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SOUTH PACIFIC COMMISSION

TWENTY - FIFTH REGIONAL TECHNICAL MEETING ON FISHERIES (Noumea, New Caledonia, 14-18 March 1994)

SPC COASTAL FISHERIES PROGRAMME

CAPTURE SECTION ACTIVITIES AUGUST 1992 - MARCH 1994

Overview

1. This section operates under the technical supervision of the SPC Fisheries Development Adviser (FDA) and incorporates two projects, the Deep Sea Fisheries Development Project (DSFDP) and the Offshore Fisheries Development Project (OFDP). A third project, The Regional Small-Scale Purse-Seine Test Fishing Project, was dropped from the 1994 work programme on the authority of the October 1993 South Pacific Conference since it had not succeeded in attracting the required funding.
2. DSFDP staffing and operations have in the past been funded from the SPC core budget, while the OFDP is a UNDP-funded activity. Despite their different funding arrangements, the two projects work closely together and share the common focus of assisting regional capture fisheries development.
3. The DSFDP has traditionally provided the services of professional Master Fishermen (MF) on a short-term basis (usually for a few months at a time) to work in support of capture fisheries development activities in Pacific Island countries, almost always in conjunction with government departments. Much of the work of the Project has focused on development of fisheries for deep-water snappers and groupers, although the range of activities undertaken has been very wide, and has included gear development, experimental fishing, fish aggregation device (FAD) technology development, FAD programme assistance, tuna fishing, fish handling and marketing assistance and training in all these skills.
4. Until the end of 1992, core budget funding allocated to the DSFDP employed the then Fisheries Development Officer (FDO) and three Masterfishermen (MFs). Core funding to the project was reduced by about 50% in 1993, a level adequate to cover the FDO and one MF only, so the range of services available to countries under the project diminished. In a recommendation from the 24th RTMF, CRGA 17 and the 32nd South Pacific Conference were strongly urged to consider reinstating this funding as soon as possible. Both CRGA 17 (October 1992) and CRGA 18 (May 1993) deferred discussion of this issue. Subsequently SPC's Work Programme budget was reorganised and, while core funds were allocated in support of the FDA position in 1994, there is presently no provision for funding of MF positions.
5. The OFDP arose as a result of the increasing number of requests from SPC member-countries for assistance in medium-scale tuna fishery development, especially in association with programmes of FAD deployment. This focus extends beyond the normal scope of the DSFDP, which in any case did not have the capacity to respond to all the requests for assistance that were being received. As a result a proposal was put to UNDP for funding of a four-year programme of support to promoting medium-scale offshore fishery development in Pacific Island countries.

6. The OFDP effectively became operational in mid-1992 when, in order to proceed quickly with its implementation, the budget was scaled back to fall within UNDP's regional approval ceiling. This required removing important budget components in the fourth year. At present the project provides for the employment of a project officer (designated as Fisheries Development Officer [FDO] by CRGA 19), a Project Assistant (PA), and 6 man-months of specialised consultancy per year, under the overall supervision of the FDA. During 1993, at the invitation of UNDP, and in light of the heavy demands placed on OFDP services, a revised budget was submitted which provides for re-instatement of the fourth year components, and an allocation for the provision of fishing vessel design and evaluation activities. Approval of this submission will be subject to the outcome of a tripartite review to be conducted as part of the present RTMF.

7. The Capture Section operated with a staff of four for most of the period since the last RTMF; FDA, Peter Cusack, MF Paxton Wellington PA Marie-Ange Bao and MF Peter Watt, who was informally designated as OFD project officer early in 1993. With MFs Rata and Wellington having completed their contractual terms in October 1992 and March 1994 respectively, and the re-designation of MF Watt, the Section will effectively have no MF staff as of mid-March 1994. The position of FDO will be formally recruited to early in 1994.

8. Consultancy funds provided by UNDP and USAID were applied to employ consultant MF Steve Beverly for a number of short and medium-term field assignments and consultant MF (Jerry Russo was engaged through the DSFDP under a shared-costs arrangement for an assignment in American Samoa. In addition a MF from New Caledonia's Territorial Fisheries Service, Aymeric Desurmont, was attached to the Section to undertake a field project in Wallis and Futuna.

