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POST-HARVEST SECTION (Paper prepared by the Secretariat)

GENERAL

1. A post-harvest technical and advisory service has been a component part of the Coastal Fisheries Programme (CFP) since 1986. The Fish Handling and Processing Project (FHPP), as the main functional project was then known, terminated in August 1994. The FHPP was established with the objectives of supporting SPC member countries and territories in their efforts to increase the value of fish and fishery products, reduce losses, enhance the income of fishers, seafood traders and processors, and, help reduce health problems associated with the consumption of improperly handled and processed seafood. For most of its existence the FHPP was funded by the UK Government.
2. A Post-harvest fisheries technical service to the region is currently provided under the Integrated Coastal Fisheries Management Project (ICFMaP). The Post-harvest Section (PHS) and the Resource Assessment Section of the CFP are linked together into this one project. ICFMaP aims to optimise the production from Pacific Island inshore fisheries through better resource management, while simultaneously fostering the generation of greater economic returns through more efficient and effective post-harvest handling, processing and marketing of coastal resources. The project started in September 1994 and is scheduled to last for three years (to August 1997). It is financed by the UK Government.
3. ICFMaP will, over its life, provide assistance to develop a minimum of six national resource management plans. The first year of the project was used to collect information and data and organise a regional workshop on Inshore Fisheries Management. This important workshop was held in June 1995. The remaining two years of the project is allocated to completing the national resource management plans in six selected Pacific Island countries. The PHS's role under ICFMaP is to support fishery development objectives of member countries and territories by providing specialist advice and training to ensure that harvested marine resources are exploited and utilised in a wise and sustainable manner to the full benefit of Pacific Island communities.

4. In 1994 changes were made to two other projects that operated within the remit of the PHS. First, the Women's Fisheries Development Project (WFDP) was at the time of the last RTMF only active to the extent that it provided support to the Canadian funded Women-in-Fisheries Support Project for Papua New Guinea. By mid-1994 Canadian funding for the WFDP was reinstated, and the Women's Fisheries Development Section created within the Coastal Fisheries Programme on the appointment of the new Women's Fisheries Development Officer in early 1995. The PHS continues to work closely with this Section to assist with sub-project activities.

5. Second, the project for establishing a Regional Post-harvest Fisheries Centre was terminated because the Commission was unable to secure the necessary funds. A modified approach was accepted by the 25th RTMF in March 1994. The agreed approach was to follow a lower cost path in which some of the component parts of the original project were shared out between the Marine Studies Programme at USP and SPC Coastal Fisheries Programme. This approach was endorsed by the South Pacific Conference later the same year and includes dropping two professional and one secretarial positions and replacing them with a single professional officer (Post-harvest Fisheries Officer) and a Project Assistant (see later).

6. The current staff complement of the Section is a single professional officer, the Post-harvest Fisheries Adviser and a Project Assistant. The approved position of Post-harvest Fisheries Officer remains vacant while the Commission continues to seek funds from a suitable donor. The Section operates under the supervision of the Post-harvest Fisheries Adviser.

7. This Information Paper provides details of the PHS's activities under the FHPP not previously reported since the last RTMF, and, activities under the UK funded ICFMaP.

OBJECTIVES

8. The current development objective of the PHS is to secure better value and returns for harvested marine resources for urban, rural and outer-island dwellers. This will be done through the introduction of new and improved seafood processing/packaging technologies, quality assurance techniques and the provision of marketing advice, with full considerations given to sustainable development and environmental protection. More specifically the Section's objectives are:

- to increase the value of fishery products through improved fish handling practices and processing and marketing procedures at all levels in national fishing industries through programmes of training and information dissemination;
- to promote the full utilisation of harvested resources by identifying appropriate trade opportunities and providing technical assistance and advice on how to increase the value of seafood, by-catch fish species, etc., and to turn processing "waste" into saleable by-products;
- to reduce health problems associated with the consumption of improperly handled and preserved seafood through the development of hygienic fish handling and processing practices, together with the promotion of greater public awareness of seafood hygiene issues;
- to advise on appropriate infrastructure, equipment and materials for the handling processing and trade of fresh and processed seafood and seafood products.

