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**Aquaculture at the Faculty of Islands and Oceans  
(FIO) of the University of the South Pacific**

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### **Background and introduction**

1. The University of the South Pacific has undergone a restructure to create four Faculties, each headed by a Dean. These changes took effect on 1 January 2006.
2. The Marine Studies Programme (MSP) at USP has been re-named the **School of Marine Studies (SMS)**, and has been placed within the **Faculty of Islands and Oceans (FIO)** headed by Dean Pa’o Luteru.
3. The **Institute of Marine Resources (IMR)** remains with name unchanged, and is also within the Faculty of Islands and Oceans.
4. This Information Paper briefly describes progress in aquaculture education, training and research at USP since the 4<sup>th</sup> SPC Heads of Fisheries meeting in 2004.

### **School of Marine Studies (SMS)**

5. The mission of SMS is to “provide the necessary opportunities for Pacific Islanders to understand, conserve, develop, manage and utilize their living and non-living resources in a rapidly changing world, provide Pacific Islanders with the widest possible range of opportunities for research, education, training and employment in the marine sector, and provide for improved collaboration between the University of the South Pacific, island nations, regional and international bodies in their common goals in the marine sector”.
6. SMS has a Seawater Laboratory suitable for hatchery training attachments, and provides degree-course and post-graduate research opportunities in aquaculture. SMS works closely with IMR on externally-funded research collaborations and short-course training in aquaculture.

### **Institute of Marine Resources (IMR)**

7. IMR undertakes research and consultancies in the three main areas (aquaculture, coastal and coral reef monitoring, and education and training) that support the existence of sustainable aquatic resources in the Pacific region. Current projects have been reviewed and a future strategy developed that gives priority to projects in Sustainable Livelihoods, particularly fresh water aquaculture and mariculture, coral reef monitoring, biodiversity conservation and sustainable use of marine resources, and environmental training.

### **SMS degree courses in aquaculture**

8. SMS offers a 300-level course MS324 Aquaculture in Pacific Island Countries that introduces students to most aspects of tropical aquaculture. In 2005 there were 21 students, from Fiji Islands, Cook Islands, Marshall Islands, Tonga, Maldives and Solomon Islands. A 400-level project-based course MS425 Aquaculture is also offered, with about 3 – 6 candidates per year.

### **Short-course community and in-service training**

9. SMS in collaboration with IMR and external collaborators also run in-village community-based training in aquaculture as alternative and sustainable livelihoods. For example, in 2005 SMS/IMR with NZ NIWA and Fiji Fisheries set up a trial bath-sponge farm at Kiuva Village, Fiji Islands. In collaboration with ACIAR, DPI Queensland, Worldfish Centre and Fiji Fisheries, SMS/IMR conducted demonstrations of post-larval fish capture and culture (PCC) using reef crest nets at Tagaqa, Navutulevu and Kiuva Villages in Fiji.

### **Post-graduate research**

10. MSc and PhD aquaculture research projects currently underway at SMS/IMR include:
11. The viral diseases of the shrimp *Penaeus monodon* in Fiji (MSc candidate Salote Waqairatu, Fiji, partly supported by Australian CSIRO and ACIAR);
12. Productivity, profitability and constraints in tilapia and freshwater prawn farms in Fiji (MSc candidate James Teri, Solomon Islands, partly supported by ACIAR);
13. Seasonal abundance and diversity of glass eels in Fiji rivers and their potential for aquaculture (MSc candidate Chinthaka Hewavitarane, Fiji);
14. Post-larval fish capture, culture and release for restocking of coral reef fisheries in the South Pacific (PhD candidate Julien Grignon, jointly supervised by SMS/EPHE, funded by Govt. of France);
15. Effect of post-larval fish culture conditions on post-release survival in a coral reef environment (MSc candidate Shirleen Bala, Fiji, funded by CRISP/EPHE, for July 2006 start-up);
16. Trial of low-cost community-level capture, culture and marketing of post-larval fish at Navutulevu Village, Fiji Islands (MSc candidate Peni Saqata, Fiji, funded by CRISP/Fiji Government, for July 2006 start-up).