9. In addition to the DSFDP and OFDP funding blocks, several smaller grants have been approved for specific sub-projects, including the production of a manual on FADs, the production of training videos, and support for a tuna fisheries development project in PNG. Further funds will be sought in 1994 to continue or expand selected activities in specific countries.

National-level activities

10. The Capture Section has undertaken 90 country-specific, field assistance assignments since the inception of the DSFDP in 1978. In the 18 months since the 1992 RTMF, Section staff undertook 20 field projects in twelve member countries: Papua New Guinea (2), Wallis and Futuna (2), Fiji (4), Palau (3), Western Samoa (2) and one in each of New Caledonia, Vanuatu, Nauru, Tokelau, Tonga, American Samoa and Solomon Islands. Only one of these assignments, in Papua New Guinea, is still in progress. These activities are summarised in Table 1.

Table 1. Capture Section field activities undertaken between August 1992 and March 1994.

Country Dates Project staff	Request	Summary of Activities
Papua New Guinea June 92 - August 92 Consultant MF Steve Beverly	Initiate pilot FAD programme.	Conduct FAD site survey, supervise rigging and deployment of one unit.
Wallis and Futuna (Phase I) August - September 92 Consultant MF Steve Beverly	FAD assistance: Survey and chart FAD sites.	Conduct echo-sounding surveys at Alofi and Futuna. Complete accurate charts of site bathymetry.
Fiji July 92 - October 92 Staff MF Tuainetai Rata	Assist with training course for rural fishermen.	Serve as boat skipper/tutor during practical fisheries training.
New Caledonia September 92 Consultant MF Steve Beverly	Provide technical assistance to pilot swordfish fishing programme.	Advise on gear, rigging and fishing, post-harvest handling. Participate in offshore fishing trials.
Fiji (Phase I FAD) September - October 92 Consultant MF Steve Beverly	Assist redeployment of two FADs off Suva.	Conduct echo-sounding surveys. Complete charts of site bathymetry. Supervise rigging and deployment of FADs.
Palau (Phase I FAD) October 91 - October 92 Staff MF Peter Watt	Develop FAD-based tuna fishing techniques and gear.	Survey further FAD sites. Investigate baitfish resource. Develop and demonstrate longlining gear suited to local vessels. Conduct fishing trials.
Vanuatu November 91 - November 92 Staff MF Paxton Wellington	Initiate national FAD programme.	Needs assessment, site survey, deployment of shallow and deep-water FADs. Training.
Wallis and Futuna (Phase II) November 92 MF on attachment Aymeric Desurmont	Assist design and procurement of FAD systems. Supervise deployments.	Coordinate procurement/shipping of FAD systems. Supervise deployment of FADs at Wallis and Futuna in collaboration with French Navy.
Papua New Guinea November 92 (ongoing) Consultant MF Steve Beverly	Implement pilot tuna longlining project.	Gear specification and procurement assistance. Supervision of FAD rigging/deployment and fitting out of vessel with longline gear. Conduct fishing trials.
Western Samoa (Phase I) February 93 OFD project officer Peter Watt	Assist implementation of national FAD project.	Assist FAD needs assessment, material requirements, design and procurement recommendations.