ACTIVITIES

9. The PHS's efforts in providing a technical and advisory service to its members is described in some detail below. In addition to these activities PHS provides technical advice and information in response to enquiries originating from member countries and territories. This is an important and valuable service which requires continued updating of information from various sources, including suppliers of seafood handling and processing equipment and materials, new product ideas and technical innovations, and keeping abreast of changes in seafood product regulations in other parts of the world that may have an impact on the region.

Training

Post-harvest Fisheries Training Project

10. In early 1994 member states were offered the opportunity to organise and run another series of in-country workshops for fishers and fish traders, under the Canadian funded Post-harvest Fisheries Training Project, which is jointly executed by the Post-harvest and Fisheries Training Sections. These in-country workshops were designed as follow-up support training activities that assisted participants of the 1992 train-trainers Regional Chilled Fish Sector Training Workshop, gain even more teaching practice and experience in organising and running a technical workshop in their own countries. Consequently, in June 1994 the Fisheries Division in the Solomon Islands ran a workshop for 12 fishers; and, in August the Ministry of Fisheries in Tonga organised two workshops, one in Ha'apai for 11 fishers and the other in Vava'u for seventeen fishers, traders and Fisheries Department staff members. This offer included the option of utilising a supporting tutor from another participating Pacific Island country. SPC therefore covered the costs of sending a tutor from the Fiji Fisheries Division to Tonga to share the teaching duties for the Ha'apai and Vava'u workshops.

11. The overall in-country training record of this Canadian funded project is 337 fishers trained in a formal workshop environment, plus 395 individuals benefiting through informal, ad hoc training, or provision of technical advice. This training was provided by the participants of the 1992 train trainers workshop.

Regional Training Workshops on the Handling, Quality Assessment and Grading of Sashimi Tuna

12. A one week Regional training workshop aimed at providing tuna handling and grading skills to individuals working in the tuna longlining industry was held in the Federated States of Micronesia in August 1995. The workshop was jointly organised by the Post-harvest, Capture and Fisheries Training Sections and funded under the Canada-South Pacific Ocean Development Program (CSPODP) from funds remaining from the Post-harvest Fisheries Training Project. The workshop was attended by sixteen participants, fourteen from the Pacific region and two from the ASEAN region.

13. The background to this initiative stems from the need to develop and improve in-country skills in an area that is often the domain of specialists from outside the region. Quality assessment and, in particular, grading, are very often carried out by graders from Japan, Taiwan or Hawaii. These skills are slowly being developed in the Pacific especially in countries, such as Fiji and Federated States of Micronesia that have had tuna longlining and exporting operations for a number of years. Other countries are just starting up their longlining ventures and need the skills to ensure that the tuna being exported overseas will be sent to the correct market where they can be sold for the best possible prices.

14. A total of ten countries were represented at the workshop – all from countries with a flourishing longlining industry or with plans already in place to establish such an industry over the next twelve months or so. The Pacific was represented by the Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Papua New Guinea, Tonga, and Western Samoa. From the ASEAN Region a participant each from Indonesia and Thailand funded their own participation.

15. The reason for encouraging ASEAN countries to participate in the workshop was part of a process of promoting links between post-harvest fisheries projects operating in the two regions. Previously, an ASEAN post-harvest fisheries project had offered training positions to the Pacific Island region. Although the training opportunity was not taken, the Coastal Fisheries Programme made a reciprocal offer that was taken up by two ASEAN member countries. Such links were established when the CFP was invited to the 3rd Meeting of the Project Steering Committee, ASEAN-Canada Fisheries Post-harvest Technology Project – Phase II in June 1994. The aim of the visit was to look at ways for developing links between the two post-harvest fisheries projects of the two neighbouring regions.

