SPC ACTIVITIES

Fishing Corporation will be required to take the courses;

• A series of statutory certificate courses on safely operating longline fishing vessels. All NFC skippers, engineers and crews will be required to take the course;

• A comprehensive training package for NFMRA staff consisting of in-country courses, work attachments and selected overseas courses. The initial focus of the training will be on NFMRA senior officers (organisational management training) and trainers (extension skills training).

While some training programmes will require overseas trainers (mainly for short, technical training courses and work attachments), efforts will be made to use local training institutions, such as the University of the South Pacific’s Extension Centre (distance learning courses).

While several components of the HRD plan will be implemented with SPC’s assistance and NFMRA’s existing human and financial resources, other parts of this ambitious and long-term plan will require additional support. It is envisaged that NFMRA will present a funding proposal to that effect, at a forthcoming donor meeting in Nauru.

AQUACULTURE SECTION

Sustainable aquaculture in Pacific Islands region and northern Australia
An update on the February 2004 ACIAR Project Leaders Meeting in Cairns, Australia

Introduction

The ACIAR-funded Sustainable Aquaculture Project is intended to support responsible aquaculture in the Pacific region and northern Australia, particularly among the indigenous populations. The inception of this project was reported in the February 2004 issue of the SPC Fisheries Newsletter (#108). The project comprises three core components:

1) mini-projects that will address development bottle-necks through research and capacity building;

2) extension of post settlement capture and culture techniques; and

3) technology to develop sea cucumber aquaculture and reseeding efforts.

The main organisations and their representatives in this project include Mike Rimmer and Cathy Hair from the Queensland Department of Primary Industries and Fisheries (QDPI&F), Ben Ponia from SPC, and Warwick Nash from the WorldFish Center. Tim Pickering from the Institute of Marine Resources (IMR) at the University of the South Pacific also participated, as IMR has proven to be an active participant in project activities.

This article reports on the major outputs since the project began, provides an update of ongoing activities, and reviews other project developments.

Sea cucumber reseeding/ aquaculture

Cathy Hair gave an update on sea cucumber broodstock acquisition and maintenance, and hatchery production in Queensland up to February 2005. Cathy will pursue options for obtaining new broodstock for the Torres Strait 2005-2006 spawning season.

Warwick Nash provided an update on ACIAR project FIS/99/25 — “Optimal release strategies for restocking and stock enhancement of the tropical sea cucumber, sandfish”. This study, which is being carried out by the WorldFish Center New Caledonia office, has been extended to June 2006. The most recent hatchery runs produced large numbers of juveniles for the grow-out and release experiments, although problems with larval survival remain. A number of promising experiments have been undertaken involving grow-out of juveniles in ponds, using hapas and bag nets under different conditions (e.g. shaded vs unshaded, fed and unfed, artificial substrata vs no substrata). A paper is in preparation that examines the relationship between movement rates and no-take zones, while further workshops are planned to determine the location and techniques to be used for future large-scale reseeding experiments.

The choice of a second Pacific Island country for transfer of sea cucumber production technology was discussed, with Kiribati a possibility because it has an established pearl oyster hatchery with algal culture facilities, and an active sea cucumber (white teatfish) hatchery. Fiji also has a hatchery and algal culture facilities.

Presettlement fish capture and culture (PCC) fishery

Cathy Hair gave an update on this project’s progress in Solomon Islands, and will explore the possibility of doing some simple modelling (with Dr Neil Gribble of QDPI&F) to
support the claim that controlled crest netting will not lead to overfishing of pre-settling larvae.

Dr Tim Pickering mentioned the possibility of Fiji receiving training in PCC methods. Fiji has a well established aquarium fish export industry, and excellent air links to the US and Europe. Exporters are supportive of a sustainable industry and will actively support attempts to introduce PCC techniques. Many rural Fijian communities are experienced in this industry. In addition to involving the Fiji Ministry of Fisheries, there are also valuable links with USP and industry. Two trips were originally planned to assess possible sites for transferring technology to a single community. These trips could instead be used to:

1) establish two monitoring sites to assess the suitability of selected reefs over several months; and

2) run a training workshop for community members, Fiji Fisheries and industry representatives.

The WorldFish Center–NZ-aid funded Rural Livelihoods Project has begun. This project is expected to enhance the transfer of PCC technology in Solomon Islands through the hiring of four more technicians and funding to cover additional sites.

The inception workshop of the Agence Française pour le Développement (AFD)-funded Coral Reef Initiative for the South Pacific (CRISP) will include extension of pre-settlement fish capture/culture methods from French Polynesia to other Pacific islands, probably including Fiji.

