

The marine aquarium trade in Papua New Guinea: Historical context and current activities

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Introduction

The Papua New Guinea (PNG) National Fisheries Authority (NFA) has been interested in developing its aquarium fishery since 2004. In the second half of 2007, with the approval of its board, NFA commissioned EcoEZ Inc., a consulting company based in Alexandria, Virginia, USA, to conduct a rough assessment of marine species with potential for export as ornamentals. The project, then named as the Papua New Guinea Sustainable Marine Aquarium Resources Trade was given a substantial start-up budget over a six-week period. Following this initial resource assessment, a one-year technical services contract was then awarded to EcoEZ Inc. in January 2008. The project was re-named the SEASMART Programme (Sustainable Enterprise Advancement through the Market Advantages of Responsible Trade) and its objective was to provide technical and project management services for the development of a sustainable marine aquarium trade industry in PNG. At the end of its first year, the programme was extended for another two years.

Key achievements of the programme over these three years include:

- a number of export trials;
- training men and women in eight Central Province coastal communities in the collection and handling practices according to the Marine Aquarium Council⁴ certification standards of fish, coral and invertebrates (see Table 1); and
- the establishment of a state-of-the-art export facility in central Port Moresby.

Although laudable, it should be noted that these achievements were accomplished at significant expense — nearly PGK 15 million (~ USD 5 million) over a three-year period ending in 2010. At the request of NFA, a formal review of programme outcomes was undertaken by SPC in October 2010, with the following findings and conclusions.

- The resource assessment, community training and extension work part of the project have been successful at providing good quality fish, and setting a good management and monitoring framework in place.
- A full baseline inventory of potential marine aquarium fish species and invertebrates, their densities, estimated stocks and total allowable catch by species for each of the eight fisheries managements areas (FMAs) already surveyed has been produced.
- The holding facility constructed is world class and is to MAC certifiable standards, but operational costs are very high, and have contributed to the lack of commercial viability of the project.
- Poor species mix probably contributed to poor economic performance.

Given the overall non-commercial viability of the project, poor communication between project operators and NFA, and the failure to deliver on several key project deliverables (including a finalised management plan and fully functional export monitoring software), operations were shut down in December 2010.

Table 1. Number of fishers trained under SEASMART in eight Central Province communities in Papua New Guinea.

| Community | Number of fishers trained |
|------------------|---------------------------|
| Fishermen Island | 22 |
| Roku | 18 |
| Kouderika | 12 |
| Gaire | 18 |
| Gabagaba | 18 |
| Pari and Taruama | 30 |
| Keapara | 27 |

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⁴. Note that this programme is now defunct.

EcoAquariums

Capitalising on the resource assessments and community training portion of the work undertaken by EcoEZ, and addressing some of the issues raised by SPC in its review, a private entrepreneur submitted a proposal to NFA in 2011 to establish a smaller entity. In early 2012, the proposal was accepted and a trial license granted to EcoAquariums to export marine ornamentals from the FMAs around Port Moresby and Central Province. The company established its holding and packing facility on Fishermen Island⁵ — traditionally known as Daugo Island — and fish collection centred mainly around the island itself; although fish provision toward shipment originally was meant to be allocated on a rotational basis between Fishermen Island, Pari and Taurama villages, with all collectors trained under SEASSMART. The company's main objectives were to ensure that fish were collected at sustainable levels and were of high quality, and that activities promoted equitable trade. However, in early 2013, after 30 shipments were made between 2011 and 2012 (to the US, Europe, and Asia), the company ceased operations due to its economic non-viability. Freight costs, the high price per fish paid to collectors, the difficulty in keeping collectors (at Fishermen Island in particular) engaged in the trade due to other more lucrative opportunities (e.g. tuna fishing) all seem to have significantly contributed to this outcome. At present, the future of the company is unclear.

NFA Marine Aquarium Programme

After closure of SEASSMART in 2010, NFA integrated the resources assessment and training component of the programme into its fisheries management unit, with the objective at the time to undertake resources monitoring and collectors training in the event that a private sector for marine ornamentals develops.

The NFA Marine Aquarium Programme currently consists of three core divisions:

1. Resource Assessment and Management — Staff are responsible for conducting regular biological surveys and monitoring of key species typically traded for the marine aquarium trade at predefined sites within the eight FMAs.
2. Fishers and Fishery Division — Staff are responsible for training local aquarium fisher folks on proper collection, handling and packing methods.
3. Management Area Planning — Staff deal with the social component of the programme, which includes engaging with community stakeholders and raising awareness about the marine aquarium programme, conducting socioeconomic monitoring surveys, and assisting village members in developing a committee that will regulate aquarium fishing activities within their respective communities.



Women from Fishermen Island preparing live coral pieces for grow out (image: Colette Wabnitz).

In 2011, detailed surveys of Fishermen Island collection areas were conducted to assess fish, coral and invertebrate population abundance after marine collection activities ceased. Findings indicated that there were no significant differences between collection years and the 2011 assessment, seemingly indicating that collection areas are in good condition. Concern was raised at one point during the programme because of the many sea anemones spotted without their resident host percula clownfish (*Amphiprion percula*). However, recent surveys seem to indicate that the population has recovered. Unfortunately, there has been no follow up assessments since then.

