

Making a spl

FOR PACIFIC FISHERIES

In 1999, while employed by ACIAR, Janet Lawrence spent time in the Solomon Islands observing the ACIAR-funded research under way through WorldFish (then ICLARM). In an interview with Warwick Nash of WorldFish, she discovers what has taken place in the ensuing seven years

A CIAR and the WorldFish Center (WorldFish) have been partners in Pacific fisheries research for more than a decade. When I talk to Warwick Nash, director of the WorldFish Pacific Office based in New Caledonia, he is adamant that the time has come to focus on the delivery of benefits to coastal communities throughout the Pacific.

“Together we have produced some excellent research results,” he says. “But both ACIAR and WorldFish are now looking for genuine impacts from that research. They are mindful of the extensive investment in research over this extended period, and they recognise that they are accountable for turning those results into income-generating or food-security enterprises for people across the region.”

Pioneer work

During my 1999 trip I visited the Coastal Aquaculture Centre on Guadalcanal, Solomon Islands, stationed about 20 kilometres west of the capital Honiara, and later flew to Marau Sound on the eastern tip of the island. Visits to these two sites showed me that research efforts were being rewarded. Giant clams and sea cucumbers were being successfully cultured – the first step towards replenishing areas that had been depleted through overfishing for prolonged periods.

It was still early days for the sea cucumber work, which had established that sandfish (*Holothuria scabra*) was a desirable species of sea cucumber for restocking and that juveniles could be reared *en masse* in simple, land-based nursery systems. But clam culture had been well tested and juvenile clams were being distributed to villagers who were ‘on-growing’ them to boost the natural populations and to harvest and sell as a desirable, high-value product in the aquarium trade, with further potential as restaurant fare.

After 1999 the Solomon Islands were beset with years of civil unrest. The Aquaculture Centre was ransacked, leading to a decision to relocate the ACIAR WorldFish program to New Caledonia. However, limited field R&D operations were maintained at the Nusa Tupe research station in Western Province. I question Warwick about the fate of the giant clam and sea cucumber work.

“Clam culture and village on-growing came to a stop during those years,” he says. “But since June 2005 NZAID has funded a sustainable livelihoods project at our field station on Nusa Tupe Island, near Gizo in Western Province, allowing us to restart the culture of clams for the aquarium trade. We now have a small but effective hatchery there, so the distribution of seed clams can continue. The villagers are very keen to be involved.”

Adapting to a new environment

The sea cucumber research was continued in New Caledonia. “In the early stages we had considerable challenges,” Warwick says. “We had to build a new hatchery and adapt to the new environment because, unlike in the Solomon Islands, the sea cucumbers do not spawn year-round in New Caledonia – it is more like October to January. Water quality is different, and controlling the large daily variation in temperature was a challenge, but important to achieve high survival rates of the sea cucumber larvae. We surmounted those challenges and now we are seeing very good research outcomes.”

Warwick joined the program three months after the move to New Caledonia. He brought with him an extensive knowledge of fisheries biology and management garnered from years of research work with abalone, trochus and giant clams and studies of management with inland fisheries. He teamed up with project leader Dr Steven Purcell, an ecologist with previous research experience on an ACIAR project investigating the restocking of depleted trochus populations. Warwick has supported Steve in the research that has brought advances in culturing and restocking the sea cucumbers.

They supervised the successful repetition of experimental-scale juvenile production that had been developed in the Solomons. The next step was to scale up the production of juveniles. They were aided by new facilities for culturing sea cucumbers, including a 10 by 15-metre greenhouse and a system of flow-through tanks and raceways. They also adapted some successful work undertaken in Vietnam, and evaluated methods for growing juveniles in earthen ponds.

Release experiments in the marine environment followed. “Steve, as the ecologist, had so many issues to address in the releasing trials,” Warwick says. “He had to identify suitable habitats and answer questions such as the optimal size for their release, how to transport them, the best time of day for release to minimise predation, the ideal depth of water, whether they needed shade and the best time of year for release. To track the progress of the juveniles after release he developed a very effective method of tagging them, which is a break-

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through in sea cucumber research. He has been able to sample and re-release many of the cultured juveniles every two months and tracked their progress for more than a year.”