PNG freshwater aquaculture

Brett Herbert from QDPI&F Walkaman Station presented an overview of an ACIAR project proposal — “Development of capacity for aquaculture of indigenous fish species in Papua New Guinea”. The project is focused on native fish species (e.g. catfish) that are popular with locals, as there are no introduced species in Papua New Guinea’s upper Fly River. He also discussed linkages with another large ACIAR project (led by Paul Smith from the University of Western Sydney), and potential contributions from QDPI&F to address training needs at Aiyura Highlands Aquaculture Station.

Yonki Lake in the Eastern Highlands Province of PNG was discussed as a potential mini-project site to examine cage culture of GIFT tilapia. Currently, there are 50 commercial cage farms with GIFT tilapia set up, using government-subsidised cage materials and fish. There is concern about the potential for overcrowding and a lack of sustainability with the current rate of increase in cage farming. Another constraint is the lack of feed, as the nearest mill in Lae is not producing any. This study would monitor water quality to determine impacts on growth, and conduct fish cage density trials. Another mini-project on feed formulation is already underway, and will benefit the cage fishery when it is complete. There are also linkages to other current and proposed ACIAR projects (e.g. an Indonesian study on the impacts of cage aquaculture (Australian Institute of Marine Science), and a study on cage tilapia farming in the Philippines).

Indigenous aquaculture

Chris Robertson of QDPI&F outlined results from the “Scoping Study for Opportunities for Indigenous Aquaculture in North Queensland”. The focus of the study was to reduce the failure rate of indigenous aquaculture ventures, and to that end, a project assessment tool has been developed. A large project under development for Torres Strait involves sponge farming at York Island in collaboration with the Australian Institute of Marine Science. An Indigenous Aquaculture Extension Officer has been recruited to assist with the development of indigenous aquaculture ventures in Queensland.

The need for a definition of indigenous aquaculture was discussed, but no accurate and succinct definition was developed at the meeting. An indigenous aquaculture logo has been designed by SPC for the indigenous aquaculture webpage.

Aquaculture economics and marketing

Ben Ponia, Tim Pickering and Bill Johnston (an economist with QDPI&F) reported on their discussions regarding a training programme for aquaculture economics and marketing. The three organisations jointly produced an Aquaculture Economics CD. SPC will hold two subregional workshops targeting economic and marketing aspects of aquaculture, supported by training funds from Taiwan/ROC. The workshops will also teach participants how to use the Aquaculture Economics CD.

The first workshop will be held at the University of the South Pacific in Fiji, and the second at
Bribie Island Aquaculture Research Centre in Queensland, Australia.

Mini-projects

Ben Ponia summarised progress to date on mini-projects. He emphasised that it took some time to build momentum, but that a number of mini-projects have come on line fairly quickly; SPC’s preference is for mini-projects to focus on research. Ben highlighted the importance of projects supporting ongoing government research and development activities in PICs, rather than simply being of academic interest. It is important that proposals be well defined at the outset, before resources are committed. Ben also emphasised the importance of engaging stakeholders early in the process, and securing agreement in principle before getting caught up in project technicalities.

Discussion points relating to funded mini-projects were:

- The hiring of a consultant for the Aquaculture Assessment of Motupore Island Research Centre at the University of Papua New Guinea. The preference is to identify a consultant that is able to establish linkages with an Australian research institution, leading to potential collaboration.

- The feeds formulation project involving Fiji and Papua New Guinea is progressing well. Personnel from SPC, Queensland University of Technology, and ACIAR have conducted field visits to PNG and Fiji. The project has the potential to develop linkages with French expertise through institutions such as IFREMER, which has a station in New Caledonia. There may be an opportunity for PIC postgraduate attachments at IFREMER; development of Macrobrachium feeds was one potential area identified. The SPC consultant nutritionist (Carmen Gonzales) is acting as an external supervisor for two USP students; Ben Sagata (Fiji Ministry of Fisheries) is the local counterpart for the mini-project and currently enrolled in a master’s degree programme at USP doing feed research. The other student, James Teri from Solomon Islands, is carrying out a master’s degree project to monitor farm performance (including feeds) as part of a GIS study of ponds in Fiji.

- The Fiji shrimp disease status mini-project is nearly complete. The main researcher (Salote Waqairatu) is due to finish her master’s research at USP after having completing her viral and DNA analysis at CSIRO in Brisbane. The impacts of this project and the potential to develop specific pathogen-free brood stock were discussed. Now that the disease status is known, the next step is to assess the availability of broodstock.

- A mini-project to conduct basic trials for farming of wild freshwater shrimp (Macrobrachium lar) is underway in Vanuatu and Wallis and Futuna. Very little is known about M. lar, including basic information such as growth rates. In Wallis and Futuna the shrimp will be stocked into ponds that are integrated with taro swamp plantations. Vanuatu will trial monoculture using high quality formulated diets. The project to due to be completed by mid-2005.