16. The workshop covered topics such as: biology of tunas and physical characteristics of tuna flesh with respect to eating quality; overview of factors affecting the quality of tuna; causes of flesh deterioration in tuna; principles of chilling; procedures for quality assessment and grading of sashimi tuna; grading of sashimi tuna (practicals); on-board handling of sashimi tuna; on-shore handling of sashimi tuna; design features of a good packing plant; packing for export; and, introduction to modern quality management procedures (HACCP – Hazard Analysis Critical Control Point, and QMP – Quality Management Program, etc.). The training workshop proved to be a highly popular with the participants even though fishing was so poor that there was insufficient fish to fully carry out the practical demonstrations.

17. The demand for training in this area is such that a national level workshop on the same subject was held in Papua New Guinea in December 1995 and a similar workshop was held in French Polynesia in May 1996. Both of these national workshops were organised by the Fisheries Training Section.

Training workshop on fish jerky manufacture in the Cook Islands

18. While the ICFMaP team was visiting the Cook Islands in November 1995 to carry out a project on the Aitutaki Lagoon Fishery Management Plan, a workshop was conducted by the PHS for the Ministry of Marine Resources (MMR) on the processing of fish jerky (marinated dried fish). The workshop took place over the period 27–30 November 1995 for entrepreneurs from Rarotonga and a number of outer islands. The source of the request came from a fish processor based on Palmerston Island. This processor had been exporting frozen parrot fish to Rarotonga for many years. In recent months he had noticed that the parrot fish catch rates were declining and concluded that the resource was being over-exploited. To allow the resource to recover, the catching of parrot fish has been restricted. However, the processor was seeking an alternative income earning activity and decided that jerky manufacture using the more abundant nearshore oceanic resources could provide a replacement export product.

19. The workshop was unfortunately affected by poor weather with no let up in the rain throughout the week. Demonstrating solar drying for making jerky was therefore impossible. However, a domestic food dryer was borrowed that allowed a series of simple demonstrations to be carried out. Much of the workshop was spent helping to develop financial plans for setting up jerky processing operations at two different outer-island sites.

In-country Integrated Coastal Fisheries Management Projects (ICFMaP) Activities

Inshore Fisheries Management Workshop – 26 June to 7 July 1995

20. During this two-week workshop one day was set aside to discuss the role that post-harvest fisheries technology can play in the resource management process. If inshore fisheries resources are to be exploited effectively, whether for subsistence or commercial purposes, then it is important that the component of the resource that is still exploitable following a resource management input, must be utilised fully, handled, distributed, processed and marketed without loss or waste, and processed to the best quality standards available. This is the only means of ensuring that harvested catches are exploited to their full potential, either to feed the local population or for commercial purposes.

- Four broad subject areas were discussed that touch on appropriate post-harvest fisheries inputs that would help bring about the Section's challenging aims described above. The subject areas were:
- provision of advice on the handling and processing of nearshore oceanic resources following management intervention to divert harvesting activities away from inshore resources;
- investigate value adding processing of conventional inshore fisheries products; investigate new/alternate product formats that can be made from under-exploited resources;
- establishing product standards, plus introduce modern quality assurance procedures for all exported seafood products; and,
- improving market and trade information to help plan and develop appropriate production and marketing strategies.

21. The meeting agreed that for significant export fisheries, such as trochus and bêche-de-mer, a comprehensive and up-to-date source of intelligence is needed on the status and forecast for their markets, particularly in East and Southeast Asia. It also stated that there is a need for a regional organisation to consider maintaining a register of international entrepreneurs and operators engaged in marine product exporting from the Pacific Islands, to improve the ability of national fisheries managers to appraise the likely compliance of companies engaged in commercial coastal fisheries; and, supported the possibility of developing a set of regional seafood quality standards plus an appropriate plan of action for introducing modern quality assurance procedures, such as HACCP or QMP, for Pacific Island nations.

Freshwater Clam (Kai) Fishery on the Ba River, Fiji

22. The resource management plan for the freshwater clam of the Ba River in the Western Division of Fiji is being conducted in co-operation with the Fiji Fisheries Division over two or three visits by various officers from the CFP. The PHS's input into the project was carried out in March 1996. A thorough bio-mass study and a household survey will be carried out at a later date, at which time the draft management plan will be finalised.

