The Hong Kong Trade in Live Reef Fish for Food

Report by TRAFFIC East Asia and WWF Hong Kong

EXECUTIVE SUMMARY

Fish have played an important role in the culture and cuisine of China for centuries. Consumption of reef fish, imported into and kept alive in Hong Kong, still plays an important cultural and social role particularly for business dinners and banquets. Reef fish imported live for food (henceforth live reef food fish / LRFF) are eaten to mark special festivals or occasions, as a close to business agreements and, for the more expensive fish, as a status symbol. They are kept alive until cooking to ensure freshness - a practice that has developed over the centuries and that persists to this day.

To obtain reef fish alive, some fishers use cyanide, mostly in the form of sodium cyanide (NaCN), to stun the fish. Cyanide leaves the structure of the reef intact but, in fact, kills the corals (Jones and Steven, 1997). It can also be fatal to non-target marine organisms including the smaller reef fishes which are vulnerable to lower concentrations. Although the deleterious effects of cyanide are well documented, its use continues, albeit illegally, in many countries (Barber and Pratt, 1997). In cyanide detection tests carried out by International MarineLife Alliance on over 10,000 fish, virtually all the common food fish species tested positive at one time or another. Those species which most commonly tested positive for cyanide included Napolean Wrasse *Cheilinus undulatus*, High-finned Grouper *Cromileptes altivelis* and all *Plectropomus* spp. (Pratt, *in litt.*, 1998).

The question of sustainable use of reef fish is an issue of concern equal to the use of cyanide. Certain species, such as the Giant Grouper *Epinephelus lanceolatus* and Humphead Wrasse *Cheilinus undulatus*, are more vulnerable than most to the use of cyanide as they are difficult to catch with more conventional methods of fishing - such as hook and line. They are also particularly susceptible to stock depletion due to their long life cycles and relatively small population sizes (Sadovy, 1997; Lee and Sadovy, in press). The Giant Grouper

and Humphead Wrasse are already listed as "Vulnerable" in the IUCN Red List of Threatened Animals (Baillie and Groombridge, 1996).

Global concern about depletion of coral reef resources prompted the Asia Pacific Economic Cooperation (APEC) to host the Workshop on the Impacts of Destructive Fishing Practices on the Marine Environment, in Hong Kong in December 1997. Participants agreed on a number of steps needed to reduce the current threats to coral reefs and reef fish, including: entering into bi-lateral agreements; strengthening current laws, regulations and enforcement regarding destructive fishing practices; and putting in place comprehensive monitoring mechanisms to track volume, value and species of live reef fish in trade. The full text of the recommendations are included as Appendix I of this report.

Despite world-wide concerns about the methods used to catch live reef fish and the probable unsustainability of the trade, scant detailed information was available at the consumer end. This project was thus carried out, from May 1997 to February 1998, to collate available information on the trade, to put forward recommendations with a view to strengthening current regulations where appropriate, and to highlight areas in need of further research. The study focuses upon the quantity, species and origin of LRFF imported into and re-exported out of Hong Kong, the structure and dynamics of the Hong Kong trade, and demand in the Hong Kong market. Research was conducted through questionnaires with restaurateurs and traders of live reef food fish and through analysis of available import and re-export statistics.

Hong Kong is believed to be the largest consumer of LRFF in Asia as well as an important entrep^ t for re-export of LRFF (Johannes and Riepen, 1995). Hong Kong imports LRFF from over 10 different countries/regions. The majority of these fish are caught in tropical reef habitats in the Southeast Asian countries and increasingly in the remote Pacific archipelagoes. Southeast Asian countries were found to be the main countries of origin.

Indonesia and the Philippines were, respectively, the main sources of LRFF imports into Hong Kong as well as the main sources for Giant Grouper *Epinephelus lanceolatus*, High-finned Grouper *Cromileptes altivelis* and for Humphead Wrasse *Cheilinus undulatus*. Of concern is that exports of Humphead Wrasse are in fact prohibited from the Philippines and specimens of a certain size are prohibited in exports from Indonesia. Capture of this species and its export from the

Maldives, another Hong Kong supplier, are also prohibited. Traders noted that they were aware it was illegal for this species to be exported from certain areas and noted that smuggling is a common phenomenon.

