

## CNMI expresses interest in offshore aquaculture

by Antoine Teitelbaum

SPC Aquaculture Officer (AntoineT@spc.int)

*Worldwide, open ocean cage aquaculture (or offshore aquaculture) is regarded as an industry with huge potential and which is largely underdeveloped. The Commonwealth of the Northern Mariana Islands (CNMI) has recently expressed interest in developing this industry. Earlier this year, CNMI organised an open ocean cage aquaculture symposium on Saipan. This is a significant development in a region where marine finfish aquaculture is only just being considered.*

### Marine finfish in the Pacific: Background information

Remote islands and faraway markets, high operation costs and lack of skills needed for aquaculture — these constraints are often mentioned when discussing marine finfish development in the Pacific Islands region. “We can’t compete with Asian neighbours!” seems to be the main complaint of this non-developing industry while everywhere else, finfish farming is developing steadily. However, in recent years, this line of thought has changed. Pacific oceanic waters are pristine, broodstock are easily sought and free of pathogens and suitable aquaculture sites are numerous. Also, several places have no regulation in place yet, and regulations can be developed “in collaboration” with the aquaculture industry. Last, with an increase in population and a change in life style, domestic markets are growing and the demand for fresh marine fish from Pacific Island countries and territories (PICTs) is high.

A few PICTs have made marine finfish aquaculture a national priority, and have invested tremendous amounts of time and effort in setting up marine finfish hatcheries in which the final aim is to supply small- to medium-scale farmers who will sell their products to local markets.

Below are several examples of marine finfish initiatives that are currently underway in the region.

- In French Polynesia, the batfish (*Platax orbicularis*) — locally called paraha peue — hatchery will soon be operational and it is expected that a number of farmers will be able to supply local markets with this species in 2011. Paraha peue, a native species, is considered to be a delicacy.
- In New Caledonia, a national hatchery project will be operational in 2012. The aim will be to produce grouper and snapper species, and assist farmers in rural area to produce fish as an alternative to shrimp, or simply as a new activity. Although the original plan was to target export markets, the project has now changed its strategy to targeting local markets. If production reaches economies of scale, export markets for live or fresh chilled fish within the region will be considered.

- Also in New Caledonia, a private sector-based project is nearly ready to begin producing hatchery-reared rabbitfish. *iganus lineatus* is a species that is receiving increasing global interest because it is herbivorous (easy to feed) and popular as a food item (easy to sell).
- In Palau, grouper species are being closely looked at in the national hatchery. The country has hopes of developing an export market aimed at the Asian live fish market. Milkfish also has been selected as a priority commodity, most likely because of the large Asian community there, which favours this fish. Milkfish is relatively cheap to buy, but has huge sales potential (in terms of volume), as this fish is the daily dish for middle class households.

More projects are being developed throughout the region but the above examples are some of the highlights. The reality is that marine fish aquaculture in the Pacific is becoming commercially viable, although open ocean aquaculture is a different story.

### Offshore aquaculture in the region: The CNMI example

At the recent symposium in CNMI, pioneers of open ocean cage aquaculture in Hawaii were invited as resource people. Neil Sims from Kona Blue relayed his experience with farming amberjack (*Seriola rivoliana*) off the Kona coast, and Randy Cates, from Cates international, shared his moi (*Polydactylus sexfilis*) farming experience on Oahu. Both of these operations produce about 500 tonnes of product per year. Although they have hatcheries, these ventures receive support from, and continue to rely on, assistance from the Hawaii Oceanic Institute (represented by Charles Laidley during the conference) for their supply of fingerlings. It was said that these venture required an initial capital investment of about USD 5 million each.

Because offshore aquaculture requires large capital investment, it is dedicated to markets that can absorb large quantities of product. An interesting question is whether offshore aquaculture is transferable to CNMI in particular and to PICTs in general.

### Open ocean aquaculture



Open ocean aquaculture is the farming of marine fish in large sea cages in offshore areas, in water that is sometimes more than 50 metres deep. It requires large capital investment and high skill levels for operating. Offshore aquaculture is difficult to do because of sea conditions, swells and winds, but presents great advantages in that it poses no conflicts with other coastal zone users the way that conventional sea cage aquaculture does. If the aquaculture site is properly selected, offshore cages offer pristine growing conditions for fish due to clear, clean seawater (i.e. no pollution due to runoff or turbidity). Offshore aquaculture is usually developed in places where there are no other options. Open ocean aquaculture occurs around the Pacific Islands region, mostly in Hawaii, Asia and Mexico. The species that are farmed are usually fast growing, carnivorous, and avid swimmers (e.g. cobia, amberjacks, tuna).

There are no clear answers. CNMI has competitive advantages and is in need of ventures that will help boost its economy. The textile industry, which employed thousands of people, has collapsed. The tourism industry, which had flourished over past decades, has also dropped and is down to half of what it used to be. These factors, plus the recent economic downturn in the United States, have caused CNMI authorities to consider a range of economic activities, including aquaculture. CNMI (through the Northern Marianas College – the competent authority for aquaculture in the territory) has identified offshore farming as a potential tool for development. Land use is restricted but ocean access and bathymetrical charts show good geographical potential for offshore farming.

Hawaii's experience, as detailed by Cates and Sims, is an excellent lesson for CNMI and other PICTs. Offshore farming technology requires a high level of specific skills and some high technology inputs in terms of cage structure, navigation, and feeding processes. Cates and Sims demonstrated different strategies and approaches: Cates farms exclusively for local markets while Sims focuses on, among other things, targeting the overseas sashimi market and producing high-end products. Both have their constraints and opportunities, demonstrating that this type of farming needs to be studied on a case-to-case basis.

### Offshore farming in the Pacific

A common mistake when developing a list of priorities for aquaculture projects is to place greater importance on “technical feasibility” than on “markets and access to them”. It has been shown that offshore farming is feasible in places such as Hawaii but it is also known that Hawaii went in this direction because there were no other options.<sup>1</sup>

In the case of offshore aquaculture in PICTs, local markets are likely to be too small to absorb production from offshore farms, given that these must reach a high tonnage threshold before they break even (e.g. several hundred tonnes). If PICTs ventured into offshore farming, the only option would be to target export markets.

Fish species that can be sold in large volume, whole or processed, and which will guarantee weekly sales, must be identified while also determining whether it is possible to break even financially. Several questions that should be asked immediately include: How much are freight costs for importing containers of aquatic feed? How much are freight rates for exporting products, whether frozen (by sea) or fresh (by plane)? How much are labour costs? What sort of taxes will the company pay on imported equipment?

While offshore aquaculture is a huge challenge, in today's global context where quality food items, environmentally friendly aquaculture ventures, and production traceability are of concern to the end customers, these consumers may be ready to pay a premium to purchase fish from the Pacific that are raised in aquaculture facilities.

Another consideration are the markets that can be reached from any given PICT such as local restaurants, domestic trade, export (live, whole, processed or filet). Should we then produce live fish, expensive fish, “day-to-day” fish?

The choice will determine the scale of production that must be achieved in order to supply a particular market. Once these elements have been considered, then the entrepreneur will decide on a species or two and the appropriate technology to produce them (i.e. offshore aquaculture, open top floating cages, small-scale artisanal enterprises).

<sup>1</sup> There is a lack of protected coastal areas where traditional, open top cages could be deployed without conflicting with other sea users.