignment culminated in the first export of fresh tuna to Japan from New Ireland.

During the 2nd HOF, the Fisheries Development Adviser, Lindsay Chapman, chaired sessions on bycatch from tuna longlining. The sessions were aimed at raising awareness of the problem with representatives of the meeting. Following the HOF meeting, Steve participated in the Standing Committee on Tuna and Billfish meeting (SCTB 14, 9 to 16 August), as a member of the Fishing Technology Working Group.

In August Steve went to Fiji with a delegation from New Caledonia, to inspect a new 18 m aluminium longliner being built for a New Caledonia company, Sodefish. The boat is being built to Bureau Veritas survey standards by Alloy Fabricators of Lami, Fiji (see feature article in this issue).

Lindsay spent August and part of September working in Niue and the Cook Islands. In the Cooks, he worked with the Ministry of Marine Resources, drafting a tuna fishery development strategy for the country.

This entailed meeting with different stakeholders, including fishermen, in both Rarotonga and Aitutaki, so that views

could be gathered from a large cross-section of people.

The draft tuna fishery development strategy focused on infrastructure needs as well as development options for small- and medium-scale tuna fishing, especially tuna longlining, throughout the Cooks. The Cook Islands was split into three areas (Rarotonga, southern islands, northern islands) as each has different issues or concerns that need addressing.

In Niue, options were considered for developing a small-scale tuna fishery. Niue is faced with some unique problems such as no harbour, an open-ocean wharf (Fig. 1), limited shore facilities, and limited marketing options. The government is keen to overcome these problems and future work is planned to explore the options for developing tuna fishing, especially tuna longlining.

Lindsay also worked with the fisheries staff in both Niue and the Cook Islands for the implementation of the new FAD research project. Meetings and discussions were held to determine the FAD designs to be trialled. From this, a materials list and FAD deployment and a maintenance sheets were also developed.

A daily fishing logsheet was also developed and discussed at fishermen's meetings in each country. SPC will make these into a logbook and distribute them to all tuna fishermen in Niue, Rarotonga and Aitutaki, the locations where the project will be implemented. Data collected from the logbooks will be used to do a cost–benefit analysis of the FADs to the small-scale tuna fishery in these locations.

A community survey form was drafted to gather information from coastal communities on their fishing activities, and try to detect any changes in fishing practices in the coming years. The survey will be conducted with the same communities three times — with one year between each survey. The communities selected for the survey will be those adjacent to where FADs are deployed, and where possible, adjacent to current and proposed marine protected areas.

An important part of the FAD research project will be the regular maintenance of FADs in the water. In both countries, FAD maintenance is taken very seriously, although different methods are used. Lindsay accompanied fisheries staff from both locations on routine FAD maintenance trips, to view the different maintenance methods.

In the Cook Islands the maintenance vessel ties to the FAD. Two divers then take air bags (Fig. 2) down to about 30 m (100 feet). An air bag is tied to the mooring line and inflated using air from a diver's regulator. The divers wait at this depth until the first air bag reaches the surface. A second air bag is then tied to the mooring line and

Lindsay Chapman

Figure 1: Open-ocean wharf on Niue

Lindsay Chapman

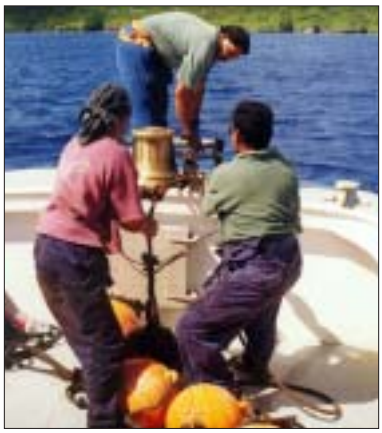
Figure 2: Diver with air bag ready to enter the water

inflated, raising the mooring line to the surface (Fig. 3). The mooring line is then hand-hauled onto the maintenance vessels for cleaning, inspection and repair when needed.

In Niue, the maintenance process is different. It starts with launching the Public Works work boat (Fig. 4) from the ocean wharf. The work boat then moves to the FAD for inspection. The buoy system is hand-hauled on board until the top connection shackle and swivel (Fig. 5), which connects the buoy system to the actual mooring line, is reached.

The mooring line is then wound around a powerful capstan winch mounted on the stern, which in turn is used to haul up the mooring line. As the line is hauled, fishing line is cut free and marine growth on the rope is removed (Fig. 6). The mooring line is carefully checked for wear or damage as it is let out, with repairs made when necessary to the rope and hardware.

William spent the first part of August writing a report on the work he undertook in Papua New Guinea. Later, he travelled to Tonga to start a new assignment with the Ministry of Fisheries. The objective of the project was to assist in revitalising the operation of the Fisheries Training Vessel *Takuo*,



From top to bottom

Figure 3: Mooring line on the surface suspended from the air bags

Figure 4: Launching the Public Works work boat in Niue

Figure 5: Hand-hauling the buoy system of the FAD on board

Figure 6: Using a capstan winch to haul in mooring line for inspection

(All photos taken by Lindsay Chapman)

focussing especially on vessel operations management and advising the crew on the finer points of using the two longline systems available on board — the Japanese rope gear system and the monofilament reel system.

FTV *Takuo* was designed specifically for tuna longline training and research purposes. The vessel has an array of electronics equipment that contributes immensely to improving ship-to-shore communications, enhancing the possibilities of selecting better fishing grounds, performing longline fishing research, assisting the master in monitoring weather conditions, and detecting extreme weather conditions that may endanger the vessel.

Upon arrival in Tonga, William proceeded to examine the present operation of the vessel and to suggest improvements where necessary. The main areas examined included the condition and configuration of the two types of longline gear, the preparation of the vessel prior to departure for fishing, the effectiveness of shore personnel and captain for quick turnaround between fishing trips, and the general operation of the boat and those on board from the captain to the crew.

Part of the assignment was to accompany FTV *Takuo* on a full fishing trip. However, due to unforeseen developments, only eight sets were carried out.

These were done while on passage to Pago Pago to offload approximately 50 t of albacore caught on previous fishing trips. Information obtained from other fishing vessels identified the grounds south of Tonga as the 'hot spot' at that time.

Although the fishing operations were not conducted in choice fishing grounds, it was sufficient to make an assessment of the gear and to recommend changes that would enhance fishing operations using both rope and monofilament gear in a single fishing operation.

During the eight sets, a total of 214 saleable fish were caught weighing around 4200 kg. The total hooks set was 13,990. All fish were stored in the vessel's freezer cargo holds (at –40° C) to be stock-piled for the next unloading.

The rope system on FTV *Takuo* is the modernised version of the coiled rope mainline system. The mainline is flaked out in a master bin located on the aft upper deck (Fig. 7).

A level wind flaking machine collects and flakes the line into the master bin that is divided into three longitudinal sections. This division prevents the stored rope mainline from roaming over a larger area thus reducing the chances of creating tangles.

During line setting, the rope mainline is rove through a pipeline guide leading to a line setter (shooter) situated on the centreline of the aft bulwark. The branchlines are attached as the mainline is paid out.

The hauling operation is performed similarly. A line hauler retrieves the stressed mainline via a hauling port and flakes it out on an escalator type tray. A relay machine then transports the weightless line to the master bin via a pipeline guide. Compared to the coiled rope system, this method is faster, safer and requires less crew to operate but is still inferior, operation-wise, to the monofilament reel system.

Branchlines were individually coiled and stacked during the hauling process (Fig. 8), which is a very labour intensive job. To modify this, the 10 m monofilament branchlines for the monofilament reel system were used. This enhanced the work efficiency so that it was almost on a par with the reel system, and made no difference to the catch rate. The extra work effort was in transporting the line from the collecting tray to the bin. Previous use of the same system on other vessels produced the same results.

The vessel is outfitted with a Lingren Pitman reel capable of holding up to 30 nm (55 km) of

William Sokimi

Figure 7: Mainline storage bins with rope being coiled into them

3.5 mm monofilament mainline. This system is easier and safer to operate, takes up less space and requires less crew. For line setting the mainline is directed to the shooter via a series of guide blocks. The branchlines are snapped on as the mainline is paid out.

During line hauling, the line is directed to the reel via a hauling block and is wound directly onto the reel. The branchlines are unsnapped and stored into bins, ready for the next set.

William Sokimi

Figure 8: Coiling and stacking the branchlines from the rope gear

TRAINING SECTION

Tonga seaweed workshop

In August 2001 the Fisheries Training Specialist travelled to Tonga to assist with the organisation of a one-week workshop on seaweed farming.

The workshop followed a request from the Tonga Ministry of Fisheries, which wanted to run such a programme for local staff and possibly some interested prospective farmers.