Fiji (Phase II FAD) February - August 93 Staff MF Paxton Wellington	Assist national FAD programme implementation.	Technical advisory/procurement services. Practical training in FAD skills. Assist design and implementation of catch monitoring programme.
Palau (Phase II FAD) April 93 OFD project officer Peter Watt	Assist re-establishment of FAD network.	Technical advisory/procurement services. Practical training in FAD skills. Design and deployment of experimental FAD types.
Nauru April - May 93 OFD project officer Peter Watt	Locate and chart offshore FAD sites.	Conduct offshore FAD site surveys. Practical training in site survey skills. Follow-up design/material procurement services.
Tokelau August 93 OFD project officer Peter Watt	Assist implementation of national FAD programme.	Technical advisory/procurement services. Complete site surveys, design and rig moorings, deploy 6 units. Practical training in FAD skills.
Western Samoa (Phase II) September 93 OFD project officer Peter Watt	Provide technical assistance in FAD survey and deployment.	Rig rafts for two experimental FADs. Training of FAD technician in site survey technique using GPS.
Fiji (Phase III FAD) August - September 93 Staff MF Paxton Wellington	Assist FAD deployment programme for national pole-and-line fleet.	Technical advisory/procurement services. Demonstration/training in rigging and deployment.
Tonga September - October 93 Staff MF Paxton Wellington	Assist deployment of two FADs.	Technical advisory/procurement assistance. Supervision of/training in site survey, rigging and deployment.
American Samoa September - December 93 Consultant MF Gerry Russo	Assist implementation of pilot tuna longlining project.	Prepare vessel and gear. Supervise fishing trials.
Palau November 93 OFD project officer Peter Watt	Provision of technical assistance in planning sportsfishing development project.	Technical input to preparation for sportfishing guides' workshop.
Solomon Islands November 93 - March 94 Staff MF Paxton Wellington	Provide training in deep-bottom fishing technique/catch handling to export standard.	Practical training at sea for artisanal fishermen at three sites.

11. Details of the assignments are as follows.

Pilot FAD deployment - National Capital District, Papua New Guinea.

12. Following assistance provided by the Capture Section to Papua New Guinea national and provincial fisheries managers in assessing the site-by-site potential for initiating FAD programmes, the Department of Fisheries and Marine Resources decided to undertake a pilot FAD deployment in the vicinity of Daugo Island near Port Moresby. The island is the centre of an important, small-scale commercial, pelagic and demersal fishery. DFMR subsequently contracted the fabrication of a steel FAD raft to SPC design, and purchased the requisite mooring materials. Following a request by the Papua New Guinea Government, the Section then assigned a consultant MF under the OFDP to conduct an echo-sounding survey of potential sites, supervise the calculation and rigging of the mooring, and oversee the eventual deployment of the FAD. The Section later coordinated the provision of assistance to DFMR staff in developing a FAD-catch monitoring system and database. The catch monitoring programme has indicated that this FAD is extremely productive; the first three months of records show that Daugo Island craft fishing at the FAD averaged better than 119 kg/trip and produced a total catch valued at around PNG K\$6,600.

Initiation of national FAD programme (Phases I & II) - Wallis and Futuna.

13. Following a request by the Territorial Administration of Wallis and Futuna, the Capture Section provided technical advice and assistance throughout 1992 in connection with the implementation of a FAD deployment programme. This involved the design of rafts and moorings, assistance with procurement, and the assignment of a MF to conduct site surveys. Subsequently, once the mooring materials were delivered, the Section coordinated the collaboration of the French Navy, which provided a deployment vessel, and New Caledonia's Territorial Fisheries Department, which provided the services of a MF on attachment to the Section to supervise three FAD deployments, two off Wallis and one off Futuna. The FADs were successfully deployed and each has been reported to be aggregating fish, resulting in renewed interest and activity in offshore fishing in the Territory. It is expected that the Capture Section will collaborate with the Training Section to develop a practical training programme in FAD-fishing techniques for the Territory's fishermen, to be undertaken in 1994.

Training for rural fishermen - Fiji.

14. To assist the Fiji Fisheries Division with its annual programme of fishing techniques training for rural fishermen, a staff MF was attached to the Division's Extension and Training Section between July and October. The 1992 programme catered to fishermen from the Western Division and covered fishing techniques, gear, safety at sea and aspects of seamanship and small-business management. The MF's main duties included participation in practical demonstration and training sessions on shore and at sea. Assistance was also provided at this time in planning a FAD programme for the Western Division.

Broadbill swordfish longlining trials - New Caledonia.

15. In conjunction with the initiation of small-scale longlining trials targeting broadbill swordfish, the Section arranged the short-term attachment to the Territory's Fisheries Department of a consultant MF experienced in commercial broadbill fishing. The assistance provided included advice on gear rigging and configuration, setting and hauling technique, identification of potentially productive fishing areas, and on-board handling of the catch to export standard. Catch rates were encouraging, with a total of seven broadbill taken in two sets of 96 hooks each. The Territory's Fisheries Department is continuing these trials and has recently undertaken a study of marketing opportunities and import regulations for broadbill overseas.