23. The post-harvest component of the project was to review and evaluate the handling, storage and marketing practices for kai; examine whether there were any public health concerns from eating Ba river kai associated with town and sugar mill effluent and agricultural run-off; and provide an evaluation of the potential and desirability for exporting kai.

24. Surveys conducted in the village and the health service community (doctors and Ministry of Health officers) suggest that there is no measurable short-term public health concern from eating kai harvested from the Ba river. This is despite the very high faecal and total coliform counts found in the flesh of the shellfish by the Institute of Applied Sciences at USP. The indication is that consumers by commonly depurating the shellfish in clean water and then cooking thoroughly are able to avoid gastro-intestinal problems. It is still unclear whether long-term consumption problems will arise because of effluent from the sugar mill or agriculture run off of fertilisers and pesticides. But, handling problems at one or two retails sites were observed in which the kai had died after being overexposed to high temperatures and direct sunlight. Extension information therefore needs to be drafted to inform sellers of such problems.

Other activities

Post-harvest Fisheries Training Video Production

25. In 1989 the PHS produced two videos on chilling fish and chill storage of fish. These were respectively called: "An Icy Tale – Chilling Fish On-board" and "A Chilling Story – Handling Fish in the Processing Plant". These videos have proved to be very popular – not only as training tools in workshops for fishers and fish traders but also as general interest videos. Funds under C-SPODP have been available for some time to add further training titles. A concerted effort was made in 1995 to clear this backlog of video production. A further four post-harvest fisheries training videos were therefore produced and distributed throughout the region in 1995. The titles of the videos are:

- A Visit to the Fish Market – better facilities for selling better seafood;
- Once Upon a Fish Stall – improved seafood selling techniques;
- On-board Handling of Sashimi Quality Tuna;
- Air-freighting of Chilled Fish.

26. The popular story approach of the two chilling videos has been repeated in the two seafood retailing videos. These are aimed at a wider audience of seafood retailers and consumers alike. These videos were filmed in Noumea and Suva.

27. The other two videos are straight technical demonstrations on how to handle tuna on board a longlining fishing vessel (the Fisheries Training Section was pivotal in producing this title) and what procedures to follow to ensure that chilled fish, including valuable sashimi tunas, arrive at the overseas markets by air-freight in the best possible condition. The on-board handling video was filmed and edited in New Caledonia, while the air-freight video was filmed and produced in Suva, Fiji.

28. It is hoped that these will be just as popular and useful as the fish chilling videos. Like the first set of videos, they were funded by the Canadian Government through the Canadian-South Pacific Ocean Development Project.

Marine resource utilisation and marketing studies

29. In response to the needs identified during the Inshore Fisheries Management Workshop described above, the first of a series of resource utilisation studies funded by UNDP under the Regional Fisheries Support and National Capacity Building Project (RFSNCBP) was undertaken at the end of 1995. The theme of the studies is Improved Utilisation and Marketing of Marine Resources from the Pacific Region.

30. The aim of the series of studies is to identify improved commercial opportunities for Pacific Island countries to utilise living marine resources in a sustainable, and environmentally responsible manner. Up to date information trade and marketing information is being gathered that will be useful for evaluating commercial opportunities. The results of the studies will be valuable to commercial operators involved in processing these specific resources, and used as appropriate in the six ICFMaP national resource management plans.

31. The first study was on "Bêche-de-mer, Sharkfins and Other Products Purchased by Chinese/Asian Traders". The report of this study will be available in the third quarter of 1996. A second study is currently under way on "The Market for Fish Jerky and Similar Value Added Dried Fish Products in Hawaii and Selected US West Coast Locations". The third study in the series, to be completed before then end of 1996 will cover shellfish (shell and meat products).

New Quality Assurance Regulations

32. The introduction of new quality assurance (QA) systems and requirements in major seafood importing countries (European Union, Canada, and in late 1997, the USA) have now become an issue of great importance to the Pacific Region. These new quality assurance systems will have an impact on all the region's exporters of fish and seafood products. A quality assurance system based on HACCP (Hazard Analysis Critical Control Point) is becoming the food industry standard all over the world for ensuring consumer safety. Seafood exporters, ranging from chilled tuna packing plants to manufacturers of processed and packaged seafood, will need to comply to these new regulations if they wish to continue trading with these countries and trading blocks.

