

The first task is to open discussion with the main importers of live reef fish in Hong Kong and make them aware of the implications of using cyanide, including the threat to the future of their own businesses. The International Marinelife Alliance – Philippines has already initiated talks with one of the largest importers and WWF will continue this dialogue and introduce more traders to the concept of sustainable fishing. The aim will be to steer traders towards a sustainable source of live fish, that is, traditional catching methods. (These are already identified in the Philippines and the intention is to encourage them in Indonesia and other source countries).

WWF Hong Kong plans to conduct a market survey amongst the public to establish a baseline of public attitudes towards eating fish sold live, the effect of cyanide on distant coral reefs, and the long-term prospects if this method of fishing is allowed to continue. If the results show that a significant percentage of the population is unaware of the consequences of cyanide fishing for the live food-fish market, a programme will be planned to change public attitudes by raising public awareness and increasing general concern for the future of coral reefs.

An informed public will promote demand for 'reef-friendly fish' produced from sustainable, well-managed sources, and methods will be developed to provide information to consumers to allow them to choose where they buy fish or which restaurants they frequent. Through WWF's Endangered Seas Campaign, the organisation will work to establish a restaurant 'labelling' method to enable the public to make informed choices of seafood from sustainable sources.

WWF will also consider the possibility of CITES listings for species threatened by the live food-fish trade. This is, however, a very long-term solution since there is little biological data available for many of the target species, such as Napoleon wrasse. Currently, in addition, no country where these species are found and which is signatory to CITES has called for a national ban on the export of such species. These issues need to be resolved before any listing can occur.

WWF also supports village-based initiatives to put their live reef fisheries on a sustainable basis. For example, it is helping support a programme run by an NGO, Fund for Nature of the Philippines (KKP) in the Turtle Islands, Philippines. The programme involves groups of 15 people, representing a cross section of each community, including conservation wardens, teachers, youth leaders, police officers, local government officials, etc. These are being asked to identify their communities' problems. Prominent among these, as has already been established, is destructive fishing methods, including the use of cyanide.

Action plans are being developed that include education for environmental sustainability in the schools and communities. A reef-monitoring programme has been established in one area. Socio-economic studies are also being carried out with the objective of identifying approaches, from the communities' perspectives, for setting up viable community enterprises based on the ornamental and live food-fish trade. Outside assistance is being obtained from local exporters and coral reef scientists, as well as a fisheries certification expert who will help establish a certification system for the export of ornamental reef fishes.

Asian gourmets taste fish to help save coral reefs

*by Carol Fox*¹

Reef fish such as grouper and wrasse are highly prized by Asian gourmets, but the practice of using cyanide poison to stun and capture them is degrading coral reefs in Indonesia and throughout the South-East Asian region. The Nature Conservancy, concerned over the growing destruction of the world's biologically richest marine ecosystems, is working to create a joint venture with Indonesia to save reefs and ensure the trade in these fish is practiced in a sustainable manner.

Traditional fishing methods once allowed for a sustainable supply of wild reef fish, but current methods threaten the availability and affordability of these creatures, as well as many other varieties of seafood.

High prices and decreasing fish supplies have driven fishermen to use large quantities of sodium cyanide, a deadly poison, to stun these large fish so they can be captured and transported live to market. Unfortunately, the cyanide is creating a mosaic of dead and dying reefs in the targeted areas, eliminating them as a source of food and income for locals, as well as for other fishermen who follow.

Destructive fishing has already resulted in the decimation of the majority of the reefs in the Philippines, and of large areas of Indonesia's rich underwater environment. Hong Kong fishing companies note that the continuation of these unsustainable practices is driving fishing fleets farther afield, for example to the Maldives

¹ The Nature Conservancy, Hawaii

and Papua New Guinea. As fish stocks decline, prices of seafood will continue to rise, and favoured species may become unavailable within three to five years.