National FAD programme implementation - Fiji (Phases I, II, & III).

16. Following the loss of two productive FADs which were the focus of the offshore small-scale commercial fleet supplying the Suva urban market, a consultant MF was assigned under the OFDP to the Fiji Fisheries Division in September 1992 to survey FAD sites using global positioning system (GPS) equipment and to supervise the rigging and deployment of two replacement FADs. These units were rigged from available materials and with the *payao* type FAD rafts long used in Fiji. The aim of this work was to put FADs in place before the beginning of the productive summer tuna season, but cyclone Kina struck soon afterwards and one of the units was lost. This work was to be followed by the extended assignment of a staff MF in February to assist with implementing a FAD programme in Fiji's Western Division.

17. The second phase work schedule was subsequently changed to re-establish a viable FAD system in the Suva area before moving on to the Western Division work. This included the use of a well-proven steel spar FAD raft design developed by the Section as well as training for Suva staff in FAD mooring design, rigging and deployment. Assistance was also provided in FAD programme planning and material procurement. Work had begun on planning the Western Division deployments and materials placed on order when the MF was re-assigned to Vanuatu temporarily to assist with the practical fishing module of the SPC/Nelson Polytechnic course.

18. On the MF's return to Fiji, but with the Division's FAD materials not yet landed, the MF was assigned to provide technical advisory services to the national fishing company in developing a FAD type suited to the needs of the pole-and-line fleet. Use of a new FAD raft type, developed under the OFDP from a design first used in the Indian Ocean, was recommended. This inexpensive raft, rigged from a string of purse-seine floats threaded onto a PVC-sheathed wire rope, is considered likely to be more resistant to storms than the single-hull buoys traditionally used in the Pacific. Moorings also made use of inexpensive materials, including 3-strand rope, as it is expected that the FADs will be inspected and serviced regularly by the commercial fleet.

19. Once materials were assembled the MF worked with catcher vessel crews demonstrating the rigging of the FAD rafts and moorings and provided training in site survey, mooring calculation and deployment techniques. Six units were deployed during this work.

FAD-based offshore tuna fishery development - Palau (Phases I & II).

20. After deploying a series of five FADs to the east of Palau's main reef system late in 1991, and hopeful that these units would support attempts to develop a domestic medium-scale sashimi tuna fishery, Palau's Marine Resources Division (MRD) sought Section assistance in developing gear and techniques which would enable local craft to target the large deep-swimming tunas known to commonly associate with FADs. A staff MF was assigned to this task. At the outset of the project most effort was given to designing and building a wooden hand-hauling drum to set vertical longline gear and to investigating local baitfish resources. When fishing commenced it was soon apparent that the FADs had not then aggregated even small tunas in any abundance. It was not clear, however, whether the absence of tuna at the FADs could be attributed to seasonality, the proximity of the sites to the reef system, or other factors.

21. Soon afterwards the FAD moorings began to fail: by June all five of the units deployed in 1991 had drifted off station. The focus of Section support to Palau was subsequently shifted to attempting to determine the cause of these failures and to re-establishing a FAD system. An exhaustive series of site surveys was conducted and a new deployment strategy arrived at, which saw two units deployed well offshore from the western reef. These units quickly aggregated large numbers of small tuna vulnerable to trolling, and a local pole-and-line boat took 4 tonnes of mixed yellowfin and skipjack over two days fishing at one of the FADs.

22. In April 1993, after the cyclone season and once Palau had landed all materials the OFD project officer was assigned to assist in deploying five further FADs. These units included several low-cost, experimental submerged FADs incorporating monofilament nylon moorings, and an Indian Ocean-style FAD raft rigged with purse-seine floats. The performance of these experimental units is being monitored to assess their potential for the region.

23. While in Palau the OFD project officer, at the request of MRD, provide technical advice during the formulation of a funding proposal for the development of tourist-based sports fishery. He returned to Palau in November 1993 to take part in a planning session for implementation of this project. This will involve Section staff in preparation of training materials and participation in a workshop for sportsfishing guides in 1994.

National FAD programme planning and implementation - Vanuatu.