With funds obtained from the Government of Taiwan/ROC, the SPC Fisheries Training Section was able to assist Tonga in initiating a seaweed-training programme. According to the 'Akau'ola, Secretary of Fisheries, Vava'u was involved in the mid-1980s in farming this type of seaweed but the programme collapsed as a result of marketing problems.

There has been interest in renewing this programme, especially for remote island communities that experience problems generating cash income.

The training was held in Vava'u under the supervision of the officer in charge 'Ofa Fakahau. Delivery of the course was a joint effort between SPC and FMC Corporation (seaweed buyer).

The SPC Fisheries Training Section organised the funding and participation of competent resource persons

Esaroma Ledua from Fiji Islands was contracted as SPC consultant for the duration of the workshop; Erick Ask from FMC Corporation was sent free of charge by his employer.

Esaroma and Erick are both *Euchema* specialists. Delivery of the course programme and supervision of field work were shared by the two specialists. Their participation to this workshop was an asset and overall, this second SPC course on seaweed farming was a success.

Participants are preparing lines on which propagules will be attached

Seaweed specialist, Esaroma Ledua, demonstrates how to check water salinity using a simple field refractometer

Some of the local seaweed can be good indicators that **Euchemia cottonii** *will grow in the area*

Fisheries technician setting a test plot consisting of one meter line with propagules attached every 20 cm

(Photos taken by Terii Luciani)

A great little boat for the Vanuatu Maritime College

Sitting proudly in the Santo Boatbuilding Yard is a brand-new 5.7 metre boat belonging to the Vanuatu Maritime College. Soon she will have her name painted on: *Emmnao*.

Why the name?

Emmnao is derived from the Bislama phrase 'Hem nao!', meaning 'That's great' or 'Just what we need'. But it is also a reminder of the boat's history. She was built as a pratical training exercise, using a new technique demonstrated by an instructor from New Caledonia's maritime training institution, the Ecole des Métiers de Mer.

The new technique used in building *Emmnao* was developed in the US and is known as the WEST system – standing for Wood Epoxy Saturation Technique. Wood has been used for boatbuilding for thousands of years, but has a tendency to crack, split and even rot. In the WEST system, wood is considered a fibre that can be glued with epoxy resin into the shapes required, in much the same way as fibreglass is used for hulls of polyester resin. This increases the rigidity of the hull, eliminates the risk of cracks and rot and results in a boat that requires less maintenance and lasts longer.

Work on *Emmnao* started in May this year, when Instructor Jean-Pierre Malingrey arrived in Santo for a two-week stay and met with the Santo boatbuilder, Marcel Rosflender, and his team. Together they laid down the patterns, frames and stringers, working from plans and instructions written entirely in French, which Marcel and his helpers are not familiar with. All the timber used in the boat (mostly rosewood) was grown on the island of Santo.

The frames were covered inside and out with plywood and everything was thoroughly covered in four coats of resin. Once this process had started, Jean-Pierre returned to New Caledonia. He came back for two weeks in August to help with final touches to the building and when these were completed, the boat was painted white and blue.

From top to bottom

- ***Jean-Pierre checks that everything is done properly***
- ***The hull with the plywood thoroughly soaked in resin***
- **Emmnao *with her final coat of paint***

(Photos taken by Caroline Nalo)

Marcel was most interested in the new technique and in the design, both different from those he normally uses. 'She should last a long time', he commented, 'and cost a lot less in upkeep. And the treatment can be used on the other boats that I build if that is what the customers would like'.

Emmnao has not yet been trialled at sea because she is waiting to be fitted with her 75 hp Yamaha outboard engine, which will not arrive from Japan until early next year. But plans are already in hand for her use.

Nare Wolu, the Vanuatu Maritime College's Fishing Instructor, will outfit *Emmnao* with gear for trolling and deep bottom fishing.

Nare's main task at the Vanuatu Maritime College is training fishers in rural areas. *Emmnao* will be an excellent boat for practical fishing training and Nare is really looking forward to using her.

Emmnao will also be useful for training 'taxi-boat' operators who carry passengers between islands and along the coast of the larger islands, and who require training in safety, navigation, and boat and engine maintenance. Her top speed will be about 15 knots, twice as fast as that of Etelis, the vessel currently used by the College for fishing training.

Apart from her practical value, *Emmnao* is a fine example of cooperation between four different institutions: the maritime training colleges of New Caledonia and Vanuatu, the Santo Boatbuilding Yard and the Secretariat of the Pacific Community, which funded the whole operation.

Vanuatu Maritime College thanks all who were involved:

- Christian Blanchard, Director of the Ecole de Métiers de la Mer in Noumea, for allowing his boatbuilding instructor to spend so long in Santo;
- École des Métiers de la Mer instructor, Jean-Pierre Malingrey, for his skilful and friendly assistance;
- Marcel Rosflender, Joseph and Fredson at the Santo Boatbuilding Yard for their patience and hard work;
- Michel Blanc and Terii Luciani of SPC's Fisheries Training Section for coordinating this project ;
- The Government of France for providing funds for Jean-Pierre's travel, for all labour and materials, and for the engine.

NFC staff sharpen their handling and grading skills

The small island state of Nauru requested a workshop from SPC's Fisheries Training Section on handling and grading for local staff involved in the country's fledgling tuna industry.

While the government-owned company Nauru Fisheries Corporation has only been operating its sole longliner (NFC 5) for a few months, catches are being exported to Japan and development plans for acquiring alia vessels from Samoa are well underway.

The worshops ran during the first week of September and targeted both the crew of NFC5 and staff of NFC's fish market who handle catches on shore and pack tunas for export. Several staff of the Nauru Fisheries and Marine Resources Authority (NFMRA), NFC, and six local fishers also attended the workshops. A total of 32 persons were trained.

The Wednesday (first) workshop mainly targeted the crew of NF5 (18 m catamaran), and so the vessel did two shorter trips that week instead of its usual four to five day trip.

The vessel therefore came to port Wednesday morning to offload its catch (it had sailed on Sunday and done two sets on Monday and Tuesday), the crew attended the workshop in the afternoon, sailed back Thursday morning to do another couple of sets, and returned Friday morning to meet the Air Nauru flight in the afternoon.

In addition to NF5's crew (skipper, engineer and four deckhands), six local fishers interested in tuna longlining and prospective crew on NFC's forthcoming longliners also attended. The workshop was run at NFMRA, in a small meeting room that had been set as a training room.

The classroom session covered a presentation of the sashimi market in Tokyo (where Nauru fish is sold) and then focussed on on-board handling procedures using slides, video and transparencies.

After that session, we moved to the fish market to handle a couple of bycatch tunas that had been unloaded that morning and had been left intact for the workshop (one small yellowfin and one albacore). A simulation of the on board handling procedures was done, then trainees were shown the position of the

tuna's brain and major blood vessels. One local private fisher then practised his skills on the second fish. A third tuna was set aside for the next day.

The Thursday workshop was attended by five staff of the fish market (including its new manager, Chris Marstin) and twelve staff of both NFMRA and NFC (including NFC's manager Roland Kun). That workshop targeted shore staff, so in addition to the description of the Japanese market and on board handling procedures (shore staff should know how sashimi-grade tunas need to be handled onboard the vessel), grading parameters and the factors that affect price were explained. This took most of the day. In the afternoon, the left over bycatch tuna was used to demonstrate tuna handling.

On Friday morning, the workshop reconvened at the fish market. Ten bigeye and two yellowfin caught by NF5 on its two short trips were ready for export and packing operations started at 9 am. This provided an excellent opportunity to run a practical grading session with market staff and other attendees. From the twelve fish graded that morning, three were left on the local market and the others packed for export. Those fish left Nauru on Air Nauru flight to Brisbane at 2 pm then onwards to Tokyo for the auction at Tsukiji market the following Monday.

This was the first time fish caught by NF5 had been graded prior to packing and export. The only screening that used to be applied was based on size (all bigeye and yellowfin tunas above 35-40 kg were considered as suitable for export to Japan) and no prior inspection of the meat (tail cut) was made.

NFC's longlining operation has been operating for almost a year and weekly exports have been regular and consistent for less than this – the fish graded during the workshop made the 16th shipment to Japan. So far, financial returns have been encouraging with bigeye commonly fetching 2000+ yen/kg and yellowfin in the 1000-1500 range.

As a result of the workshops, several recommendations were made to improve presentation and quality of the catch. These include using the Tanaguchi method (coring of spinal cord) on all large tunas and using

The trainees were exposed to all aspects of grading and handling sahimi-quality tuna

(Photos taken by Michel Blanc)

'mutton cloth' socks to wrap fish before placing them in Refrigerated Sea Water. Shore staff were also advised to store tunas in ice with belly down and for those fish being unloaded on the day of shipment, to store them in an ice slurry for the last few hours between offloading from the vessel and packing.