The Nature Conservancy is working with government and private investors in Asia to develop a sustainable alternative for cyanide-caught wild fish by developing a dependable source of reasonably priced, high-quality fish raised in community-based aquafarms in Indonesia, and possibly in other countries in the region. The farms could use a combination of abandoned shrimp ponds and/or sea-pen culture, depending on local conditions and experience with successful results.

The first step toward establishing such an industry, however, was to determine the present differences in taste, texture and appeal between wild-caught fish and their aquacultured counterparts. To that end, in November 1996 The Nature Conservancy brought together approximately 100 leading gourmets for a series of three fish-taste comparison tests, at three separate dinners in Shanghai, Hong Kong and Taipei.

By comparing farm-raised malabar grouper with wild-caught specimens, the participants helped the Conservancy obtain a clearer idea of the relative strengths and weaknesses of aquacultured fish as a competing product. The taste tests were conducted by the market survey firm OmniTrak Group, and compared wild-caught Malabar grouper (*Epinephelus malabaricus*) against farm-raised grouper from two different hatcheries and finally against coral trout (*Plectropomus leopardus*).

The tests yielded some very promising results. While participants in all three cities, and particularly Hong Kong (where most of these live reef fish are con-

sumed) asserted prior to the tastings that they could tell the difference between wild and farmed fish, and would prefer wild-caught, in fact the majority in all three locations preferred farmed fish from Taiwan's Chou Lien Fong farm. Follow-up investigations will pinpoint the differences in the rearing of this farm's fish that may be responsible for its superior marks.

In all three cities, however, coral trout ranked higher than any of the three varieties of Malabar grouper. Because techniques for raising coral trout and other desirable species such as the humphead wrasse have not yet been perfected, the Conservancy is encouraging Taiwan aquaculture specialists to perfect the spawning and grow-out of these higher-value species as an even more attractive market option.

These first taste test results clearly demonstrated that a market exists for aquaculture fish, particularly for those raised in good water and general environmental conditions, on specially formulated feed, on well-managed farms. The successful development of a market for these fish, however, will depend on upon properly marketing them as an alternative to wild-caught: better in taste, better in diet, and better for the environment.

The Conservancy is talking to both Taiwan and Indonesian investors, and is very optimistic about developing grow-out locations for these fish. Reef-fish farming, combined with more effective cyanide testing, industry monitoring of the trade and improved enforcement, should help shift demand pressure for these fish off the reefs. It will also provide local employment. All aspects of the project are being reviewed for environmental sustainability, including sourcing of the fingerlings, waste run-off, and genetic mixing.

Aquarium fish market boom bodes well in Isles

by Edwin Tauji

Dennis and Luana Mitchell are just small aquafarmers who still support a hobby-turned-business with real jobs. But their tanks of ornamental angelfish are part of an aquarium-fish industry that is measured in billions of dollars world-wide.

State aquafarmers stand to earn a bigger share of that market because of the explosive growth of the hobby and because of a Florida winter freeze that devastated the aquarium-fish industry there. Commercial sales of ornamental tropical fish are booming by 10 to 15 per cent a year in the United States, which has the biggest market in the world, according to studies of the industries. 'It's a slow-growing process. You have to sell a lot of little fish at 50 cents a piece to make it pay off,' said Dennis Mitchell, who raises angelfish in his Upper Waiehu garage. But 1995 Mitchell shipped out

25,000 little fish from Maui. Some prime angelfish specimens can fetch US\$ 5 to US\$ 10 each. The growth in sales is helping Dennis and Luana pay off the US\$ 35,000 investment that got them started three years ago in a converted garage full of fish tanks. What a really has Dennis and Luana smiling is the feeling that it's going to get better.

For Hawaii breeders, sales this winter boomed because a freeze in Florida—where ornamental tropical fish is a US\$ 60 million-a-year (1994 value) industry—killed thousands of fish. US wholesalers normally expect to import fish during the winter anyway, but the Florida fish freeze fuelled demand from Hawaii. 'In the last six months, the price doubled,' Mitchell said. 'In New York, angelfish were selling for US\$ 1.75 (wholesale) and I was selling for 45 cents.