### **Up-grading of regional aquaculture skills base**

17. The various aquaculture education, training and work attachment opportunities provided by SMS and IMR over the last 5 years (in collaboration with SPC) has built up an aquaculture skills base of regional alumni with skills in a range of aquacultured commodities. For example, it has now become possible to establish sea-shrimp, freshwater prawn or tilapia fish hatcheries in Fiji or Solomon Islands using entirely local staff. This pool of trained regional personnel provides a base for alternative livelihoods and food security projects that can be utilised for wider coastal development and protection projects.

### **External research and training collaborations**

18. SMS is one focal point of the French-funded Coral Reef Initiative in the South Pacific (CRISP) and is also hosting some CRISP activities in Fiji implemented by Ecole Pratique des Hautes Etudes (EPHE). The SMS Seawater Laboratory has been outfitted with a reef-fish culture system for on-growing of fish post-larvae caught by EPHE using “Coral Artificial Reef Eco-friendly” (CARE) light-trap systems moored off Suva Reef. The establishment of this culture facility at SMS by EPHE is enabling regional post-graduates to also partake in reef-fish research projects.

19. In 2005 Australian ACIAR funded transfer of low-cost community-based post-larval fish capture and culture (PCC) from Solomon Islands to Fiji in a collaboration between DPI&F Queensland, Worldfish Centre, Fiji Fisheries and SMS/IMR. The first phase to demonstrate techniques and obtain catches in Fiji has been successfully completed, and in 2006 SMS will supervise Fiji Fisheries MSc candidate Peni Saqata in the next phase to scale-up fish capture and culture, and conduct trial marketing.

20. The once-derelict Viticorp freshwater prawn farm at Navua in Fiji has been revitalized by new lessee Dairy Farms Fiji Ltd (DFF) using technical and farm management services provided by IMR staff, and prawn post-larvae supplied from a hatchery in the SMS Seawater Laboratory. Twenty-four 3000m<sup>2</sup> ponds are being brought into full production. DFF are supportive of USP developing a regional training role for the prawn farm. The DFF facility can provide opportunities for short-course training and longer-term work attachments in freshwater prawn and tilapia fish aquaculture.

21. The feasibility of bath sponge (Porifera) aquaculture is being investigated with the assistance of New Zealand's National Institute of Water and Atmospheric Research (NIWA). Visiting New Zealand scientists, in collaboration with the Department of Fisheries and IMR/MSP, assisted villagers at Kuiva, Tailevu, to construct a farm, collect and identify sponges. The progress of this trial farm is now being monitored by a SMS post-graduate student.

### **Upgrading of aquaculture facilities at USP**

22. The DFF Aquaculture Unit at Navua, Fiji is a large freshwater aquaculture facility that has been re-vitalized by input from USP. Through IMR/SMS, work attachment opportunities can be arranged for regional staff to gain skills in freshwater prawn and tilapia fish aquaculture.
23. The Seawater Laboratory at SMS has been re-organised to provide (a) a commercial-scale freshwater prawn hatchery staffed by two full-time technicians, in which work attachment opportunities can be arranged, and (b) an experimental facility for on-growing of coral-reef post-larval fish for either reef re-stocking or for culture of fish for the food-fish or marine ornamental markets.

### **Training materials**

24. Jointly with SPC Aquaculture Programme, SMS/IMR have prepared four manuals on the hatchery phases and pond grow-out phases of commercial tilapia fish and freshwater prawn aquaculture. These are available through SPC and USP.

### **New Initiatives**

25. Thanks to the recent increases in our operational aquaculture facilities, aquaculture staff, and completed training materials, it is now possible for USP to contribute a strong aquaculture training component to any new CROP arrangements that may be under discussion for fisheries training in the region. We look forward to developing our regional role further in collaboration with CROP sister organisations and national institutions.
26. Additional funding opportunities are now being investigated for research on breeding of marine ornamental and reef food fish, with an emphasis on alternative sustainable livelihoods for coastal communities and on reef biodiversity protection.