The grading session of the workshop was useful to all. The good thing about NFC's operation is that it is small (about ten pieces are packed weekly i.e. half a ton of product). This means that grading can be done with great care.

To that effect, NFC staff were shown a technique that works well when you are not under the pressure of having hundreds of tunas to grade within a limited time frame.

This technique consists of placing meat samples (tail cuts) on a white surface (a piece of polystyrene board for instance) so as to better analyse and compare the colours, defects, fat content, etc. Also, by leaving the meat sample exposed to the air for a few minutes you can assess the potential of the meat to turn bright red.

The board with all the samples can be transported easily outside the packing room—neon light alters colours—for checking colours at daylight. If time does not permit to go outside, the assessment of colours should be done at torch light.

The other good thing about this grading session is that trainees observed several commonly found defects (burnt meat, improper bleeding, rainbow sheen, brown meat, external bruises).

As a result of the workshop and with a few more weeks of experience local market staff should be able to have a better idea on how to sort fish for export to Japan from the catch—tunas that are likely to induce a financial return on the demanding sashimi markets.

In brief

- The second SPC / AFA Traineeship Programme for Pacific Island Fishers is postponed until January / March 2002. This programme, run from the Australian Fisheries Academy in Adelaide, targets young promising fishing deckhands who have the potential to move into a skippers position. Following a successful first edition in 2000, the Training Section had secured AusAID funding for eight trainees to study at AFA from October to December 2001. Tighter immigration policies following the September terrorist act in the US made it difficult for most selected deckhands to obtain Australian visas on time; consequently, SPC and AFA have decided to run the programme in early 2002. Trainees from Papua New Guinea, Tonga and Kiribati will spend six weeks at AFA's campuses in Port Adelaide and Port Lincoln before a four-week fishing experience on board Australian commercial fishing vessels. Trainees have been selected from fishing companies engaged in tuna longlining, tuna purse-seining, prawn trawling and deep-bottom snapper droplining.

- A regional course funded by New Zealand will be run at the Nelson School of Fisheries from 19 November to 7 December. The course will target trainers of women engaged in small-scale post-harvest activities. Thirteen participants from 11 countries and territories have been selected and include two male fisheries officers from FSM and Solomon Islands. Course content will consist of three major themes and modules: a one-week block on communication and teaching skills will open the course and will be followed by seven days on seafood technologies. A three-day seafood business management workshop will conclude the programme. It is expected that participants will also develop some resource materials to take back home for use in in-country workshops. All participants come with a background in training at the community level. Both the SPC Fisheries Training Adviser and Fisheries Community Officer will travel to Nelson for some parts of the course.

- A series of new resource materials is being produced by Section staff who are targeting distribution by year's end. Materials include a Safety Management System (SMS) for medium-to-large sized fishing vessels, a leaflet on gender-integrated training, and a manual on the co-management of commercial fisheries resources. The SMS materials consist of a manual, a vessel logbook and two awareness leaflets that will be widely distributed via e-mail and surface mail to fishing companies, fisheries

administrations and maritime authorities.

- On the funding side, the Section was not successful with Taiwan/ROC this year. The proposal for additional in-country workshops on HACCP was not approved in July. In September, a proposal for a regional course for fishing-specific engineering training (hydraulic, refrigeration and electrical systems) was submitted to NZODA. If approved, the five-week course will be run at the New Zealand School of Fisheries in 2002.

- The Section's website has recently been updated with the inclusion of a Powerpoint presentation of the Section and an E-form for ordering the Section's resource materials. We invite all our fisheries contacts to have a look at the website:

www.spc.int/coastfish/Sections/training

REEF FISHERIES ASSESSMENT AND MANAGEMENT SECTION

Underwater visual fish census survey tools: a manual and software package

A booklet on the proper use and implementation of underwater visual fish censuses was recently published in French and the English version is due out in December.

This booklet, designed for fisheries service agents in Pacific Island countries and territories, was written in collaboration with IRD (formerly ORSTOM), and describes methods developed by IRD and SPC. More generally, it serves as a guide for training divers in these techniques and reviews the rules for their use.

The Section has also developed a software package that makes it possible to enter and use data gathered during underwater visual census surveys. The software can be downloaded from our website:

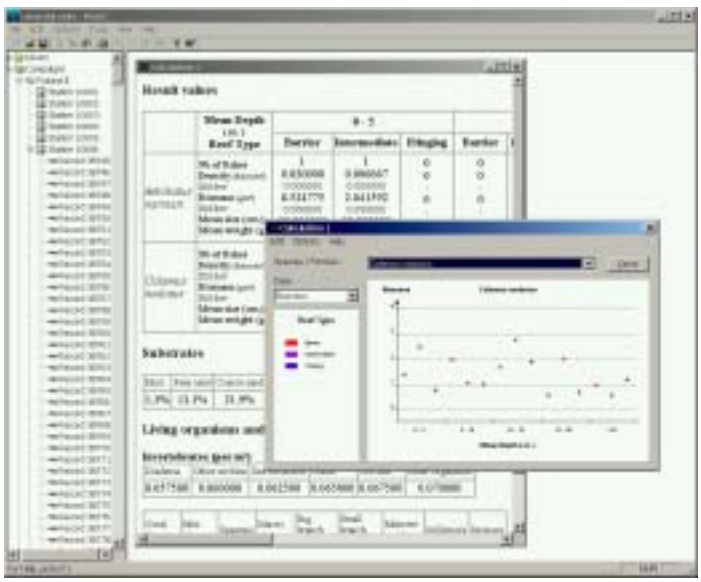
http://www.spc.int/coastfish/Sections/reef/react/

It is the first in a series of computing utilities known as ReACT, i.e. Reef Resource Assessment and Management Tools. This initial version has been made available in 'open source' format so that users can suggest improvements to it. It is designed to allow fisheries services that use underwater visual census surveys to:

- enter data from sampling campaigns with a minimum number of errors;

- carry out initial calculations (e.g. densities, biomasses); and

- recover data and initial results in a standard format for more in-depth statistical processing and/or integration into regional databases.



TOSURA Project (Trained Optical System for Underwater Resource Assessment)

A system of three underwater video cameras was purchased at the end of last year through funding from Australia (AusAID) and France (French Embassy in Fiji), representing the first phase of a project whose second stage is the development of automatic fish counting software using electronic imagery. The software has been put into place with financial support from France.

Eric Clua

The cameras, being tested in real situation

After this programme has been finalised (within two years), the mobile equipment and its trained technician will be made available to countries that want to assess their reef and lagoon resources. This should make it possible to increase data acquisition by widening the scope and increasing the number of sampling operations and to improve data quality by limiting sources of error. Other uses of stereo image acquisition, which describes ecological landscapes through three-dimensional reconstruction of habitats, are also being examined.

ICLARM

The three-year ICLARM project on Optimal Release Strategies for Sea Cucumbers (beche-de-mer) has started its activities at SPC, Noumea. The positions of Team Leader, by Dr Steve Purcell (see photo), and Senior Aquaculture Associate, by Ms Deborah Gardner, are jointly held by SPC and ICLARM. Support by local agencies will fund three support staff positions for hatchery and field work.

The sea cucumber project aims to determine the best strategies for releasing sandfish (*Holothuria scabra*) into the wild for purposes of restocking and stock enhancement of inshore Pacific fisheries. The sandfish will be cultured from local broodstock at the hatchery at St Vincent, and perhaps later at Kone. The best release methods, sizes, release densities, habitats, times of the day and year will be revealed through releases of the juveniles at inshore sites in the Provinces.

A brochure of ICLARM's activities and vision of work in the Pacific will soon be available at SPC – a version in French will follow. ICLARM is geared to increase their research in the Pacific under the direction of a Senior Scientist, who is currently being recruited, and who will be in charge of the new Pacific Office at SPC. For more information, visit their website at:

http://www.iclarm.org

Jean-Paul Gaudechoux

OCEANIC FISHERIES PROGRAMME

The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem

From 1 to 4 October 2001, the Government of Iceland and the United Nations Food and Agricultural Organization hosted, with the co-sponsorship of the Government of Norway, the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem. This important conference brought together about 400 participants from 70 countries. SPC was represented at the Conference.

During the first plenary session, a series of presentations clarified the context of the Conference's main topic. These talks covered the level of worldwide catches, international conventions and legal instruments and the views of ecologists and commercial and artisanal fisheries on the ecosystem-based approach to fisheries management.

During the scientific symposium that followed, three themes were discussed:

1) the dynamics of marine ecosystems,

2) the role of humans in marine ecosystems, and

3) incorporating ecosystem considerations in fisheries.

It was, therefore, possible to conduct a review of scientific knowledge and concepts related to an ecosystem-based approach. About 20 poster displays on cases studies were also presented.