33. These modern QA system changes the traditional method of end product inspection and analysis, to one that actively checks products at various critical steps in the processing procedure. The system has the advantage in that there is greater confidence in maintaining and meeting health safety requirements, but does put more onus on the manufacturer for carrying out the rigorous process of maintaining these checks and keeping a full record of the process. They are unfortunately costly to install, requiring technical inputs from specialists in a number of related QA fields.

34. The PHS has started an awareness campaign to inform and advise Government departments and commercial exporters of the impact these regulations will have on national fishing industries. It has been an important additional component of all recent workshops, including the Inshore Fish Management workshop and articles on HACCP have appeared in the Fisheries Newsletter. The Section has benefited from attending the "Second International Conference of Fish Inspection and Quality Control" that was held in Washington DC in May 1996. Funds are now being sought to conduct a review of the region's needs in developing an appropriate regional approach for putting in place a fisheries inspection and quality assurance system that will help meet regulations of important markets.

Fish Jerky Manufacture

35. Very little real progress has been made in the area of processing marinated dried tuna products (tuna jerky) since the 25th RTMF in 1994. In previous years the PHS, with assistance from the Australian Centre for International Agricultural Research (ACIAR), has developed improved products and processing procedures. A review of the project was presented at a technical session during the last RTMF. Only in Kiribati, Guam, FSM and the Marshall Islands are there commercial manufacturers of marinated and dried tuna/fish products. These are the same countries active in jerky processing at the time of the 1994 review. The operator in Kiribati is working towards a viable exporting business, while those operating in the Marshall Islands are successfully targeting the domestic market, utilising marlin and shark as well as tuna. The improved processing procedures developed with ACIAR's assistance have been accepted by these processors.

36. Interest in the commercial processing of fish jerky is, however, re-emerging. In addition to the request for running the fish jerky workshop in the Cook Island as previously reported, the section is receiving many requests for information and advice on how to make jerky from many parts of the Pacific. More information needs to be gathered on the market place and viability of jerky processing in the Pacific. As part of this exercise a product market investigation is taking place that will attempt to show whether the USA is a viable market for fish jerky products (see earlier section on Marine resource utilisation and marketing studies).

Establishment of a Regional Post-harvest Fisheries Centre for the Pacific

37. The project for establishing a Regional Post-harvest Fisheries Centre reported at many previous RTMFs, has been terminated. It has been replaced by two separated components of the original project, that have been divided between the Marine Studies Programme (MSP) at USP and the SPC Coastal Fisheries Programme. This new arrangement was discussed at the last RTMF and two recommendations were approved. The first of the two recommendations had the MSP assuming responsibility for formal educational teaching and some research components of the original project, while SPC retains the vocational training and applied research components. The new arrangements required USP to fund the post of the Lecturer in Post-harvest Fisheries from core sources, whilst SPC would drop the remaining positions under the old project and replace them with a Post-harvest Fisheries Officer and Project Assistant. The subsequent South Pacific Conference in October 1994 provided the final endorsement.

38. At two consecutive meetings of the Management Board of MSP held soon after the last RTMF, approval was given by the Board to establish the core-funded position of Lecturer in Post-harvest Fisheries. At the beginning of 1996 the position was filled. Furthermore, USP has succeeded in obtaining funding support from the Japanese Government for new buildings to replace the old MSP shore-side facility. A post-harvest facility is included in the building plan. Many of the functional components of the original project will be included in the new building complex.

39. Unfortunately the Commission has not had the same success as USP in finding funds to support the Post-harvest Fisheries Officer position. Funding support continues to be sought to be able to meet SPC's obligation under the new arrangements. In the meantime the PHS will work closely with the MSP's Post-harvest Fisheries teaching programme to help develop appropriate undergraduate courses, and work together on other training and research activities.

