ACIAR Regional Trochus Project (FIS/2001/085): Samoa node

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Introduction

Establishing *Trochus niloticus* stocks on Samoa's reefs has been one of the Fisheries Division's goals to further enhancing the availability of marine resources for utilisation. Trochus were first introduced into Samoa in 1990 with assistance from the FAO-funded South Pacific Aquaculture Development Programme (SPADP). A few shells were brought in from Fiji's Makuluva and Suva reefs and distributed at Namu'a Island off the Aleipata coast on Upolu, Samoa. The status of these shells was not known, especially after the havoc created by two cyclones to the reefs of Samoa in 1990 and 1991.

The first regional trochus project, of which Samoa is one of three participating countries, commenced in July 2002. The Samoa node is being implemented with funding provided by the Australian Centre for International Agricultural Research (ACIAR).

The objectives of the project in Samoa are threefold. First, to establish trochus in Samoa, using broodstock and juvenile seeding. The latter will be produced extensively at the Fisheries Division's hatchery at Toloa. The second objective of the project is to utilise customary marine tenure (CMT) and the establishment of marine protected areas (MPAs) for the protection and establishment of trochus populations. The third objective is to encourage community participation in the management of the resource.

Project Co-coordinator Dr Chan Lee, and Mr Justin Bellanger of the Western Australian Fisheries Department, conducted the official launching of the Samoa node of the project during a workshop held in Apia in February 2003. The workshop was attended by the staff from the various sections of Fisheries Division that are involved in the implementation of the project: the Aquaculture, Extension and Inshore Sections (Fig. 1). Site assessment, evaluation of the Toloa hatchery (Fig. 2), and survey method training were also undertaken by staff during their visit.

Site selection

In a previous habitat assessment conducted by Mr Moses Amos of the Vanuatu Fisheries Department in 1996, five sites were recommended for seeding. Some of these sites were re-visited, along with new sites, during the site assessment conducted by Mr Bellanger and Fisheries Division staff. As a result, six sites were recommended based on the availability of adult and juvenile habitats. Another important aspect that was taken into consideration was community participation in the Fisheries Division's Community-based Fisheries Resource Management Program. Most of the assessed communities had already established fish reserves, which were legally binding with the enforcement of village bylaws by the Village Fisheries Management Advisory Committee (VF-MAC).

Given the criteria for selection, the three sites that were eventually decided upon for broodstock and juvenile seeding were Saleapaga and Saoluafata on Upolu Island, and Papa-i-Puleia on Savai'i Island.

Broodstock

Obtaining broodstock for seeding and for spawning was a challenging task and a new experience for the Samoa node. After negotiations with the Fiji Fisheries Department, 428 shells arrived in Samoa in two separate shipments. These shells were collected from Makogai Island and transported to Viti Levu for onward passage to Samoa. The Fiji Fisheries Department arranged preparations for shipment and a Samoa Fisheries staff member, Mr Etuati Ropeti, travelled to Fiji to accompany the shipment to Samoa. This arrangement was successful and resulted in two shipments in March and May 2003. A third shipment

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was expected in May but bad weather prevented transport of trochus shells from Makogai Island to Viti Levu, resulting in cancellation of the shipment to Samoa. The trochus broodstock from Fiji was used for seeding at Saleapaga where 360 shells were stocked.

Delayed stocking of sites was a concern, and other sources of broodstock had to be considered. Mr Moses Amos and Mr Robert Jimmy from the Vanuatu Fisheries Department were aware of the Samoa node's dilemma and offered to assist in supplying trochus broodstock for seeding selected sites.

As this was the first time trochus were to be shipped from Vanuatu to Samoa, several arrangements had to be made prior to shipment. In Samoa, a quarantine import permit from the Quarantine Division was obtained, and the Customs Department was notified of the expected shipment. In Vanuatu, shells were inspected and several checks were made before they were shipped to Fiji to await the next flight to Samoa.

Figure 1. **First trochus project meeting between Samoan and Australian project staff, January 2003, Apia, Samoa.**

Figure 2. **AusAID-funded hatchery at Toloa, Samoa.**

The checks included inspections by the Customs and Quarantine departments, and certificates from these agencies, as well as the local Fisheries Department. The trochus shipment was to be held over for a maximum 24-hour transit period in Fiji so that it coincided with the flight to Samoa the following day.