It appears that ecosystem-based fisheries management is still in the conceptual stage, and that, in most cases, knowledge about ecosystems is very sketchy. This should not, however, keep this new fisheries management system from being implemented fairly rapidly.

During this session, there was discussion on the role of marine mammals in the marine ecosystem and their direct and indirect interactions with fisheries. Several nations requested that more qualitative and quantitative studies be conducted on marine mammal feeding habits so as to assess their impact on the ecosystem.

A second plenary session allowed the representatives of the countries, international agencies and non-governmental organisations in attendance to present their views on responsible fisheries and ecosystem-based management.

The Conference ended with the adoption of the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem. *(This declaration was adopted by consensus with Japan and Saint Lucia abstaining.)*

The Conference declared that "in an effort to reinforce responsible and sustainable fisheries in the marine ecosystem, we will individually and collectively work on incorporating ecosystem considerations into that management to that aim." This declaration also foresees FAO producing, with the assistance of scientific and technical experts, technical guidelines for best practices with regard to introducing ecosystem considerations into fisheries management.

14th Standing Committee on Tuna and Billfish

The fourteenth meeting of the Standing Committee on Tuna and Billfish (SCTB14) was held 9–16 August 2001 in Noumea, New Caledonia, at the invitation of the Chairman, and hosted by the Secretariat of the Pacific Community. SCTB14 was attended by participants from Australia, the Federated States of Micronesia, Fiji Islands, France, French Polynesia, Guam, Kiribati, Korea, New Caledonia, New Zealand, Papua New Guinea, the Peoples Republic of China, Samoa, Solomon Islands, Taiwan/ROC, United States of America, and Vanuatu.

Representatives from various regional and international organisations also attended the meeting, including the Food and Agriculture Organization of the United Nations, Inter–American Tropical Tuna Commission (IATTC), and the Forum Fisheries Agency (FFA).

The meeting broke up into eight working groups – the Statistics Working Group (SWG), the Fishing Technology Working Group (FTWG), the Methods Working Group (MWG), the Skipjack Research Group (SRG), the Albacore Research Group (ARG), the Yellowfin Research Group (YRG), the Bigeye

Research Group (BRG), and the Billfish and Bycatch Research Group (BBRG).

The initial overview of Western and Central Pacific Ocean (WCPO) tuna fisheries noted that the estimated total catch for 2000 for the four main tuna species was 1,852,746 mt, the second highest annual catch on record after 1998 (1,893,648 mt).

The 2000 WCPO catch of skipjack (1,165,099 mt) was slightly higher than in 1999, but below the 1998 record catch (1,305,841 mt) and as usual dominated the total catch (63%).

The yellowfin catch (421,533 mt) was slightly less than in 1999. South Pacific albacore catches (41,835 mt) were slightly higher than in 1999, and the bigeye catch (114,907 mt) was a record high, eclipsing the previous record in 1999 (108,989 mt). National fishery reports provide further details of these catches.

Reports on relevant activities of other organisations were received from Bureau of Rural Sciences (BRS–Australia), Commonwealth Scientific & Industrial Research Organisation (CSIRO–Australia), Inter-American Tropical Tuna Commission (IATTC), the United Nation's Food and Agriculture Organisation (FAO), and the Pelagic Fisheries Research Program (PFRP) of the University of Hawaii.

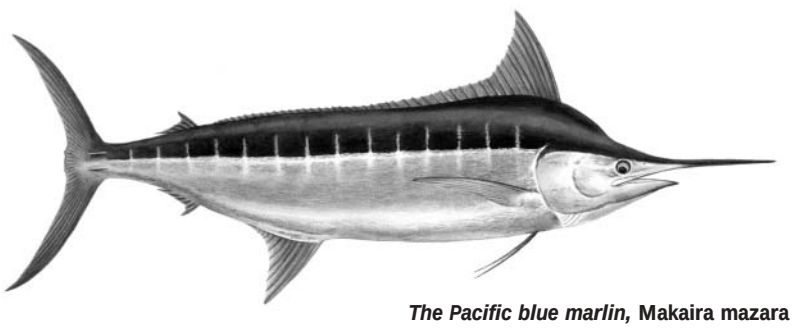
The directives to the SWG made during SCTB13 were reviewed. These concerned the compilation of annual catch estimates for small-scale fisheries; the compilation of catch estimates for the South China Sea; the availability of data in Indonesia and the Philippines; a review of Japanese logsheets; an OFP project to scan logsheets in member countries to improve the timeliness of data submissions; the availability of tuna and billfish data on sex ratios and length data by gender; the compilation of factors for converting processed weights to whole weights; the compilation of information on illegal, unreported and unregulated (IUU) fishing; the level of predation of longline-caught fish by sharks and whales; a review of vessel and gear attribute data on the FFA Regional Register; the classification of purse-seine effort by school association; the sampling of yellowfin and bigeye species composition for purse seine; the estimation of bigeye catches by purse seiners using regression trees; the compilation of data covering the American Samoan longline fleet and the Canadian troll fleet; the revision of catch and effort data for the Taiwanese distant-water longline fleet; targeting of albacore by the Taiwanese distant-water longline fleet; sampling of longline-caught albacore in Samoa; the estimation of catches of billfish under mandatory release; the estimation of tagged and released catches in recreational fisheries; the revision of billfish catch estimates; the compilation of annual catch estimates for species of special interest, such as sharks, marine reptiles, marine mammals and sea birds; the availability of data that can be used to estimate catches of non-target species; and the role of SCTB in national and regional observer programmes.

The five Research Groups considered regional fishery developments, advances in research, stock assessment and research coordination and planning for those species or species. Summary statements on these matters are provided for each research group. SCTB14 was presented with applications of the MULTIFAN–CL length-based assessment model to all four target tuna species in the WCPO, and to the North Pacific blue shark (Prionace glauca), and Pacific blue marlin (*Makaira mazara*).

Recognising the continuing concern of the SCTB about the status of yellowfin and bigeye tuna stocks in the WCPO, and recognising the increasing catchability of juveniles of these species in surface fisheries, particularly those using FADs, SCTB14 recommended that there be no increase in fishing mortality in surface fisheries on these species in the WCPO until uncertainty in the current assessments has been resolved.

It also strongly reinforced the value of large scale tagging experiments to provide information on movement, natural mortality and exploitation rates. As this will reduce the uncertainty in existing assessments, SCTB recommended that funding be sought to undertake such work.

The objectives of the SCTB Statistics Working Group (SWG)



***The Pacific blue marlin,* Makaira mazara**

are to coordinate the collection, compilation and dissemination of tuna fisheries data. Data compiled by the OFP on behalf of the SCTB include annual catch estimates, catch and effort data, length data, and other types of data.

The SWG Coordinator reported that progress in data compilation had been achieved, although no annual catch estimates for 2000 had been provided by Japan, and the most recent estimates covering the domestic fisheries of the Philippines are for 1997.

It was reported that the level of coverage of catches in the WCPO in recent years by observer data held by the OFP is only 0.18 percent for longliners and 3.9 percent for purse seiners, so coverage must be increased to obtain reliable catch estimates for non-target species, including those of special interest, such as sharks and rays, marine reptiles, marine mammals and sea birds.

This year, two new Working Groups met in preparatory meetings, just prior to SCTB14, to review and discuss key aspects of fishing technology and analytical methods. The terms of reference and summary of presentations for each working group are given in separate sections.

The objective of the first Fishing Technology Working Group (FTWG) was to discuss the status and direction of this new working group.

Ten working group papers were presented to the twenty participants covering the development of the FTWG, comparable programs, technical data holdings and accessibility, country reports, recent entrants and developments in regional fisheries, and the status of regional purse seine management measures and developing bigeye tuna management plan for the WCPO. During the preparatory meeting, the terms of reference (TOR) were drafted and later approved by the plenary. These TORs and a brief report of the WG are attached to meeting report.

The objectives of the first Methods Working Group (MWG) were to review the terms of reference (drafted at SCTB13), and discuss recent developments concerning the testing of stock-assessment methods.

Two papers were presented (MWG-1, YFT-4). The first of these outlined the recent changes made to MULTIFAN-CL to improve its capabilities. The second paper described the features of a new operational model of the WCPO yellowfin fishery that is used specifically to assess the accuracy and precision of MULTIFAN-CL estimates.

The group recognised the need to conduct further testing of MULTIFAN-CL under various scenarios, and to compare the reliability of the estimates obtained with alternative models using simulated datasets.

Recognising the value of bringing the MULITFAN-CL model into the public domain, in view of its increasing application to stock assessment, the group recommended that funding be sought to make this possible. A report of the WG is attached to the meeting report.