Women-in-Fisheries Support Project for Papua New Guinea

40. The C-SPODP funded Women-in-Fisheries Support Project for Papua New Guinea came to term at the end of 1994 (prior to the new WFDO taking up her post). The execution of the Project was the responsibility of the PNG Department of Fisheries and Marine Resources (now the National Fisheries Authority). PHS provided supervisory assistance to the project throughout its existence.

Publications/Reports

41. The English version of "Sea Cucumbers and Bêche-de-mer of the Tropical Pacific: A Handbook for Fishers" was distributed to member countries and territories at the end of 1994. The French version of the same very popular handbook was printed and distributed throughout the region at the end of 1995. A poster depicting live sea cucumbers and their equivalent processed bêche-de-mer in English and French was sent out at the same time.

FUTURE ACTIVITIES

In-country Resource Management Projects

42. Other ICFMaP resource management projects to be undertaken during the second half of 1996 include the development of a bêche-de-mer fishery management plan for a selected site in Papua New Guinea; assessment of resources and community-mediated fishery management plan for Fakaofu atoll in Tokelau; and a management plan for live serranid fishery of Helen Reef in Palau.

Second Regional Training Workshops on the Handling, Quality Assessment and Grading of Sashimi Tuna

43. The demand for training in tuna graders is still strong in the Pacific, even after completing one regional and two national level workshops over the last twelve months. The CFP now plans to organise a second Regional level workshop before the end of 1996. Funds from the UNDP/RFSNCBP will primarily support this activity. A venue for the workshop is yet to be decided.

Marine resource utilisation and marketing studies

44. The third study in the series on Improved Utilisation and Marketing of Marine Resources from the Pacific Region will be carried out on shell and shell meat products in the second half on 1996.

New fisheries inspection and quality assurance system for the Pacific

45. To meet new quality assurance (QA) requirements in a number of major trading destinations (e.g. USA) it will be necessary for Pacific Island seafood exporters to take on board these new, demanding and potentially costly QA systems. The PHS plans to undertake a review of fisheries inspection systems in the Pacific with the objective of developing a strategy that will start the process of upgrading quality practices throughout the Pacific region.

EVALUATION

46. Bringing the Section up to its full complement of two professional officers has been an objective of the CFP since the last RTMF. Under the current funding climate it is unlikely that this objective will be met for some time. This has to a large extent limited the full range of service that could otherwise be offered to the region. The Section's sole professional officer is committed to programmed activities under ICFMaP. However, a reasonable balance has been struck so that a number of other activities, plus a technical advisory service, have been possible. Important and useful activities such as the Regional sashimi graders workshop in FSM and the production of training videos have thus been successfully undertaken.

47. Additional teaching and research capacity within the region through the Marine Studies Programme at USP is welcome. The recruitment of a lecturer in post-harvest fisheries will allow courses on post-harvest topics to be offered to undergraduates from 1997. Some research projects are underway and one or two ad hoc training activities already planned. With post-harvest laboratories included in the plan for the new MSP building, the goal of establishing a post-harvest centre, even in a more modest format, will be realised by the beginning of 1998.

48. The introduction of new quality assurance systems and requirements in major seafood importing countries (European Union, Canada, and in late 1997, the USA) will become an issue of great importance to the Pacific Region. These new quality assurance systems will have an impact on all the region's exporters of fish and seafood products. A quality assurance system based on HACCP is becoming the food industry standard all over the world for ensuring consumer safety. Seafood exporters, ranging from chilled tuna packing plants to manufacturers of processed and packaged seafood, will need to comply to these new regulations if they wish to continue trading with these countries and trading blocks. Funds are now being sought to conduct a review of the region's needs in developing an appropriate regional approach for putting in place a fisheries inspection and quality assurance system that will help meet regulations of important markets. Once the review is completed there will be a need to provide commercial seafood operators a full range of assistance. This will include staff training, helping to establish and write up management plans, etc.

49. ICFMaP funding will come to end in August 1997. Unless the project is extended or a new project is supported by the UK Government or another donor is found the Commission will not be able to provide a service in the post-harvest fisheries area. All avenues of funding are being pursued.