24. Under a long-term commitment by the Capture Section to provide technical assistance in the planning and implementation of a national European Community-funded FAD programme, a staff MF was assigned to the Vanuatu Fisheries Department, based at the Fisheries Training centre at Luganville on Espiritu Santo. From here, he conducted a wide-ranging assessment of village fishing community capacities and needs, and surveys of potential FAD sites, with the aim of determining an appropriate allocation of FAD resources.

25. The MF then supervised the rigging and deployment of four offshore FADs, and six FADs set in shallow inshore waters designed to aggregate baitfishes. The offshore FADs proved to be very effective, although two were lost after a short time due to shark-bite. With the collaboration of the Marine Resources Assessment Group of the University College of London, under British Overseas Development Administration funding, the aggregation of fish to the inshore FADs and the community's inclination and ability to exploit them is being monitored to determine the type, number and distribution of future deployments in Espiritu Santo and elsewhere in the archipelago.

Pilot tuna longlining project - East New Britain, Papua New Guinea.

26. On behalf of the Government of East New Britain Province, and in line with national policy of fostering a domestic industrial tuna fishery, the Government of Papua New Guinea requested the Section's assistance in implementing a pilot tuna longline fishing programme in East New Britain. Under the OFDP a consultant MF was assigned to this task for an initial period of 6 months. A great part of this time was taken up with refurbishing the 14 m vessel made available for the trials, in deploying a series of FADs in support of the project, in exploring the potential of local baitfish resources to provide bait for the project, and in conducting exploratory fishing using hand-hauled vertical longline gear.

27. In June 1993 USAID agreed to support this project under a bi-lateral assistance agreement and funds were made available to the Section to fit out the fishing vessel with modern monofilament longline gear, including an hydraulic hauling drum, to establish limited shoreside infrastructure, and to maintain the MF in place for a further 12 months to undertake mechanised longline fishing trials. The East New Britain Provincial Government committed to developing shoreside infrastructure and to installing a flake ice plant. The aim of this phase of the project was establish a commercial model medium-scale longlining operation that, if successful, would demonstrate to the local private sector the commercial feasibility of catching and landing high-quality tunas with export market potential in the New Guinea Islands region. The results of the project were to be reviewed by the donor and the Governments of PNG and ENB early in 1994 with a view to extending the work into a shipping and export marketing phase.

28. Longline fishing trials commenced in August 1993. The first set of 300 hooks produced 28 large yellowfin tuna (averaging 45 kg) and 5 billfish, for a total catch of 1410 kg. As the vessel's holds are capable of carrying only 2 t of fish and ice and only limited ice supply was available this catch strained the vessel's handling capacity. These factors combined with continued high catch rates have necessarily limited the fishing effort to one set per week of up to 600 hooks. Large yellowfin tuna have continued to predominate in the catch and their quality offers hope that once all requisite infrastructure and transport systems are in place the catch might be successfully exported to sashimi markets. With the installation of a 5 t/day flake ice plant scheduled for early 1994 it is planned that fishing effort will increase, including the targeting of big-eye tuna, and that some trial export shipments will be made. With cutbacks in USAID activity in the region, development of regular packing, shipping and marketing systems may be beyond the scope of the project.

FAD site survey - Nauru

29. Following the mixed success of a series of three FADs deployed off Nauru at sites within a mile of the island Nauru's Department of Island Development and Industry requested the assistance of the Section in surveying sites further offshore which, it was hoped, might prove to be more effective in aggregating fish. This presented the technical problem of obtaining accurate bathymetric data on a bottom a good deal deeper than the regional norm for FAD deployments, owing to the very abrupt drop-off around the island. In order to satisfy this request and anticipated calls for further such work the Section procured a deep-water echo-sounder with a range to 3000 m. This unit, a JRC Model JFV-120, 28 khz unit with 3 kw of output power proved just adequate to the task of surveying Nauru's deep reef slope which reached a depth of 2600m just 3.5 nm offshore. Several FAD sites were selected in this range and mooring design recommendations and material procurement options provided to Nauru so that future deployments on these sites could be planned. During the visit, at the request of the Nauru Government, the survey equipment was used to complete a bathymetric chart of the main mooring area in cooperation with the Harbourmaster. This assistance was provided under the OFDP.