The Second Ocean Atlas Users Workshop was held on 14 August 2001. This workshop was chaired by Dave Foley (University of Hawaii/JIMAR), and open to all SCTB participants. The aim of the workshop was to refine project goals and enhance the utilisation of the end products of this atlas, currently being developed by the NMFS Fisheries Research Laboratory in Honolulu, and the University of Hawaii Pelagic Fisheries Research Laboratory. A report of the workshop is appended to the meeting report.

The meeting was also provided with an update of the Preparatory Conference (PrepCon) process, in particular the expected requests for the provision of interim scientific advice and other information by SCTB.

Procedures for providing such information were agreed, and a continuing role for a small working group in co-ordinating the provision of such advice was noted. Some concern was expressed over the reduced role of the SCTB in the provision of scientific advice in this process.

The SCTB Chairman and Working Group and Research Group Coordinators for SCTB14 were as follows:

SCTB Chairman: Mr Bernard Thoulag

Albacore RG: Dr Talbot Murray

Skipjack RG: Dr Gary Sakagawa

Yellowfin RG: Dr Robert Campbell

Bigeye RG: Dr Chi-Lu Sun

Billfish and Bycatch RG: Mr Paul Dalzell

Statistics WG: Mr Tim Lawson

Methods WG: Dr John Sibert

Fishing Technology WG: Mr David Itano

FOOD SECURITY AND FISHERIES

Why is food security an issue for fishery resources? Simply put, too many people are harvesting a rapidly diminishing supply of living aquatic resources. This resource is one of our last remaining common properties.

In half a century, we have overharvested what was felt in 1950 to be an unlimited supply of seafood. The result is that many species that once were abundant food sources, such as cod and haddock in the North Atlantic, are now in short supply.

As common species were depleted, new areas and species were located by 'in-vogue' exploratory fishing; these species usually suffered the same fate. More efficient gear on an increasing numbers of fishing vessels overcapitalized the industry and over-harvested resources worldwide.

It is interesting that most sea life is concentrated near the coasts, just as most human populations are concentrated near coastal areas or on rivers that lead to them. The trend in human migration, now and through history, is toward coastal areas. One third of the world's human population inhabit coastal areas. Ingress of people, with their multitude of effluents, has had a direct effect on coastal aquatic life. We have dubbed this 'pollution,' the cause being industrial, agricultural, and urban runoffs and discharges. Further consequence have been due to hunting and gathering (e.g. fishing) and natural phenomena (e.g. El Niño/La Niña).

The population explosion, with many nations doubling their population in only a quarter century, along with this migration toward the coasts, exacerbates an already critical scenario. Hence, sustainability of fishery resources is directly related to human population pressures. Management of coasts with their special physical and biotic attributes became one of the major challenges by the end of this last century. Unfortunately, what has often happened is insufficient coordination between efforts to develop the coastal zone and efforts by the harvesting sector to manage the fisheries — we are our own worst enemy.

The complex physical characteristics of coasts (bays, estuaries, and continental shelf) provide a home to 80 percent of living marine species, at some stage of their life cycle. Offshore adult populations may not be directly affected by human coastal activity; however, these coastal activities can bc disastrous to the larval and juvenile populations. Coastal degradation reduces larval/juvenile survival and offshore harvesting reduces the breeding adults. The results arc obvious.

World fisheries

In 1997, the total world fish harvest was estimated to be 122 million metric tons; in 1998 it had decreased 4 percent. Capture fisheries (the harvest and utilisation of natural stocks) accounted for 85 percent of the harvest. At the end of the 20th century, the United Nations' Food and Agriculture Organization (FAO) estimated that 70 percent of the world 's fishery resources were either fully or overexploited.

Over 50 percent of the world harvest comes from waters of developing countries, and over half of that is caught by artisanal fishers. These fishers are in competition for an ever-decreasing supply of fish.

Factory trawlers became common in the 1960s and 70s, severely depleting stocks in the most productive areas. This led coastal nations to establish exclusive economic zones (EEZ), giving jurisdiction over waters 200 miles from their coasts. The US declared its EEZ with the passage of the Magnuson Fisheries Conservation and Management Act in 1976. Nevertheless in 1996, 20 years later, the Sustainable Fisheries Act was passed recognising that our fisheries resources had not been sustained and were rapidly declining.

The real issue is what level is actually sustainable. If the overexploitation of natural fish stocks, environmental degradation and the destruction of oceanic, coastal, and freshwater habitats which is currently underway in many parts of the world is not curtailed, the yield from natural stocks will continue to be reduced, and in somc areas even eliminated. In the US, rebuilding stocks is now the charge, with management forced toward a precautionary approach, thus limiting harvests to levels lower than desired by industry.

Fishery products are the world's most important source of animal protein, particularly important to the poorer segments of coastal society. Fish contribute more animal protein for human consumption than beef and poultry combined.

For many people in developing countries, fish provide more than 40 percent of their basic needs for animal protein, and often is the cheapest or only affordable source of this vital nutrient. Of the over 25,000 species of fish, only a few species are harvested for direct human consumption. More than 15 percent of the world

harvest is used for other purposes (e.g. meal and oil). In US waters, the US National Marine Fisheries Service's publication Our Living Oceans lists only 904 species involved in the 41 fishery management plans that regulate US marine fisheries. This is insufficient information for management for over 60 percent of these species.

Role of aquaculture

Aquaculture (the controlled culture of freshwater and marine organisms) has been a significant method of producing fish for over a thousand years. Aquaculture now accounts for nearly 20 percent of the total world harvest. But, until recently, aquaculture has depended largely on trial and error, and the basic parameters for production are poorly understood.

Carp and a few salmonid species dominate fish culture worldwide, and penaeid shrimp dominate invertebrate culture. Only a handful of marine fish species are successfully cultured, with significant advances in ornamental species. Much of marine culture is actually in brackish water, with shrimp and milkfish being good examples.

Annual world aquaculture production doubled from 10 to 20 million metric tons in just over a decade (some of this is an artifact of better reporting from China).

Due to the rapidly increasing human population, worldwide demand for fish continues to exceed production. Assuming that production from natural stocks remains static, any increase will have to be from aquaculture.

The price of fishery products continues to rise, with some being truly excessive. A recent report from Tokyo tells of a single bluefin tuna selling for USD 173,000. In Jamaica, tilapia (a group of freshwater fish native to Africa) are marketed as "Caribbean red snapper," demonstrating marketing techniques for capitalizing on the short supply of a popular, high market-value native species. In contrast, in countries such as Eritrea where most fishery products remain in the country, the market cost of all species, whether lobster, tuna, or lizardfish is the same (USD 0.50 per pound in 1996 *[Ed: 1 pound = 0.454 kg])*.

Fish farm yield is increasing due to research in bioengineering (genetics), nutrition, disease control, and reproductive physiology. However, in some countries, these increasing yields have had major effects on coastal ecosystems, causing pollution and altering physical surroundings. Shrimp farming is a major culprit, as seen in Ecuador and Taiwan. In Ecuador, vast acreage of mangroves (a primary wild shrimp nursery) has been destroyed.

In southern Taiwan, milkfish ponds were converted for shrimp farming affecting the surrounding ecosystems, i.e., to make brackish conditions necessary for shrimp farming, freshwater is extracted from the water table to dilute seawater in the milkfish ponds. In both cases, and in most other locations where shrimp farming has been practiced, the immense profits initially gained by shrimp farming suddenly turn to losses due to disease. However, today, with increased attention to disease prevention, shrimp production is again on the rise.

The food chain

Marine ecosystems are extremely complex, habitats vary widely and are influenced by many factors (e.g. climate, ocean currents, and water column and substrate characteristics). Marine creatures have evolved to protect themselves from predators. Understanding predator–prey interactions is indeed understanding the food chain, an area greatly studied. Species location and concentration also drive the food chain. Upwelling off western Africa and the eastern Pacific provides nutrients for algal production, which in turn attracts small fish (sardines or anchovies), then larger pelagic fish (mackerel and small tunas), and ultimately the apex of the chain (e.g. tuna and sharks). As we fish out larger fish, we are fishing more and more down the food chain to lower trophic levels.

Possible solutions

Efforts to protect the marine habitat have increased in the last decade. Restrictions on coastal development activities have been in place in the US for several decades, but this is not generally true in developing countries. Protection of mangroves and coral reefs is recent, occurring only after their importance was recognized, and it became clear that a significant percentage is being lost.

One cause of overfishing is better technology and a better understanding of marine processes. An obvious solution is to

restrict harvests (e.g. number of fishing vessels) and to close areas where reproduction occurs, or that are required for larval survival. Reserves and marine protected areas (MPAs) have been established to do this. These zones limit fishing to specific areas, thus removing the element of time or season from management decisions.

