

# OF GIANT CLAMS AND LIVE ROCK: ORNAMENTAL AQUACULTURE

**ACIAR activities in the Pacific region sometimes resonate well with the needs, interests and agribusiness opportunities available among Indigenous communities in northern Australia.**

BY DR GIO BRAIDOTTI

**O**n the Pacific island of Tonga it is the cultivation of organisms for the marine aquarium trade that is fomenting an economically viable aquaculture industry. While trade in ornamental organisms may seem trivial, the aquaculture facility has important conservation trade-offs, both in terms of replacing unsustainable wild harvests and in restocking depleted reefs.

Additionally, the ACIAR project has sparked interest among Indigenous communities in Australia where 'mariculture' is proving a low-impact industry that resonates well with traditional ways of interacting with the natural world.

In view of broad social, cultural, environmental and economic benefits, ACIAR has played pivotal roles in providing the research needed to develop mariculture expertise and capacity both in Tonga and among Australian Indigenous communities.

Research activities have been mainly based at Tonga's Fisheries Mariculture Facility (FMC). The facility was originally established with Japanese assistance to supply tuna bait to commercial fishers. ACIAR's engagement began after the facility was badly damaged by a tropical cyclone in the 1980s.

The ACIAR project made it possible to refurbish the facility to meet standards for the cultivation of giant clam (*Tridacnidae*) for a large and growing marine aquarium trade. Subsequently in the 1990s, Japanese assistance made it possible to improve the facility's seawater flow-through system to allow the cultivation of species for resources enhancement, including commercial top and green turban snails.

The opportunity to expand further into the cultivation of aquarium organisms came in 2009 when ACIAR joined with the Secretariat of the Pacific Community (SPC) on a project to cultivate corals and 'live rock'—the misleading name given to the aragonite skeleton of dead corals, which can be colonised and encrusted by colourful coralline algae and other unusual micro and macro marine life.

The result is a low-impact, low-maintenance industry. The marine animals being cultivated

require sunlight and no additional feeding. The industry sits well with the 2008 decision taken by Tonga to ban wild harvest and export of live rock.

Bart Penny of the Kimberley TAFE's Broome Aquaculture Centre says it was a combination of these properties that made live rock mariculture appealing to various Indigenous Australians. "A live rock aquaculture industry fits perfectly with the Indigenous community's local understanding of marine systems and their important cultural activities," he says.

As a result, the Tonga experience became grist for the establishment of a course on live-rock aquaculture—the first of its kind in Australia—that extended the Pacific experience gained through the ACIAR project to potential Indigenous enterprises.

ACIAR supported James Cook University aquaculturists Scott Mactier and Cathy Hair to provide the course and pass on some of the lessons learnt about live rock cultivation in Tonga.

The course covered work practices associated with producing and exporting cultured live rock, including manufacturing the artificial rock base, preparing species for colonisation, harvest techniques, packing for export and basic trade operations.

A cross section of the Indigenous community attended, including Aboriginal students and potential business people from the mid and north regions of Western Australia and the Northern Territory. Lectures and practical sessions were conducted at the One Arm Point Hatchery.

Following the course, Indigenous communities in northern Western Australia have taken up the technology and are trialling opportunities to develop a new mariculture industry.

The ACIAR team members provided troubleshooting exercises, an understanding of the features of good artificial rocks and the tools to develop rocks from materials in their own areas, along with skills and tips on improving their operations.

"There is also a network established of experts who are available to contact if problems arise with their commercial operations in the future," Cathy Hair says.

"Given the physical and social similarities of Indigenous Australian aquaculture and that in the Pacific Islands, the knowledge gained through the course will be invaluable to the development of the industry in Australia." ■

**ACIAR project: FIS/2006/138**

## NEWS IN BRIEF

### Reseeding the wild

**Trochus shell is highly sought after for buttons and costume jewellery. Australia, Indonesia and the Pacific islands supply about 7,000 tonnes of shell annually and there is concern about depletion of the fishery. An ACIAR project investigated the prospect of using cultured trochus to reseed depleted reefs in this region and developed a simplified method of inducing spawning in trochus. In Australia, a pilot hatchery to produce juvenile trochus for the reseeded research was constructed at One Arm Point in 1999. The hatchery was funded by ACIAR, Fisheries WA, Bardi Aborigines Association and the Aboriginal and Torres Strait Islander Commission (ATSIC). Today the hatchery is both a tourist destination and mariculture centre that provides livelihoods to the local Bardi-Jaawa people. In recent years up to 15 tonnes of trochus have been exported to Europe, particularly to Italy's fashion industry. At \$9 per kilogram the export trade provides substantial returns, with all the profit earned going back into the local community.**

**ACIAR project: FIS/2001/085**

### Food choices

**With access to nutritious leafy vegetables limited in the Indigenous communities of northern Australia, Samoa, Solomon Islands and Fiji, the health impacts have become a concern to ACIAR. A project is underway to identify leafy vegetables with the potential to improve human nutrition, alongside activities to understand and document the reasons for food acceptability among these communities. ACIAR's Pacific Agribusiness Research for Development Initiative (PARDI) is on board too, examining commercial factors such as market development and loss of nutritional value in postharvest handling.**

**ACIAR project: PC/2010/063**

### Say it with flowers

**World trade in ornamental flowers, foliage and live plants continues to increase and there are recognised market opportunities for the supply of novel products by Indigenous communities based on the rich biodiversity of the Pacific and Australian region. Scoping studies by ACIAR have identified opportunities for improving Indigenous livelihoods through the use of novel, native floriculture activities and enterprises.**

**ACIAR project: HORT/2008/011**

'Live rock' has a large and growing market as an ornamental must-have addition to saltwater aquariums.