

Commercial marine ornamental fish surveys in Kavieng, Papua New Guinea



White-bonnet clownfish (image: Colette Wabnitz).

The newly established Nago Island Mariculture and Research Facility (NIMRF) is a fully operational aquaculture research and marine science centre within Kavieng Lagoon in Papua New Guinea (PNG). NIMRF was established by PNG's National Fisheries Authority (NFA) and is co-managed by NFA's Aquaculture Unit and the National Fisheries College (NFC). Currently, NIMRF, in conjunction with James Cook University (JCU) in Australia, is implementing a project focused on mariculture development in PNG's New Ireland Province that is funded by the Australian Centre for International Agricultural Research (ACIAR).

The ACIAR project's main objective is to promote the production of marine species that are technically feasible and socially acceptable to local communities within the region. The species on which the project will focus are sea cucumbers (sandfish), edible oysters, and marine ornamentals (the exports of which could be supplanted with wild species collection), including hard and soft corals. As part of the ornamental component of the project, a commercial ornamental fish survey and viability assessment was conducted with support from industry experts, SPC's fisheries scientist responsible for aquarium trade activities, a JCU PhD student who will focus on rearing white-bonnet clownfish (*Amphiprion leucokranos*), and staff from NIMRF, JCU and NFC.

As well as looking for potential ornamental species to culture, the commercial survey centred on species located in the depth range from which fish are typically

safely collected (0–40 m). During this assessment, all ornamental species of potential interest for the marine aquarium trade were recorded and placed in one of three categories.

1. Species of targetable size and high abundance. In situations where an industry can be developed, these species would constitute the main target species.
2. Species with some market value but not viable for export (and for which some were observed in low abundance). Such species would not be targeted per se but would be collected if encountered during a dive.
3. Species with low or virtually no market value (thus not viable for export). Individuals observed on the reef are typically observed at too large a size or at too low an abundance, for example.

NEWS FROM IN AND AROUND THE REGION

Dives allowed the identification of four distinct areas.

1. Partially enclosed lagoon with low current levels and no direct passes to the open ocean.
2. Lagoon with numerous passes to the open ocean along with high current levels.
3. The western side of the island in the Bismarck Sea.
4. The eastern side of the island.

A large numbers of species of interest were recorded, with good abundances noted for targetable sizes. No endemic or new species were observed however, and there were no colour variations found that would bring a premium on the market. A few organisms did stand out though, such as white-bonnet clownfish, which are unique to the region and not readily available on the market. This is why this species is targeted for further research for aquaculture potential.

While available flights would, in theory, allow the export of high-quality fish to a variety of destinations, in practice, a number of issues, mostly related to the high cost of freight, would make the development of a viable ornamental export operation very challenging. These challenges include:

- non-competitive freight costs from Kavieng to Port Moresby and onward;
- limited freight capacity from Kavieng to Port Moresby;
- difficulty in negotiating competitive freight rates between two carriers (because companies operating flights within PNG and onward are likely to be different and the carrier operating the longest leg determines the overall freight rate);

- frequent cancellations and delays both at Kavieng and Port Moresby airports;
- increased risk of missed transfers at international airports when operating with multiple carriers; and
- price-sensitive markets in most accessible markets (Singapore, Japan, and Hong Kong).

Overall, NIMRF is in a unique position to develop mariculture activities and further research on other organisms that may have a place in the ornamental market. The current survey has helped in this regard, particularly with work beginning soon on culturing white-bonnet clownfish.

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