However, use of MPAs as a fisheries management tool is somewhat new. A Presidential Executive Order to coordinate US national MPAs was just signed to coordinate work on state MPAs. However, for some states such as California that already have 100+ marine reserves, this is nothing new. Several developing countries are also using MPAs to improve their fisheries stocks.

One effort of resource protection that has been very successful is the protection of turtle nesting beaches. In most cases, this has successfully limited egg harvesting by coastal communities.

An example is in Central America where there are large concentrations of nesting turtles, where on some beaches hundreds to even thousands of nesting turtles arrive, e.g. La Fleur on the Pacific coast of Nicaragua. In contrast, where this strategy is not being used, green turtles are harvested for meat on the Miskito (Caribbean) coast of Nicaragua. Recent estimates indicate 14,000 large adult turtles are harvested per year. This practice is unlikely to be sustainable.

Socioeconomic factors

The economies of all nations are somewhat dependent on fish, shellfish, and aquatic plant life. This is especially true for those countries still developing their economic potential.

Living aquatic resources, especially fish, are essential to income generation in much of the developing world. A minimum of 15 million people are estimated to engage directly in fishing, and many millions more are employed in associated processing and manufacturing activities.

In Southeast Asia and the South Pacific, there are an estimated four million fishers. There are more than a million fish farmers in Indonesia alone. In many countries, fisheries represent more than 25 percent of the employment in the agriculture/food production sector, and in some countries fishers earn significantly more than farmers.

In many countries, destructive fishing practices (dynamite and cyanide fishing) have developed from pressures to feed the family or produce at least limited income.

The economies of many nations are largely dependent on the presence or absence of social conflicts. Though probably not the rule, locations such as the southern Red Sea and Caribbean Central America, where long-term wars have occupied the energies of Eritrea and Nicaragua potential, fish populations were able to increase.

However, in the case of lobster harvesting in Nicaragua, there is still constant illegal fishing by Honduran fishers, sometimes resulting in armed conflicts.

Development assistance

A prime culprit for the current state of depleted world fish stocks could actually be the effort to develop the fishery sector. Many assistance efforts by development banks and international donors focused on increasing harvests. It was only five years ago the US Agency for International Development (USAID) changed its approach from increasing harvests to increasing sustainability. It is fair to say that the majority of assistance programs concentrate their efforts on aquaculture, rather than on building vessels and using more efficient gear.

The future

Worldwide, demand for fish will continue to significantly exceed supply unless there is proper management to ensure sustainable yields from natural stocks. In concert, there must be efforts to reduce/eliminate environmental degradation and habitat destruction, as well as to develop and transfer technology to increase mariculture production. Although this is a worldwide problem, the impact of this deficit will be most seriously felt in developing countries where the loss of food and employment from fisheries-related activities could be catastrophic.

The bottom line is that the earth 's population, already at 6 billion, will continue to increase. Pressures on coastal fisheries will continue to increase. Even with efforts to restore traditional fisheries, it is unlikely that wild stocks can increase much above their current level. Mariculture will continue to

increase, both in numbers of species and level of harvest, but environmental effects will offset production by effects on natural stocks. It is likely that limited entry through limiting licenses and ownership of sub-tidal coastal areas will increase in developed countries. Land for aquaculture, for both marine and freshwater, will continue to increased, but with competing use demands. Only through development of intensive culture methods, after solving associated disease and feed issues, can higher levels of aquaculture production be expected. Frankly, most developing nations that have traditionally depended on fish and fishing can look forward to experiencing some level of desperation (already seen in the Philippines).

Currently, progress towards food security is likely to be limited to developed nations that have the means to make major investments toward this goal. Hopefully, in time, the techniques developed can be rapidly adapted to developing countries to quicken the pace of achieving sustainability, thus food security.

(Source: Lamarr B. Trott, Deputy Director of the Office of Science and Technology of the U.S. National Marine Fisheries Service, and published in *INTERCOAST* #38 • Winter 2001)

HELPING COASTAL COMMUNITIES IN THE PHILIPPINES

The Asian Development Bank (ADB) will provide a USD 598,000 technical assistance grant to the Philippines for two studies to help coastal communities. One will be a policy and institutional study and the other a feasibility study to formulate a project. The grant is from ADB's Japan Special Fund, financed by the Government of Japan.

The studies will prepare a program to provide jobs and improve social services for impoverished coastal communities as well as reverse coastal degradation. About 60 percent of the country's population and 70 percent of its 1525 municipalities are in coastal areas, many of which are beset by poverty as well as resource and habitat degradation. Fishing has become an occupation of last resort for many poor.

The studies will:

- enhance a national coastal resource management policy framework;
- formulate a time frame and program for implementing a national policy;
- analyze the roles, responsibilities, and capabilities of national and local agencies, coastal communities, the private sector, and non-governmental organizations (NGOs) in coastal resource management;
- estimate the costs and benefits for a proposed integrated coastal resource management program; and
- conduct a participatory poverty analysis and socioeconomic assessment in 5-6 coastal communities.

The program will adopt a participatory, community-based, and site-specific approach to reduce poverty in coastal communities by providing jobs and social services. It will also promote sustainable management of coastal resources and related ecosystems, conserve globally significant biodiversity, and control pollution. In addition, the program will enhance coastal resource management and the social development capabilities of government agencies, the private sector, NGOs and local communities.

ADB will finance 45 percent of the total cost of USD 1.33 million. Because of the global significance of the program's biodiversity component, the GEF will provide a USD 335,000 grant that will be administered by ADB. The Philippine government will finance the balance.

(Source: Dev-Zone Pacific Development Practitioners Update • 17 October 2001)

SEA FARMING ASSOCIATION APPROVES OCTOPUS FARM

Japan Sea Farming Association has recommenced an experimental octopus farming programme designed to spawn juveniles of seven parent octopus and rear them at Yashima Farming Station in Takamatsu.

Last spring the station achieved the survival of 75 per cent of spawned juvenile octopus and reared them for 25 days. Globally, this was the first time this had ever been accomplished.

As many as 16 million juveniles grew to the stage of having 20 sucking disks each, the same number a parent octopus has. However, most of them perished within three months.

"There were still some problems to solve in regard to the feed and the flow of water," said a scientist of the station. The goal of the resumed experimental farming programme is to achieve the complete process of octopus farming through mass seed-production and improvement of rearing conditions.

There is growing anticipation for the programme's success among the people involved. The spokesperson said: "If we succeed in rearing the octopus for approximately six months, we can anticipate that it will grow to 1 kg, the size fit for shipment."

(Source: Haruo Chiba, FIS Japan, from the international fisheries website www.fis.com.)

FISHING, TURTLES AND THE LAW: RECENT EVENTS IN THE HAWAII-BASED LONGLINE FISHERY

by Paul Dalzell,
Western Pacific Regional Fishery Management Council,
Honolulu, Hawaii

Introduction

In the April-June 2000 issue of the Fisheries Newsletter #93, there was an update on the changes to the Hawaii-based longline fishery as a result of successful legal action against the National Marine Fisheries Service (NMFS). The focus of this litigation was interactions between Hawaii-based longline vessels and certain species of marine turtles, particularly green, leatherback, olive ridley and loggerhead. The plaintiffs—conservation organisations—successfully argued that NMFS had not properly assessed the impact of the Hawaii longline fishery on populations of Pacific marine turtles.

As a result of this litigation, a federal judge imposed severe constraints on US longline vessels based in Hawaii. The judge's order, effective 4 August 2000, closed a large area of ocean to the north of Hawaii to all longline fishing and effectively stopped shallow set longline fishing for swordfish, or a mix of swordfish and tuna, apart from a limited number of sets.

The order also required an increase in observer coverage from 5% to 20% and required that any "profits" from swordfish sales be donated to charity. Finally, the judge's order also closed all longline fishing between 15 March and 31 May, or until NMFS completed of an Environmental Impact Statement (EIS).

A primer on US environmental statutes

Under the National Environmental Policy Act (NEPA), federal policies, laws and regulations must be assessed with respect to their impact on the environment. This includes an analysis of the impacts of proposed action and also of alternatives to proposed action. NMFS began drafting the EIS during November 2000; however, matters were complicated due to further action under another federal statute, the Endangered Species Act (ESA).

All Pacific marine turtles are listed as either threatened or endangered under the provisions of the ESA. Periodic assessments of impacts of federally regulated activities on listed species must be conducted under the provisions of Section 7 of the ESA. These assessments are a consultation process, either between federal agencies, where the responsibility for the endangered species does not rest with the regulating agency, or within an agency, which both regulates the activity and has responsibility for the listed species. In the case of turtles, the Section 7 consultation was between different branches of NMFS concerned with fishery management and protection of ESA listed species.

The result of a Section 7 consultation is a document termed a biological opinion or BiOp, which assesses the risk to the continued existence of the listed specie(s). If the risk is serious, the BiOp delivers a jeopardy opinion and can impose measures to reduce these impacts.