Import data from the Hong Kong Census and Statistics Department (HK CSD) record the largest quantities of "other groupers" and "other marine fishes" as being imported from Thailand. Malaysia was reportedly the main source of Coral trout imports. Thailand and Malaysia are also important sources for so-called "cultured" species such as Brown Spotted Grouper *Epinephelus areolatus* / *E. bleekeri*, Green Grouper *E. coioides*, Malabar Grouper *E. malabaricus* and Mangrove Snapper *Lutjanus argentimaculatus*, which are mostly grow-out specimens of wild-caught juveniles. Taiwan appears to be the only place where significant amounts of groupers are hatchery-reared. China was the major source of snooks and basses to Hong Kong in 1997, supplying over 96% (by weight) of total imports.

Faced with declining stocks in traditional fishing grounds such as the Philippines (Barber and Pratt, 1997), fishers and traders have been forced to look ever further afield to meet growing demand. Papua New Guinea and the Solomon Islands, as well as the Maldives, are becoming increasingly important source countries for live reef fish, although with the former two this may also be due, in part, to the recent push by Pacific Island Countries (PIC's) to increase exports of LRFF (G. Sant., pers. comm., Sept. 1998).

Air transport has become increasingly important for transporting fish as it enables a faster and more reliable supply. Transport by sea, however, is still used for imports of the larger specimens of Giant Grouper and Humphead Wrasse as larger specimens fare better if transported by sea. Although transport methods have, in general, been developed to a high standard, very high rates of mortality, up to 90% (Sadovy, *in litt.*, 1998) can occur when juveniles are transported for mariculture and for adult fish transported prior to sale. Mortality is an issue of conservation concern because it is live fish which are in demand. Hence, more fish need to be caught to compensate for those that die in transit in order to meet demand.

In 1997, Hong Kong imported an estimated 32,000 tonnes of live reef fish for food, of which an estimated 3,200 - 6,400 tonnes were re-exported to China. Local consumption is estimated to be around 25,600 - 28,800 tonnes per year, and LRFF traders estimated that 75% of imports were comprised of the 11 most commonly available species in Hong (traders, however, use the same common name - Chi

Ma Ban (Brown Spotted Grouper) - for *E. bleekeri* and *E. areolatus.* Thus, although they spoke of the 11 most commonly available species there were in fact 12. These were Humphead Wrasse *Cheilinus undulatus*, Leopard Coral Trout *Plectropomus leopardus*, Spotted Coral Trout *P. areolatus*, High-finned Grouper *Cromileptes altivelis*, Green Grouper *Epinephelus coioides,* Flowery Grouper *E. polyphekadion,* Brown Spotted Grouper *E. bleekeri / E. areolatus*, Tiger Grouper *E. fuscoguttatus*, Giant Grouper *E. lanceolatus*, Red Grouper *E. akaara*, and Mangrove Snapper *Lutjanus argentimaculatus.*

Trade data from the HK CSD show that Hong Kong recorded imports of 21,000 tonnes only of live marine food fish (except eels) - a discrepancy of 11,000 tonnes with this study's estimate. Analysis and comparison of officially recorded imports with interviews with traders provide an insight into the shortcomings of the current monitoring system in Hong Kong. Traders revealed that although Indonesia and the Philippines were the main countries of origin for Humphead Wrasse imports, other countries exporting this species also included Australia, China, Malaysia, the Maldives, Papua New Guinea, the Solomon Islands, Thailand, and Vietnam. These countries are not recorded in the CSD data. Discrepancies in the two data sets may also be attributed to other factors: locally licensed fishing vessels and locally licensed live fish transport vessels in Hong Kong are exempt from declaration of imports of live reef food fish - the main mode of transport for Humphead Wrasse. Furthermore, under the current Marine Fish (Marketing) Ordinance (Chapter 291), the category "marine fish" does not, ironically, include "live fish". There are no inspections of live food fish imported into Hong Kong and declarations by species are not checked. There is, however, no obvious reason for deliberate misdeclaration of imports into Hong Kong as imports are not subject to taxation and, although it is illegal to export Humphead Wrasse from certain countries, this does not make it illegal to import the species into Hong Kong.

