

Public-private partnerships are paying off in PNG inland aquaculture

There is an increased level of private-sector involvement in inland aquaculture in Papua New Guinea (PNG), which has stemmed from past government-initiated projects and demonstration facilities in hatchery and feed-making technologies.

SPC's Aquaculture Section staff took part in a training needs assessment for PNG's National Fisheries College in Kavieng, and made visits in July to key PNG aquaculture areas and installations. The vigour and enthusiasm with which small-sale, household level businesses or community projects are being based on and around inland aquaculture of tilapia (*Oreochromis niloticus*), carp (*Cyprinus carpio*) and trout (*Oncorhynchus mykiss*) is impressive.

There is now an emerging trend among the more successful and motivated farmers to specialise in certain parts of the fish aquaculture custody chain. Private-sector tilapia and carp hatcheries are being established as stand-alone businesses (i.e. they are not a subset of bigger growout-pond farm operations that sells eatable fish, or part of a government department), and these now act as district-level distribution centres for both fingerlings and feed, each supplying as many as 100 other farmers.

These advanced-level private farmers tend to have received training from government staff from PNG's National Fisheries Authority (NFA), provincial fisheries offices, and government-trained field agents now working with non-governmental organisations such as Bris Kanda in Lae. Some farmers have benefitted from

work experience attachments at the Highlands Aquaculture Development Centre in Aiyura. This training is being put to good use and has created a ripple effect, whereby more and more household farms can be supplied through sustainable private-sector businesses and expertise.

It is estimated that there are at least a half-dozen tilapia and carp fingerling and feed specialists in PNG. Below are a few examples.

Potsy Tilapia Hatchery

Managed by Douglas Kawa, a BSc graduate of Uni-Tech in Lae, and his *wantok* Moses Ngandang, this facility is established on family land near Markham Bridge and is a private-sector tilapia fingerling distribution centre for Morobe Province. The facility is run as a stand-alone business that deals exclusively in the sale of tilapia fingerlings for pond stocking. Five people work there full time, and another two casual hires assist with harvesting and packing fingerlings. Attachments have received training at Aiyura and a short training at Erup government station. The hatchery is at the centre of a cluster of several dozen tilapia ponds that are managed by



Douglas Kawa (second from left) of Potsy Tilapia Hatchery and Jacob Wani (second from right) of NFA watch as tilapia fingerlings are harvested ready for delivery to a tilapia farm in Morobe Province.

different households in the immediate neighbourhood, supplied with fingerlings and feed from this hatchery. There are other farms farther afield in Morobe Province whose businesses are now based on tilapia fingerlings supplied from Potsy Hatchery. New farmers can also be trained here through collaboration with other institutions and non-governmental organisations.

Kotuni Trout Farm, Goroka

Established in 1976 but later discontinued, this farm is now being reactivated as a community project with assistance from NFA. The first new culture cycle, brought in as eyed-eggs from Tasmania, is now underway, and a pellet made of local ingredients by government staff in Goroka is now being tested against imported Australian trout feed. If successful, farm staff will need to acquire their own feed-making machinery and be trained in order to be self-sufficient in supplying feed to the farm. The next plan is to re-commission the onsite trout hatchery to supply themselves and other farms, of which there are several in Eastern Highlands Province. A separate batch of fish is now being raised to brood-stock size, to enable re-commissioning of the onsite trout hatchery.

Western Province tilapia and carp farmers

There are a good number of fish farmers in PNG's Western Province, particularly along the Tabubil-Kiunga Highway. Projects were initiated by the combined efforts of NFA, Western Province Fisheries, and Ok Tedi Fly River Development Program (OTFRDP). Abraham Isok is a farmer who runs a tilapia and carp farm — comprising seven ponds — near Migalsim Village not far from Tabubil. He is not a local landowner, but rather has moved here from another district and has bought a small piece of land that he uses intensively for his livelihood. He harvests every two months and sells fresh fish in bundles at the Tabubil market. Although he is not formally trained, he has received instruction from Aiyura-trained OTFRDP staff. In Kiunga we overheard a conversation with another farmer who had come into the OTFRDP office to strike a deal for distributing fish feed to other farmers from his village-based farm, in partial exchange for providing feed ingredients such as whole



*Staff of Kotuni Trout Farm near Goroka proudly show a sample of their first new pond cycle of rainbow trout (Oncorhynchus mykiss).
Close-up view of trout.*

rice and sorghum to the fish-feed, mini-mill in Kiunga. This farmer is already trading in tilapia fingerlings.

Sirinumu Dam tilapia cage culture farm

Located about an hour's drive from Port Moresby, not far from the start of the famous Kokoda Track, Jonah Bobogi operates a farm on an islet of Sirinumu Lake. He has built a floating platform with 18 fish cages in the lake, and has built 6 cement ponds (6 m x 5 m) for a

NEWS FROM IN AND AROUND THE REGION

tilapia hatchery and broodstock on the islet. Recently, he sold a harvest of 1.4 tonnes of tilapia in Port Moresby. He is one of 60 farmers on this lake, and he is now the main supplier of tilapia fingerlings to the other farmers. Jonah was shown how to farm fish through extension visits by Aiyura-trained NFA staff, and in this way, he has acquired the basic skills needed to establish his business. He intends to expand his family business to become a tilapia fingerling supplier for all of southern PNG.

By PNG standards of primary-sector industry development, inland aquaculture is still a fledgling sector but it is one with enormous potential for future expansion. However, the sheer scale of the present and future needs for trained personnel, and the logistical constraints imposed by distance, topography and infrastructure, are major hurdles to overcome. A district-by-district approach is needed, where small provincial aquaculture centres can serve as ripples in a pool. It is gratifying to see that private-sector uptake of public-funded initiatives in aquaculture can be a successful mechanism for this activity to radiate outward to the district level from the comparatively few places where PNG aquaculture capacity presently exists.

By regional standards, PNG is a leader in inland aquaculture in terms of the sheer number of farmers, volume of production, and economic sustainability of projects. The spirit of enterprise is alive and well in PNG, and farmer motivation is high. Specialisation of activities within the fish custody chain, such as the emergence of private hatchery operators, is one hallmark of a successful and maturing industry. If ongoing efforts to develop the sector remain on their present course, the future of inland aquaculture in PNG will be a good one.

For more information:

Tim Pickering

SPC Aquaculture Officer

(TimP@spc.int)

or

Jacob Wani

Executive Manager - Aquaculture & Inland Fisheries,

PNG National Fisheries Authority

(JWani@fisheries.gov.pg)

All images: Tim Pickering



Jonah Bobogi with tilapia that were spawned in his tilapia hatchery, and grown-out in cage culture at Lake Sirinumu near Port Moresby.