National FAD system implementation - Western Samoa

30. Maintenance of an extensive FAD network has long been a priority for Western Samoa's Fisheries Division in support of an active artisanal and small-scale commercial pelagic fishery. Loss of FADs through storms has been a severe problem. In early 1992, when only two FADs remained on station, the Division requested the assistance of the Section in planning a new series of internally-funded FAD deployments. A staff MF visited in February 1993 to assist in determining FAD needs, proposed deployment sites and design requirements. A system of eight units was planned, including two units to be rigged with an experimental Indian Ocean-style raft which, it is hoped, will prove more resistant to storms. Material for the experimental units was provided under the OFDP.

31. The OFD project officer visited in September when materials for the two experimental units were landed. He demonstrated the rigging of the new rafts and trained the Division's FAD officer in accurate site survey technique using GPS equipment. The two FADs were successfully deployed soon after by the local team making use of SPC survey equipment on loan. Six further units are expected to be deployed shortly.

National FAD programme implementation - Tokelau.

32. In response to a request by the Office of Tokelau Affairs for assistance in implementing a national FAD programme Section staff provided detailed technical advice regarding FAD design and material procurement options and assisted with developing an overall FAD plan. These consultations included country visits by the FDA and the OFD project officer. A system of six FADs was planned, two at each of Tokelau's three atolls. On SPC recommendation each pair of FADs would include two different raft types - a steel spar buoy raft and an Indian Ocean-style raft rigged from purse-seine floats. Spare rafts for the Indian Ocean-style FADs would be prepared and landed at each atoll to allow for maintenance to be carried out without disrupting FAD use. As little bathymetric information was available and the atolls are remote and served by only infrequent shipping it was decided to order pre-rigged moorings that could be adjusted for varying site depths once bottom surveys were completed.

33. Once moorings were landed in Apia, the steel rafts fabricated locally and materials for the Indian-Ocean rafts on hand the OFD project officer returned to Apia where he boarded the Tokelau's inter-island vessel *Tutolu*, made available for the project, and travelled to Tokelau. In company with a Tokelau Affairs FAD team and experienced fishermen from each atoll, site surveys were duly completed using Section equipment, the moorings rigged according to the required depths, and the six FADs successfully deployed.

Tongatapu FAD programme - Tonga

34. The assistance of the OFDP was sought in re-establishing a FAD system for fishermen on Tonga's main island Tongatapu. After a consultative visit by the OFD project officer to determine potential sites, material needs and survey and deployment capabilities it was decided to proceed with deployment of two units. Section staff provided design and procurement assistance. Once materials were landed a staff MF was assigned to work with the Ministry's FAD team in surveying FAD sites and rigging and deploying the units. The FADS were reported to be successfully aggregating fish soon afterwards and it is expected that Section staff will return to Tonga early in 1994 to assist in a FAD fishing workshop for local fishermen being coordinated by SPC's Fisheries Training Section and the Ministry of Fisheries.

Pilot tuna longlining project - American Samoa

35. In response to the regional growth in domestic sashimi tuna longlining operations, American Samoa's Department of Marine and Wildlife Resources decided to explore the potential for tuna and billfish longline fishing in its waters by undertaking a series of fishing trials. It was expected that these trials would produce data which would assist in developing management plans for any emerging domestic longline fishery. To this end monofilament longline gear and a hydraulic hauling drum was fitted to the Department's fisheries research vessel F.V. *Sausaui moana* and fishing trials commenced targeting broadbill swordfish in the first instance. While promising results were obtained, problems with the vessel and bait supply hindered operations. The Department subsequently requested the assistance of the Section in providing the services of an experienced longline fisherman to complete the trials and to assess and advise on local infrastructure requirements to support a domestic longline fishery.

36. Consultant Masterfisherman Gerry Russo was subsequently assigned to this task. On assignment the consultant first made an assessment of the vessel and gear. Requisite fishing equipment and supplies were specified and ordered and bait supply organised, but the vessel was found to be in need of extensive work before it could be taken to sea. Some of this work was completed by the consultant and other tasks contracted locally. Fishing trials targeting tuna are expected to commence early in 1994.

