



Farming leopards at sea: Paving the way for full-cycle grouper mariculture

Gregg Yan¹

Have you ever seen a Chinese restaurant without a bubbling tankful of groupers? These lethargic fish are among Asia's most sought-after reef fish. In the Philippines, large numbers are plucked from the sea to sate the soaring demand for fish kept alive until just minutes before being served.

Although there are 161 grouper species, one reigns supreme in the market for live reef food fish. The leopard coral trout (*Plectropomus leopardus*) is a colourful crimson fish that, according to Hong Kong Chamber of Seafood Merchants Chair Lee Chaiwah, can fetch up to HKD 1500 (about USD 200) per kilogramme in Hong Kong's wholesale market (Wei 2013).

Palawan Island hosts 40% of the Philippines' coral reefs, and generates 55% of the country's seafood exports (Padilla et al. 2003), chief of which is the highly valued leopard coral trout. In Taytay, a municipality of Palawan, a fisherman earns about 50 times more from a kilogramme of leopard coral trout than he would from other common fish species (Salao et al. 2013).

Locally called *suno*, the tasty red fish are exported to Hong Kong, Singapore, Malaysia, mainland China and other seafood hubs. Many Asians believe that eating fish kept alive just moments before cooking is not only more savory, but the secret to a long and prosperous life.



Figure 1. In an offshore grow-out cage in Palawan, an adult leopard coral trout (*Plectropomus leopardus*) is held prior to export (photo: Gregg Yan).

¹ Communications and Media Manager, WWF-Philippines. Tel: +632 920-7923/26/31. Email: gyan@wwf.org.ph



Figure 2. A typical grouper grow-out facility in southern Palawan, Philippines. Operators must feed and protect the fish, which are held in submerged cages beneath and around the central hut for up to 10 months. There is no electricity, and food and water are supplied exclusively by boat (photo: Gregg Yan).

The annual export value of Palawan's grouper trade is USD 25 million, buoying the local economy and supporting the livelihoods of at least 100,000 people (Matillano 2013).

Wild-caught or farmed?

Most high-value grouper species are wild-caught because the technology to breed and raise delicate marine fish such as leopard coral trout and the CITES-protected² humphead wrasse (*Cheilinus undulatus*) at commercial scales is – at least in the Philippines – several years off.

The use of grow-out systems based on juvenile capture and known colloquially as “ranching” remains the most popular method for leopard coral trout culture. To fuel the trade, millions of juveniles are caught using traps or baited hooks, and fattened in guarded offshore cages where the fish endure temperature fluctuations, overcrowded conditions, diseases, and the occasional sneaky fish cage poacher. Up to 10 months of constant feeding and protection are needed to produce a batch of marketable fish – each around a foot long and weighing from 500 to

700 grams. Currently, a single fish head retails for about USD 60.

Buyers then classify and rate the fish before shipping or flying them to consumer nations. A steaming plate of leopard coral trout can fetch upwards of USD 200 in a high-class Chinese restaurant, especially during the Chinese New Year. Less than 5% of Philippine-caught groupers are sold locally, and often, these have been rejected by foreign importers. “Unfortunately, the cycle is not yet ‘closed’, meaning ranchers still catch juveniles from the wild, fatten them up, and sell them. The fish are not allowed to reproduce,” says Philippines Biodiversity Management Bureau Director Theresa Mundita Lim.

“Surveys have shown that over half of all groupers taken from Palawan's reefs are juveniles, a clear indication that adults have been heavily depleted,” notes Dr Geoffrey Muldoon, an international expert on the live reef fish trade. “A good solution is to move towards full-cycle mariculture, freeing suppliers from having to catch wild groupers to give Palawan's reefs a breather from half-century of fishing.”

² CITES is the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The humphead wrasse was listed on Appendix II of CITES in 2004, indicating that the species is not necessarily threatened with extinction but its trade must be controlled in order to avoid utilization incompatible with its survival.

Full-cycle mariculture (the production of fish or invertebrates in seawater, as opposed to freshwater aquaculture) entails the generation of seafood while minimizing or eliminating the need to harvest wild stocks. Tougher but cheaper species such as tiger grouper (*Epinephelus fuscoguttatus*) and green grouper (*Epinephelus coioides*) have been successfully bred and reared in captivity since 2000. A major issue in cultivating carnivorous fish is that about seven kilogrammes of low-grade fish, usually termed “trash-fish”, are required to produce a kilogramme of grouper meat.

“Full-cycle mariculture has the potential to feed millions, while minimizing natural impacts. It is a better path to unmanaged wild-capture fisheries and is the natural evolution of seafood production,” concludes Muldoon.

References

Matillano M. 2013. WWF-Philippines (pers. comm., 27 February 2013).

Padilla J.E., Mamauag S., Braganza G., Brucal N., Yu D. and Morales A. 2003. Sustainability assessment of the live reef-fish for food industry in Palawan Philippines. Quezon City: WWF-Philippines. Available at: <http://wwf.panda.org/?11914/Sustainability-Assessment-of-the-Live-Reef-Fish-for-Food-Industry-in-Palawan-Philippines>

Salao C., Cola R. and Matillano M. 2013. Taytay: Taking charge of a critical resource; a case study on the Philippines. Coral Triangle Initiative on Corals, Fisheries and Food Security. Manila: World Wildlife Fund. Available at: <http://www.coraltriangleinitiative.org/library/technical-report-taytay-taking-charge-critical-resource-philippines-case-study>

Wei L. 2013. One in 10 grouper species face extinction, with most eaten in Hong Kong. South China Morning Post, 22 May 2013. Available at: <http://www.scmp.com/news/hong-kong/article/1243043/one-10-grouper-species-face-extinction-most-eaten-hk>



Figure 3. Hundreds of market-grade leopard coral trout are prepared for export to Manila and other Asian hubs. In Hong Kong, Singapore and mainland China, a single leopard coral trout can be sold for as much as USD 150 (photo: Gregg Yan).



Figure 4. Leopard coral trout grow-out paraphernalia in Quezon, southern Palawan. It takes up to 10 months of continual protection and feeding to produce a marketable grouper, known locally as *suno* (photo: Gregg Yan).