The shipment, however, was delayed four times for various reasons. The first problem was that the source community of the broodstock withdrew approval to collect because of a dispute over the selling price of their shells. In the meantime, a Samoa Fisheries staff member had travelled to Fiji to arrange for clearance from Fiji's Fisheries, Quarantine, and Customs departments, and the freight forwarding company for the transshipment from Port Vila via Nadi, to Apia. Arrangements for storage while the shells would be in transit had also been made with Ocean 2000, a company exporting marine products out of Nadi. After the first delay, the staff member returned to Samoa, while the Vanuatu Fisheries staff sought alternative sources of broodstock.

A second attempt at shipping the broodstock which, by then, had been collected, took place several weeks later. However, this was also marred by another delay (closure of Vanuatu Customs Department for public holidays), and was followed by two more delays (cancellation of the flight by the airline and lack of available cargo space). A shipment of 900 shells finally arrived in Nadi on 3 August 2003 and, after clearance by customs officials, was stored at the Ocean 2000 facility located near Nadi International Airport.

Shells were re-packed and transported to Nadi International Airport in preparation for the flight to Samoa, after a final inspection and clearance by the Fiji Quarantine Department. Only two shells died during the 36-hour transit period.

On 4 August 2003, 898 shells arrived in Samoa accompanied by Anama Solofa from the Samoa Department of Fisheries. After clearance from Customs and Quarantine officials, the shells were transported to the Fisheries Division hatchery for quarantine. The shells were stocked into fiberglass tanks that were provided with vigorous aeration and continuous water exchange for a minimum of two hours. No shells died upon arrival. After the quarantine and health check, 800 healthy broodstock were seeded in the final two research sites.

Obtaining broodstock has been a challenging and useful learning experience for the

Samoa Fisheries staff as well as the Vanuatu node. It highlights the potential gain that could be obtained if Pacific Island researchers worked collaboratively. The experience gained by Samoa Fisheries staff will be extremely useful in future stock enhancement work.

Community-based Fisheries Management Plan

The three seeding sites selected for the trochus project are managed under the country Community-based Fisheries Management Plan. Management of the trochus project has been incorporated into the daily activities of the three communities currently participating in the Community-based Fisheries Management Program. Some of these communities outlined in their management plans the need for alternative developments in their coastal areas. Such developments included the introduction of potential species for culture and stock enhancement to alleviate fishing on the already heavily fished reefs. An article providing details of the Community-based Fisheries Management Plan for trochus in Samoa will be published in the next issue of this bulletin.

Conclusion

Participation of the Samoa Fisheries staff in the ACIAR-funded trochus project has been extremely beneficial to the research staff involved. It provides opportunities to interact with regional and Australian researchers, and allows capacity building in the area of stock enhancement and hatchery production. We will be providing further reports on the progress of our work in future editions of this bulletin, including news of the first successful trochus spawning that occurred at the Toloa hatchery in August 2003.

The Kimberley Aquaculture Aboriginal Corporation (KAAC) story: A snapshot of development of the Manbana Hatchery and Discovery Centre

Charla Clements[1] and Chan L. Lee[2]

The indigenous communities in the Broome region of Australia became involved in trochus research in 1993 when Dr Chan Lee, a senior lecturer at the Northern Territory University commenced work in One Arm Point (OAP), Broome. At that time, indigenous communities in OAP expressed considerable interest in being involved in trochus and other aquaculture activities as a means of achieving economic independence. In 1995, ACIAR supported Chan's work with the communities by funding a three-year trochus project involving Australia, Indonesia and Vanuatu; this was subsequently expanded to include Samoa in the 2002 phase of the project. Over the past eight years, ACIAR has continued to be a strong and highly supportive partner in the trochus work in Kimberley and the Pacific. This commitment has provided the impetus to efforts of the Western Australia Department of Fisheries, the Australian Torres Straits Islander Commission (ATSIC), ATSIC Regional Councils, Department of Commerce and Trade and other agencies in Western Australia to expedite the involvement of indigenous communities in aquaculture development in the Kimberley.

As a result of the collaborative efforts by these agencies, significant research and community outcomes were achieved, including:

- Standardising spawning and hatchery production techniques for trochus
- Supporting hatchery development in communities in Australia, Indonesian, Vanuatu and Samoa
- Studies examining the nutritional requirements of hatchery reared juveniles
- Rigorous stock enhancement work using hatchery produced juveniles and seeding with broodstock
- Incorporation of the Kimberley Aquaculture Aboriginal Corporation (KAAC) in 1996
- Establishment of the OAP community-based hatchery
- Supported funding and construction of the $3.5 million multi-species hatchery (Manbana Hatchery and Discovery Centre) in Broome
- Funding nine trainees and a community aquaculture project officer to work with KAAC and the communities

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