Deep-bottom fishing training - Solomon Islands

37. Under the EU-funded Rural Fishing Enterprises Project, Solomon Islands's Ministry of Natural Resources has promoted the establishment of small-scale commercial fishing operations at three rural centres, Yandina in the Russel Islands, Tatamba and Marau. Each of these sites has a fisheries station which services fishermen with ice, fuel and gear sales, marketing and other support. Annual production from the three centres has been about 90 t/yr, most of which is sold in Honiara, with some exports in the form of frozen fillets. The success of the project in increasing rural catches and the establishment of transport and marketing channels has led to increased hope of establishing the regular export of high-value species, particularly deep-bottom snappers, to markets such as Hawaii.

38. To assist in this effort the Section was requested to provide the services of a MF to train rural groups in deep-bottom handreeling and on-board handling to produce export-quality landings. A staff MF was assigned to this task in early December 1993. The training programme commenced at the Tatamba site where the MF helped outfit local vessels for fishing deep and demonstrated deep-bottom anchoring and fishing technique. Catches of deep-water species improved quickly and in the second-week of operation 1.5 t was landed from seven small craft; 700 kg of this catch was selected for export to Hawaii.

Regional-level activities

39. The Capture Section continued to monitor regional and worldwide developments in FAD technology and use and medium-scale commercial tuna fisheries. In recent times this has included: technological exchanges with FAD users in the Indian Ocean and Japan; extensive consultations with Pacific-rim FAD material and tuna fishing gear suppliers; and technical, resource and market opportunity information exchanges with established chilled tuna and broadbill fishing enterprises. While much of the focus of FAD information exchange has related to the technical aspects of FAD engineering, FAD fishing techniques and gear, including field trials with innovative raft and mooring materials and designs, progress has been made in investigating the social and economic implications of FAD programme initiation, including such issues as cost-effectiveness, user-conflict, FAD dependence, private sector FAD financing, and the impact on markets of FAD catches. In this connection emphasis has been given in the planning of each FAD-assistance project to supporting and encouraging the establishment of national FAD use and catch monitoring programmes. Field work toward this end has been undertaken in Nauru and Papua New Guinea with the cooperation of Resource Assessment Section staff, and is on-going in Fiji in collaboration with an ODA-funded research project.

Training

40. While all field assignments undertaken by the Section emphasise group and counterpart training, it is also common for the Section to contribute to regional fisheries training efforts, particularly those coordinated by the Fisheries Training Section. During 1993 a staff MF served as boat skipper/tutor during the Practical Module of the SPC/Nelson Polytechnic Pacific Island Fisheries Officers' Course. In collaboration with the Training Section notification of attachment training opportunities under the OFDP was distributed to all fisheries divisions and attachment training subsequently provided for a Palauan fisheries officer during FAD work in Tokelau and for a PNG fisheries officer during a tuna longline fishing development project in East New Britain. Three other applications under this programme are outstanding. The Section also sponsored the participation of fisheries officers from Western Samoa and Fiji in a tuna and billfish longline fishing research cruise conducted by the US National Marine Fisheries Service in Hawaii.

41. Section staff have collaborated with the Training Section on planning for a FAD fishing techniques workshop to be jointly conducted for Tongatapu fishermen and planning is under way for a sub-regional FAD skills workshop tentatively scheduled for April 1994.

Publications

42. Reports to governments on Section activities in the field during 1992/1993 have in most cases been provided immediately at the completion of assignments. These reports give an account of the activities conducted, record catch data, provide technical descriptions of the gear, vessels and techniques employed, identify restraints to development aspirations, and make recommendations as to how such restraints might be alleviated. However, difficulties persist in the timely upgrading of these reports to formal publications that can be distributed more widely. Although the nature and scope of the Section's work programme over the coming year is likely to increase the publication load, the Fisheries Programme's internal publishing capability steadily improves. The availability of some extra-budgetary funds for this purpose is expected to enhance the Section's ability to publish and distribute reports of its work in a timely manner. Three of these country reports have been published and distributed in recent months.