Giant Grouper *Epinephelus lanceolatus*, Humphead Wrasse *Cheilinus undulatus*, High-finned Grouper *Cromileptes altivelis*, Red Grouper *Epinephelus akaara* and Coral trouts *Plectropomus* spp. were, respectively, the most highly valued fish. Wholesale prices, in 1997, ranged from US$38 / kg for Spotted Coral Trout to over US$100 / kg for the smaller specimens of Giant Grouper. Overall average wholesale price for reef fish was US$20/kg (Sham, 1997). The estimated total annual value of live reef fish imported into Hong Kong for food therefore exceeded US$500 million. The value of this fishery industry far exceeds Hong Kong's total annual seafood

production by its entire traditional capture fleet (Lee and Sadovy, in press).

Retail prices for the 11 most commonly consumed reef fish species ranged from around US$30/kg for a large Tiger Grouper to around US$175/kg for a small (<1kg) Humphead Wrasse. As fish served whole are preferred to slices of fish, the larger specimens of Giant Grouper *Epinephelus lanceolatus*, Tiger Grouper *Epinephelus fuscoguttatus* and Humphead Wrasse *Cheilinus undulatus*, have a lower wholesale price per kg than smaller specimens of the same species. Interviews with restaurateurs revealed that Leopard Coral Trout *Plectropomus leopardus* and Green Grouper *Epinephelus coioides* were the two most popular species and Humphead Wrasse and Giant Grouper the least common species consumed in Hong Kong restaurants. Most consumers eat Giant Grouper and Humphead Wrasse as a status symbol due to their rarity and high price rather than for their the taste and texture.

Demand for reef fish peaks during festivals with demand highest on Mother's Day. Second to festivals are special events such as celebratory banquets - the two most important banquets being Wedding banquets and Birthday banquets, respectively. Traders also noted that consumers apparently preferred wild-caught individuals over cultured species, and wholesale and retail prices are adjusted accordingly. Retail price for wild-caught Red Grouper, for example, is 60% higher than for cultured Red Grouper, apparently due to the rarity of this species in the wild and the relatively poor texture of cultured specimens. Findings of blind taste tests, however, showed that overall, people preferred cultured Malabar Grouper *Epinephelus malabaricus* to wild-caught specimens (OmniTrak Group Inc., 1997).

The preference for the smaller, and thus sexually immature, specimens of Giant Grouper and Humphead Wrasse is an issue of great concern. Both these species are naturally scarce and particularly vulnerable to overfishing. Specimens of other species in the Hong Kong market, such as Malabar and Tiger Groupers, were also found, in large part, to be sexually immature. Given the low density of species naturally occurring on coral reefs, the preference for sexually immature fish and the large quantities in trade, current catch levels may not be sustainable. Although Coral trout commonly consumed in Hong Kong are within the range of sexual maturity, the high demand for this species may make it susceptible to overfishing. An additional issue of concern is the increase in supply into Hong Kong of certain groupers during the spawning season. Targeting spawning aggregations can be devastating for stocks.

Range states for coral reef fish will have to take the main initiative and responsibility to protect and use wisely their marine resources. Recommendations agreed upon at the 1997 APEC Workshop on the Impacts of Destructive Fishing Practices on the Marine Environment, should constitute the basis from which range states work towards conserving their coral reef resources. Consumer countries, however, such as Hong Kong, also have an important role to play. As the main consumer of reef fish, Hong Kong could take the initiative in working with member-nations of APEC towards establishing a comprehensive and standardised monitoring system for reef fish in trade. Although Hong Kong already monitors imports of certain species of reef fish, this monitoring system could be improved upon.