Warwick’s main focus has been sustainable management of sea cucumber fisheries – to study the natural populations and the communities that fish them. He has come to realise just how important sea cucumbers are as a source of income for the villagers in many parts of the Pacific. For many, they provide the main source of income, being so easy to harvest, and since many villagers have accumulated debts, they need reliable income to service them. It is little wonder that the resource is being overfished.

Another disturbing factor is that when the sea cucumber populations go into decline the villagers seek other sources of income, leading to exploitation of other vulnerable species such as sharks. It is salutary that the situation in the Solomon Islands led to an indefinite ban being placed on harvesting and export of sea cucumbers. (It was the ACIAR–WorldFish studies of fishing patterns that alerted national authorities to the crisis across the archipelago.) Already there is anecdotal evidence of a rise in the culling of sharks for their fins.

This new situation highlights why it is so important for ACIAR, WorldFish and others to work together to encourage cooperative donor action in support of a mosaic of projects covering a wide range of potential income-producing activities, in order to foster alternative livelihoods and thereby protect vulnerable marine species. This is indeed happening in the Solomon Islands, with agencies supporting research on seaweed culture, black pearls and capture and culture of fish and crustacean species for food and for the aquarium trade.

Warwick and WorldFish are eager to see more involvement from those countries that stand to benefit from the work. “It is important to note that agencies such as ACIAR and WorldFish can provide funding to develop new technologies and extend them in limited trials in small numbers of villages. But it takes the combined efforts of various concerned groups – national and provincial fisheries authorities, extension services and locally based NGOs – to apply the work more widely,” he concludes.

All these and other matters will be on the agenda at a workshop to be held in Papua New Guinea in late March (see panel).

BRAD COLLIS

A GOOD LITTLE EARNER

ACIAR and WorldFish have recognised that capture and culture of reef fish and invertebrates can provide a small but consistent income for Solomon Islands and other Pacific Island countries. They have invested in developing simple, low-cost techniques so that establishment costs can be repaid in a few months. It has provided an opportunity to build a market niche in the aquarium trade for species not caught by conventional methods, such as painted lobster and cleaner shrimp. The Nusa Tupe Field Station in Western Province, Solomon Islands, has trained village participants and national fisheries officers in techniques to capture and culture coral reef species.

As a result, community members of two coastal villages began catching and rearing post-larval lobster, cleaner shrimp and fish.

Warwick Nash describes the technique for collecting the lobster and shrimp: “All that is needed is a length of coconut palm trunk cut to size and drilled with holes,” he says. “The villagers secure these vertically with stakes in the sandy lagoon behind the reef front and when they come back a few days later, they find the tiny crustaceans have taken shelter in the holes. They have learnt how to gently remove them to holding tanks where they on-grow them for about one month before they are sold to a distributor in Honiara. The painted lobster and cleaner shrimp are in demand for the aquarium trade and a single animal is worth around eight Solomon dollars – that is considerable reward for a village enterprise.”

SEA CUCUMBER WORKSHOP

ACIAR is hosting a sea cucumber fishery management workshop in March near Port Moresby, PNG. ACIAR and WorldFish believe that research work on sea cucumber culture and release and the studies of natural populations have now reached a sufficient stage for wider dissemination and the involvement of other organisations. This workshop is an opportunity for many to discuss the implications of wild stock management and the effectiveness of restocking. Unless proper management plans are in place, the released cultured juveniles will not be left to grow and reproduce to lift the depleted populations.

ACIAR will also use the meeting to develop a project aimed at sea cucumber fishery management strategies in PNG and begin the process of establishing future directions for a Phase 3 WorldFish restocking project.

ACIAR will look for financial commitment from many of the parties who stand to gain from the extension of the results to their communities. ACIAR and WorldFish have no doubt that in promoting the sustainable development and use of sea cucumbers they have backed a potential winner for the Pacific region.



Healthy catch: ACIAR and WorldFish are helping ensure the fishing industry is not the one that goes away.