In 2012, ecological surveys conducted around Pari and Tarauma, two communities meant to contribute fish toward EcoAquariums' shipments, showed stocks to be in good health. However, the study cautioned that the overall reef area available for collection is relatively small, with all three FMAs sharing the same reefs and collecting ornamentals from these interchangeably.

Fishermen Island, Pari and Tarauma were also chosen as key sites for socioeconomic assessments. Their aim was to identify any social impacts linked to the aquarium programme, and how NFA can best address issues, if any, when they arise. Findings showed that in Pari and Taurama, the impact of the trade was minimal due to the inconsistent or lack of collectors' employment. However, fishers in these villages retain a keen interest to be involved in the trade and at their request undertook a refresher training, led by the NFA Fishers and Fishery Division team, on species identification, as well as collecting and handling techniques. At Fishermen Island, where fishers have been involved in collection since 2008, the surveys highlighted several concerns, including issues associated with ownership rights, prices paid for different species, collection gear maintenance, company partnership, and neglect of promised benefits to the community by EcoAquariums. Nevertheless, several community members, especially women, highlighted that collection activities provide an important source of income to those actively involved in the trade.

To date, other activities undertaken by the Marine Aquarium Programme team have included:

- Attempts to revive Management Area Planning committees at Fishermen Island, Pari and Taurama villages. The committees, made up of appointed community stakeholders, were originally established to give a sense of ownership and responsibility over collection activities and manage these as well as any issues that may arise among villagers. However, these remained largely ineffective because members expected to be financially rewarded for their time.

- Given the overall reduced level of marine aquarium activities since 2011, a number of the Marine Aquarium Programme staff were also recruited to participate in other inshore fisheries activities, such as beech-de-mer stock monitoring (8 out of the 14 maritime provinces in PNG); Inshore Fish Aggregating Device (IFAD) programme; Port Moresby Clean Seascape Programme; fish market surveys; and giant clam hatchery development work.

With Marine Aquarium Programme activities currently on hold, all officers working for the programme have been made staff of NFA's inshore fisheries.

Based on experiences thus far, the following activities are recommended:

- Conduct a detailed economic viability assessment for aquarium trade activities. Freight within and out of PNG is extremely expensive and presents a major (together with operating costs) hurdle to the establishment and development of commercially viable marine ornamental trade activities in PNG. Some of this work is currently being undertaken for potential operations out of Kavieng (partly based on Kinch 2008⁵), as a collaborative effort among SPC, the National Fisheries College, and researchers from the Australian Centre for International Agricultural Research.
- Individuals expressing an interest in developing collection activities should put forward a solid business plan, indicating proven experience in the field and the capacity to run an independently run commercial enterprise (i.e. fully self-financing or at the very least capable of covering the majority of set-up costs; clear price structure and breakdown of how shipments will cover operating costs and allow for income generation). Such a set-up would demonstrate clear commitment to run as a fully independent commercial enterprise, and given that their own funds are at stake, individuals would have a greater responsibility and motivation to ensure the business succeeds.
- Finalise the management plan and accompanying regulations and licensing conditions; these should also be gazetted to provide the required and adequate control and support for the sustainable management of the industry. This is particularly important with regard to potential farmed coral exports. Indeed, from the outset, marine ornamental trade activities in PNG included coral farming of both soft and hard corals. Yet no hard corals were ever shipped, due to the lack of adequate regulations (i.e. management plan and monitoring framework to fulfil CITES⁶

⁵ Kinch 2008, A preliminary assessment of the viability of the development of the marine ornamental aquarium fishery in Papua New Guinea. Report prepared for EcoEZ Inc. and the National Fisheries Authority. 13 p.

⁶ CITES = Convention on the International Trade in Endangered Species of Wild Fauna and Flora.

non-detriment finding) did not allow for the Department of Environment (local management authority) to issue permits for their export. These steps should be taken before the establishment of any new enterprise. The Secretariat of the Pacific Community has offered to work with relevant staff to finalise the plan for its submission to the NFA board by the end of this working year.

- If and once collection and export activities resume, emphasis should be placed on reliability, good species mix, quality, and consistency of production to maintain a competitive advantage. Volume and pricing at the market along with the aforementioned may also account for profitability.

The Marine Aquarium Programme should further capitalise on the momentum generated from past initiatives and the current lull in activities to standardise

and compile all marine aquarium survey data, export data, and fishery reports for storage in the NFA database. These data should then be analysed, linked to the socioeconomic context of PNG, and findings written up for publication. Considerable time, effort and resources have been expended toward developing an aquarium trade activity in PNG. It is unfortunate that this has not been a successful venture as yet. Key aspects of the groundwork laid down during the time of the various initiatives were constructive and positive at a wide number of levels, including from a resource assessment, educational and capacity building perspective. Presenting a summary of these experiences, together with data analyses and showcasing lessons learned from the initiatives would be interesting and valuable to PNG, its partners in the region, and the marine ornamental community at large.



NFA staff during a marine aquarium trade survey. From left to right: Jonathan Isikiel, William Bina, Anthony Nagul and Lorel Dandava-Oli.

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