Unlike NEPA and the EIS process, the development of a BiOp has no "transparency" requirement; that is, it has no requirement to elicit public comment, nor is it required to develop a series of alternative actions and assess the impacts of each. Further, the measures developed under a Section 7 consultation to reduce jeopardy carry with them a legal obligation, and once finalised, an agency has to comply with the directives therein.

The need for a Section 7 consultation in 2000 was triggered by a NMFS scientific report, which indicated that the estimated fishery induced mortality of olive ridley turtles exceeded the limits established previously by a 1998 Section 7 consultation.

The NMFS Office of Protected Resources decided to re-initiate consultation in 2000 on Hawaii longline fishery impacts on protected species, with emphasis on turtles. This complicated the development of the EIS because it needed to refer to the, as yet unpublished, BiOp that would result from the re-initiated consultation when analyzing the alternatives for minimizing fishery impacts on turtles. The development of the EIS and BiOp proceeded during the last months of 2000 and the first quarter of 2001.

A draft EIS was published in early December 2000, but was flawed since BiOp measures were unknown, and which were crucial to the whole process. Indeed, it became a desperate

race to finish the EIS by 1 April 2001, with the final form of the measures in the Section 7 consultation emerging by the last week of March.

Outcome

While the race to finalise the EIS was taking place, the Hawaii longline fishery closed on 15 March 2001, following the terms of the August 2000 court order. Fortunately, the EIS was completed and published on 30 March 2001, with the Section 7 consultation document released the day before. So what happened next?

The parties in litigation met with the judge and agreed to move forward with the preferred alternative in the EIS, which simply mirrored the recommended measures from the Section 7 consultation document. The court modified its injunction once again, which allowed the longline fishery to re-open and operate under the preferred alternative in the EIS, which meant the following for longline vessels under the jurisdiction of the Western Pacific Fishery Council:

- A ban on the harvest of Pacific swordfish using longline gear north of the equator by US longline vessels under Council jurisdiction.

- Configuration of longline gear for Council-regulated US longline longliners fishing north of the equator in a manner consistent with targeting tuna. This includes a minimum of 15 branch lines set between any two floats, a minimum set depth between floats of 100 m (328.1 ft or 54.6 fm) below the sea surface, a float line length of 20 m (65.6 ft or 10.9 fm) and a ban on the possession of light sticks.

- A time area closure in waters bounded on the south by the equator, by 15°N, by 145°W and by 180°W for all longline vessels between 01 April through 31 May.

- Annual certification of completion of a NMFS protected species workshop.

- Possession of line clippers, bolt cutters and a dip net, and specified sea turtle handling and resuscitation requirements.

The Hawaii Longline Association launched its own legal action against NMFS in April this year to have the 29 March BiOp overturned, claiming that the jeopardy opinion was arbitrary and capricious. Because the BiOp underpins the EIS this meant the current management regime could shift back more or less to the status quo prior to 2000.

Not surprisingly, in May the conservation advocacy organizations who were the plaintiffs in the law suit have also launched a suit claiming that the BiOp did not go far enough to reduce the impact on turtles. The two suits have been combined and are in the process of being heard in a Washington DC court, rather than in Hawaii.

Another suit was also been filed against NMFS in May by several conservation advocacy organizations, including one involved in the Hawaii litigation, for failing to take action under the ESA regarding turtle interactions with longline vessels operating out of California. These vessels are forbidden under California law from landing fish caught by pelagic longline off the US West Coast, but not from high seas catches.

The California-based fishery was a relatively small fishery of less than 10 vessels that swelled seasonally with an influx of swordfish longliners from Hawaii. The ban on swordfish longline fishing forced many of the Hawaii-based vessels to relocate to California as a matter of economic survival. This case will be of particular interest since the California fleet is currently not managed under a pelagics fishery management plan, although the Pacific Council is developing such a plan. The fishery presently operates under a permit issued by NMFS in accordance with the High Seas Fishery Compliance Act.

The Hawaii Longline Association (HLA) also filed a 60-day notice of intent to sue NMFS and the State of Hawaii in June for not enforcing the ESA with respect to recreational fishery takes of turtles in Hawaii. This suit refers to the hooking of green turtles around the Main Hawaiian Islands by shoreline anglers, particularly those targeting jacks or trevallies. In a recent article in Hawaii Fishing News (August 2001), comments by HLA member Jim Cook revealed that his organization felt compelled to take this action in order to draw attention to what they perceive as an attack on commercial longlining by conservation advocacy organizations. Cook noted that “the failure of these groups to address the obvious and overt take of green turtles occurring in the recreational fishery calls into question their motives for seeking to eliminate a commercial fishery that has far less impact on this species”.

To complete this blizzard of litigation, HLA also filed another 60-day notice of intent to sue NMFS and the US Fish & Wildlife Service (USFWS) over a November 2000 USFWS biolog-

ical opinion that required mandatory mitigation measures to reduce the risk of longline fishing to the short-tail albatross when fishing above 23° N.

Consequences

The results of these measures have been to eliminate shallow set swordfish longline fishing in Hawaii. About 40 longline vessels, which made shallow sets to target swordfish or a mix of swords and tuna, had to tie up, sell up, or move to California, beyond the jurisdiction of the Council. The move to California resulted in vessels with Hawaii limited entry longline permits to decouple their vessels from these permits, which meant they could no longer land their catches in Hawaii.

The fate of these California-based vessels will ultimately depend on the outcome of that law suit, and on the final outcome of the Pacific Council's Pelagics Fishery Management Plans.

The effect of the loss of about 40 vessels from Hawaii has meant that catches by the longline fleet will be reduced by about a third in 2001. The remaining 87 longline vessels targeting tuna have continued fishing but were subject to the area closure below 15° N between April and May, a period of usually good catch rates for yellowfin and bigeye tunas in these latitudes.

The EIS analyses contain estimates that the economic loss of the swordfish fishery to be as high as $22 million a year to the State of Hawaii. A few boats have re-geared to target tuna, but the majority of boats either left Hawaii for California, or were tied up in Hawaii and put on the market for sale.

A few boats have also decided to try their luck fishing in Fiji, placing themselves beyond US law. Some vessels have been bought up by entrepreneurs in American Samoa, fueling the expansion of the longline fishery based in Pago Pago. This fishery expanded significantly in 2001, with numbers of both the small vessel alia fleet and the larger conventional monohull longliners increasing markedly.

Most of the major provisions of the 29 March BiOp do not apply to longline vessels operating south of the equator, but the American Samoa fleet will have to conform to some measures for turtles including: annual certification of completion of a NMFS protected species workshop; possession of line clippers, bolt cutters and a dip net; and specified sea turtle handling and resuscitation requirements.

NMFS is also tasked with developing an observer programme for American Samoan vessels, which will present some special challenges for the alia fleet, many of which are two to three man operations on 30 ft vessels.

The shallow setting ban north of the equator may also have a negative impact on the development of a domestic longline fleet in Guam and the Northern Mariana Islands. Shallow sets are used in these more tropical latitudes to target yellowfin, but such a style of fishing is now denied to the fishermen of these islands.

Ironically, Japanese and Taiwanese longline vessels, which transship fish through Guam to the Japanese sashimi market, fish for yellowfin tuna in this manner.

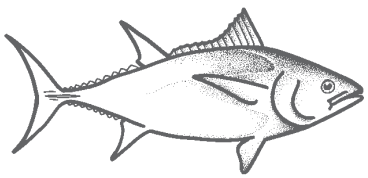
This fact was not lost on Guam fishermen and Council members who feel that they are being penalised unfairly, given that there is little information on turtle–longline interactions in the far western Pacific.

No one knows for sure how everything will turn out in the next 12 months. The conservation advocacy organizations involved in the present litigation may turn their attention to the American Samoa longline fishery, extending further the plethora of law suits involving longline fishing in this region.

The future shape of pelagic fishery management will depend largely on the outcome of the various law suits. It is clear, however, that fishery management council jurisdiction and authority can be seriously undermined through litigation, particularly under the powerful ESA, where the objective is to save species at any cost, regardless of the consequences, and where there is no requirement for public consultation.

In this, the Western Pacific region has joined the rest of the USA with respect to the way fishery management is conducted. and the law suits mentioned herein are just part of 110 legal actions pending against the National Marine Fisheries Service.

[Note from Ed: this article is a follow-up on the article written by Paul, which was published in the SPC Fisheries Newsletter *#93, pp. 23–27])*



FIJI ISLANDS EXPORTS FISHING TECHNOLOGY

by Steve Beverly,
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Fiji has much to offer other Pacific Island countries and territories that are developing commercial longline fishing fleets. Aside from Hawaii, Fiji has been in the business and has been a forerunner in commercial tuna longline fishing longer than anywhere else in the Pacific. The longline fleet started developing there in 1988 and has continued to grow ever since. Fiji is one of the main exporters of tuna from the Pacific to Japan and USA.