Potential new mini-projects

Ben Ponia presented some mini-project concepts targeting Nauru, which emerged from a recent visit. The country is currently facing a financial crisis, and food security is becoming a concern as household cash diminishes. In the past, milkfish aquaculture was widely practiced and of great importance to the local culture, but this tradition has waned and most ponds are now in a dilapidated condition and infested with Mozambique tilapia. In order to use the ponds, methods to control or integrate the Mozambique tilapia must be developed, and the mini-project mechanism may assist in this. The culture of GIFT tilapia, which is a much superior strain of tilapia as compared with the Mozambique variety, is an option with regards to providing a source of fish protein. There is popular support for rejuvenating milkfish aquaculture, although such an effort is likely to be a long-term project. It could benefit from the application of the “backyard” hatchery model developed in Indonesia.

Mud crab aquaculture is generating general interest in the Pacific region. There have been recent grow-out trials in Kosrae and an attempt at grow-out in Samoa some years ago. Some interest in assessing the potential for a mini-project in this area was expressed.

USP reported low survival of M. rosenbergii (~20–30%) through the hatchery phase. It is suggested that the genetics of local stocks need to be evaluated to determine if this is due to inbreeding depression or poor husbandry. M. rosenbergii from Fiji has been distributed to other Pacific countries and it is important to ensure that the best genetic stocks, which do not jeopardise future efforts at genetic improvement, are being sent out.

Algal training is a critical area lacking well-trained technicians. Samoa and Tonga have both applied for training support; the CSIRO laboratory in Tasmania has been identified as a potential location for providing training.

Mabe pearl is a niche product that Kiribati could produce from its fledgling pearl industry. This product would tie in
well with plans (by the ACIAR Black Pearl Project at James Cook University–JCU) to run a pearl-coconut jewellery work-
shop in the near future. Ben presented a mini-project (with the Kiribati Ministry of Fisheries and JCU) to trial mabe pearl
production at the government pearl farm on Abaiang Atoll.

16th NACA Governing Council Meeting

SPC’s Aquaculture Adviser, Ben Ponia, participated in the 16th Network of Aquaculture Centres in Asia-Pacific (NACA) governing council meeting held in the Philippines in March. SPC is an associate member of NACA and assists this dynamic network in representing the interests of the Pacific region. The meeting was hosted by the Philippines Bureau of Fisheries and Aquatic Resources and the Bureau Director served as the chairperson.

The governing council meeting was preceded by the two-day workshop for the Support to Regional Aquatic Resources Management (STREAM) Project based at NACA

[www.streaminitiative.org](http://www.streaminitiative.org)

The aim of STREAM is to empower poor farmers and improve their livelihoods; the workshop was the final output. Most of the STREAM activities have been carried out with impoverished communities in countries such as India or those that share the Mekong River (Vietnam, Cambodia, Thailand). The workshop was able to determine a broad set of parameters that define the livelihoods approach, and it was recognised that the livelihoods analysis can help build bridges between communities and policy makers. At the same time, national governments must make poverty alleviation and providing assistance to poor communities a priority, and this needs to be reflected in both policy and planning activities.

The Asian tsunami was a special topic of the governing council. Many of the affected areas supported a sizable aquaculture industry. For example, prior to the tsunami Indonesia’s Aceh Province produced over 10,000 t of shrimp and 6000 t fish from 45,000 ha of ponds that directly employed 50,000 people. Many of the key aquaculture facilities in Aceh were wiped out, with a number of key staff killed. Many meeting participants (from NACA, FAO and country representatives of Indonesia, Sri Lanka, Thailand and Australia) are currently involved in the front line of the relief effort. The Pacific extends its sympathies to its neighbours in light of this immense tragedy.

An initiative suggested by the NACA Director General was for a conference with ministerial level participation from the Asia and Pacific region. This conference would be a timely event to raise the profile of the aquaculture sector, its development agencies and global policies. Bearing in mind the demands for time on ministers, it was felt that the conference should target issues of critical importance to countries, in particular trade relationships. NACA and other agencies, including SPC, will collaborate further on this concept.

NACA continues to strengthen its work programme. While relatively small in size compared to the breath of its country membership and scale of aquaculture production, the organisation is an effective advocate for the industry. Networks continue to be established; links have been established with an Eastern European network, and there is interest in building a network from Arabian Gulf states. Iran was formally accepted as a member during the 16th governing council meeting.

Synergies between the SPC animal health program and activities within SPC were noted. During a side meeting, a concept for an aquatic biosecurity project was raised by Ben Ponia and a schedule for developing this project was outlined. The NACA secretariat has also offered its assistance to facilitate training. One area of particular interest is for study tours to the Asia region and Ben was able to get a tentative agreement for one such tour to be scheduled in the near future.