43. Apart from country reports, the Section has published a French-language version of the popular *Handbook on Trolling Techniques for the Pacific Islands*. Other publications in preparation or planned include: a Special Interest Group Bulletin devoted to FAD use; a handbook on deep-bottom fishing methods, designed as a companion volume to the Trolling Handbook; and a series of technical reports which will describe in detail appropriate gear construction, rigging and fishing techniques for vertical longlining, deep-trolling, small-scale surface longlining and other fishing methods. In addition, a draft version of the long-delayed, revised *SPC FAD Handbook* incorporates the findings of recent SPC FAD research, as well as information on FAD development and utilisation regionally and worldwide.

Other activities

Advisory services

44. In addition to field assignments, the Section continued to provide advisory services on technical fishery issues in response to national request. This service, provided chiefly by the FDA and acting OFD project officer from SPC headquarters and during consultative visits, included advice on fishing technique and gear developments, sources of gear and equipment supply, technical aspects of FAD raft and mooring design and sources of FAD material supply, and provision of catch and resource assessment data gathered during field assignments.

45. Major tasks undertaken by these staff recently have included: site visits to PNG to advise on FAD-catch monitoring and follow-up training for fishermen using the FAD deployed off Port Moresby, to monitor progress of the Tuna Longline Project in East New Britain, to provide information and advice on domestic tuna fisheries and FAD development issues for delegates to PNG's National Fisheries Advisory Committee Meeting held in Rabaul, and to assess local domestic longline fishing potential in Manus Province; site visits to Fiji, Western Samoa (including Tokelau Affairs Office), Commonwealth of the Northern Marianas Islands and Tonga to advise on FAD programme planning; participation in a USAID-sponsored FAD workshop in Suva where Section work on FAD technology development was presented; a visit to American Samoa to advise on planned longline fishing trials and a visit to Solomon Islands to assess and advise on deep-bottom fishing development options.

Evaluation

46. As noted earlier, while the Section's workload continues to grow, core budget funding, which has in the past covered the operations of the FDA and three MF, and during 1993 was scaled back to provide for only the FDA and one MF, has been further reduced so that there are no funds available to the Section for MF positions in 1994. Shortage of funding for field staff is likely to be the biggest constraint faced by the Section in 1994 and thereafter. This issue requires the attention of SPC member countries if the range of services offered by the Section is to continue.

47. During 1993 the Section maintained the level of work and output of previous years, despite growing budgetary uncertainty. If anything, the Section increased its ability to respond quickly and effectively to requests for technical fisheries assistance in the field, mainly because of the availability of extra-budgetary funds (through the OFDP) which can be used in a flexible manner to secure short-term expertise as required. The provision of advisory services was also well maintained, particularly in the technical aspects of FAD programme development and tuna fisheries implementation.

48. While great effort has been made to keep abreast of the ever-growing demand for FAD programme assistance, the workload involved in providing such services has precluded the Section from responding quickly to all such requests. In addition the Section has been largely unable to undertake planned gear and vessel trials and evaluations designed to provide important information for fisheries managers, planners and donors interested in the regional development of domestic commercial tuna fishing, nor to fully satisfy requests for field assistance in this area.

49. It is a condition of all field assignments undertaken by the Section that countries make a commitment to provide basic support services, counterparts and follow-up extension work as appropriate. However, some 1992/1993 field assignments have failed to have their expected impact, in terms of increased fisheries production or self-sufficiency, due to an inability or failure on the part of national fisheries divisions to meet these commitments. Failure to assign appropriately trained and motivated counterparts has been the most serious problem, and in some cases has resulted in lack of follow-up of the MF's work, or reduction of its impact.

Future plans

50. The Section will continue to keep abreast of developments in FAD technology and application regionally and worldwide and will seek to make expert assistance available to member countries in all aspects of FAD programme planning and implementation. Particular effort will be made to promote stricter FAD monitoring and evaluation systems on a country-by-country basis. In addition, effort will continue to promote and assist the development of medium-scale offshore fisheries in the region, particularly tuna fisheries. The common aim of this work will be to increase the participation of member countries in the harvest of their fisheries resources and in realising increasing benefit from this endeavour.