There are close to a hundred vessels in Fiji and the annual catch is approaching 7000 tonnes. Tuna has become one of the main earners of export currency for Fiji and the revenue from tuna has fuelled many other industries including: fish processing, vessel repairs, ship building, longline reel manufacturing, and manufacturing of export fish cartons.

On a recent trip to Fiji to inspect a new longline vessel under construction, I had an opportunity to visit some of the companies that are exporting or who have the potential to export their products and technology to other countries in the region. I accompanied Mr Pita Mourin and Mr Stephane Gil of Sodefish (New Caledonia) on this trip during August.

The first stop was Alloy Fabricators in Lami, just outside of Suva. The managing director of Alloy Fabricators, Mr Colin Dunlop, is a naval architect who drew the plans for a new longliner that will be delivered to Mr Mourin's company, Sodefish. The longliner will be used for tuna and swordfish longline fishing in New Caledonia. Because it will be operating in a French territory, the new vessel must pass a Bureau Veritas survey and must comply with all regulations in New Caledonia. The design of the new longline boat is called the Warren 18 metre longliner (Figs. 1 and 2).

Alloy Fabricators has been working closely with Mr Rudy Roy, Inspecteur de la sécurité des navires for Services des Affaires Maritimes de la Marine Marchande et des Pêches Maritimes en Nouvelle-Calédonie, and Mr Willy Hanssler, Expert Principal of Bureau Veritas (Tahiti), to ensure the new vessel complies with every stringent French regulation. Upon completion, the Warren 18 will be in survey to operate in a French territory. This is generally a long and tedious process, and can also be expensive as it requires several visits by surveyors, all paid for by the boat owner. In the future, it will be much easier for Alloy Fabrica-tors to build boats to Bureau Veritas survey as they have already gone through the process. This will result in substantial savings for anyone purchasing a boat to be delivered to a French territory.

The Warren 18 will be equipped with a Seamech Smart Reel. Seamech Hydraulic Shop in Walu Bay has been manufacturing longline reels and line setters for several years. Their original design was a two-motor reel made entirely of steel. The old model has been discontinued. The latest design from Ross Brodie's shop is a single-motor reel made entirely from aluminium (Fig. 3).

The new Smart Reel has many design innovations that make it one of the best reels available on the market. The new design line setter from Seamech is also very innovative. The mainline is pulled from the reel by a belt rather than a power wheel, resulting in a very smooth operation.

Steve Beverly

Figure 1: Warren 18 metre longliner under construction

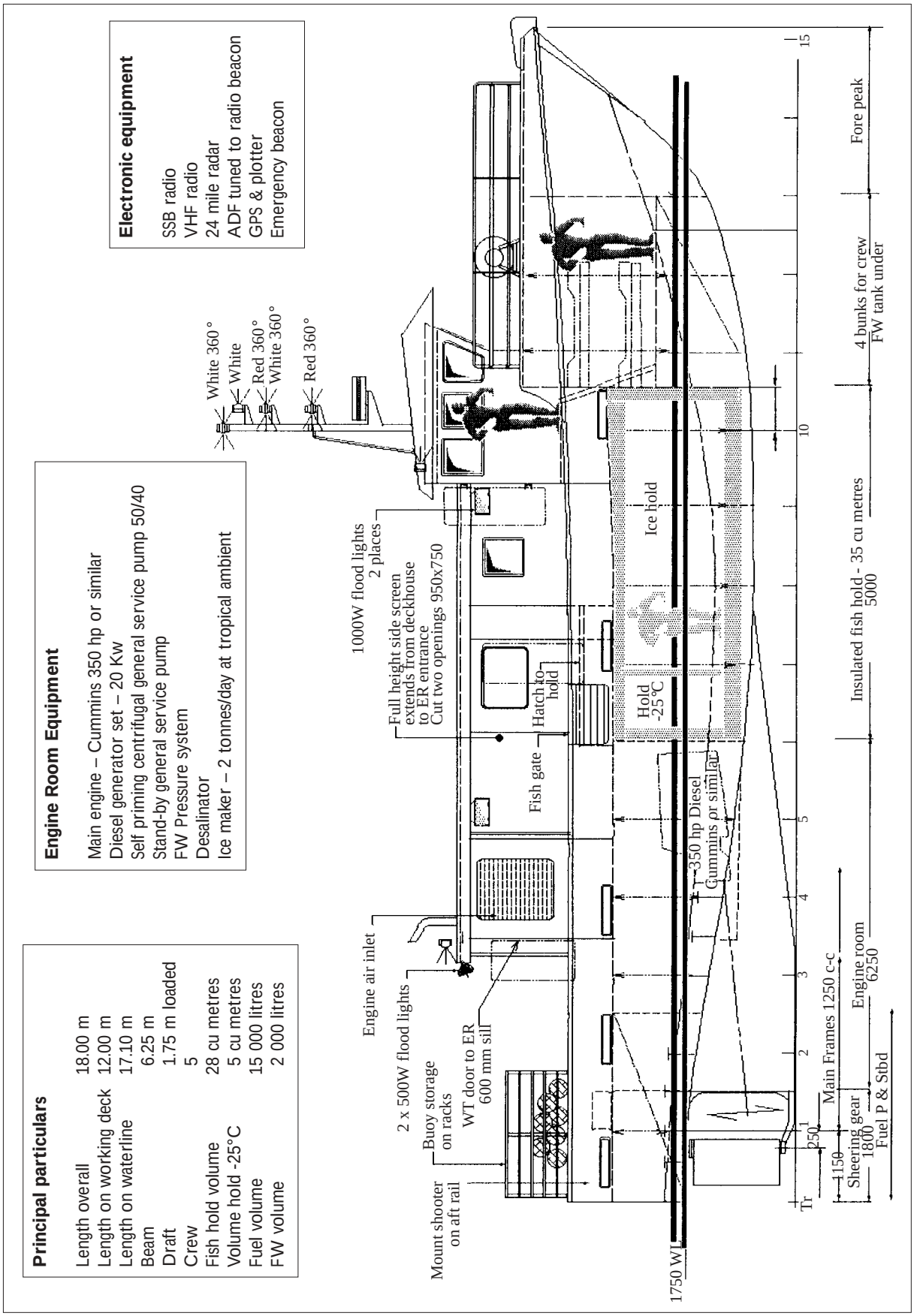

Figure 2: Line drawings of Warren 18 (from Colin C. Dunlop, Naval Architect)

Figure 4 shows Ross Brodie and his son, Shane, demonstrating a recently installed monofilament longline system on one of the many new longline boats from China that will be operating in Fiji. Seamech has provided many systems to Fiji vessels and has exported reels and line setters to Kiribati, Samoa, and Tahiti. The Warren 18 will be equipped with the first Smart Reel to arrive in New Caledonia.

Another naval architect, Chris Tsantikos of Bluewater Craft, has designed and built several small fishing vessels for Fiji and Tahiti (see *Fisheries Newsletter #91*). His latest project is building two barges for Australian companies operating in Fiji (Fig. 5).

One barge will be motorised and the other will be towed by a tug boat that was also built by Bluewater Craft. The barges are being built on the bank of the Navua River about 30 minutes drive from Suva. Mr Tsantikos is looking for more export markets for his boats and barges.

One of the pioneers in manufacturing products used for the fresh fish export business in the Pacific is Golden Manufacturers Ltd, which produces fish export cartons. Golden Manufacturing has been producing cartons for Fiji Fish Marketing Group, Celtrock Holdings, and Solander Pacific, among others, for several years. Golden has recently been exporting fish cartons to New Caledonia. It is very important that fish cartons comply with all airline regulations. Cartons containing fresh fish and gel-ice packs must be certified as being "wetlock" cartons, ie, liquid can not leak out and get into the cargo hold of the airplane. Golden Manufacturing produces a unique "wetlock" carton that has a folded cardboard liner that is waxed (Figs. 6 and 7).

Figure 3 (top): Seamech Smart Reel
Figure 4 (middle): Ross and Shane Brodie of Seamech Hydraulics demonstrate a new Smart Reel longline system
Figure 5 (bottom): One of the barges being built by Bluewater Craft

(All photos taken by Steve Beverly)

Anyone wishing to get into the fresh tuna longline fishery would do well to pay a visit to Fiji Islands to see how it is done and find a good source for boats, longline systems, and export materials. Contacts for the above companies can be found in SPC's Fisheries Address Book, which is available at SPC's website:

http://www.spc.int/coastfish

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Figure 6: Golden Manufacturing "wetlock" fish carton

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Figure 7: The folded "wetlock" liner

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