

Fishing for solutions: Can the live trade in wild groupers and wrasses from Southeast Asia be managed?

by Nokome Bentley¹

Executive summary of a report recently published by TRAFFIC Southeast Asia

The expansion of the live reef food fish industry had its beginnings in Southeast Asia. As the waters around Hong Kong and China became depleted of wild stocks, fishing vessels targeted the coral reefs of the Philippines, Malaysia and Indonesia. With the possible exception of small isolated reefs and well-guarded reserves it is now unlikely that any coral reef in Southeast Asia has not at some time been fished for live reef food fish.

The pervasiveness of the fishery is one of the few generalisations that can be made about it. The industry is diverse and dynamic. Characteristics ranging from the methods used to catch fish through to the mode of export vary over time and space. This report aims to describe the trends, patterns and diversity of the live reef food fish industry in Southeast Asia. This analysis is then used to identify appropriate management interventions at various points in the trade to ensure the sustainability of the fishery.

The four major Southeast Asian countries involved in the industry were investigated in detail for this report: Indonesia, the Philippines, Malaysia and Singapore. Most of the information presented was collected during 1997 and describes the industry up to that year. Official government trade statistics were complemented with interviews with members of the industry to provide a broad overview of the temporal and spatial trends and patterns in the live reef food fish industry. Although attempts were made to validate this information, it should be remembered that these data are not conclusive and are to some degree inaccurate.

To provide details on the exploitation and trade of live reef food fish at the local level, several localised case studies within Southeast Asia have been done. These provide insights into the diversity of methods used to catch live fish, and the local trading structures. Where possible, locations for case studies were chosen where there were existing links between researchers or non-government organisations and the industry.

The official export data suggests a rapid expansion of the live reef food fish industry during the early 1990s. Exports from Southeast Asia rose by more than one order of magnitude, from an estimated 400 t in 1989 to over 5000 t in 1995. Despite this impressive increase, it appears that the industry's boom has come to an end. In 1996, there was a 22% decline in total recorded exports from the region.

Exports from individual countries reflect this overall trend. Between 1991 and 1995, the vast Indonesian archipelago provided about 60% of the live reef food fish harvested from Southeast Asia. The country's main areas of coral reef lie in the east and the west and the live reef food fish operations in each area have operated relatively independently. The western reefs of Indonesia were the first to be targeted in 1985. But the industry quickly became established amongst the extensive reefs of eastern Indonesia, and by 1993 this area accounted for more than three-quarters of the country's exports. The bubble finally burst in 1996 when exports from eastern Indonesia fell by over 450 t.

The Philippines was the first Southeast Asian nation recorded as being fished for live reef food fish. However, between 1991 and 1995 it accounted for only 27% of the region's total exports. Until 1993, annual exports increased significantly, but after remaining steady at around 1100 t for three years, they then fell by almost 50%.

Malaysia has coral reefs around its peninsular states and Sarawak, but the greatest area of reef occurs around its easternmost state of Sabah. Malaysian companies first started exporting live fish from Sabah during the mid-1980s, but it was not until 1987 that the industry really developed. Exports reached a peak in 1993 at around 500 t, but have since declined by over 30%.

Singapore is the primary live reef food fish consuming country within Southeast Asia. Increasing amounts of live fish are demanded by Kuala Lumpur and other centres with large Chinese pop-

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ulations. However, these amounts are small compared to Singapore's consumption of around 500 t per year. Most of the live reef food fish imported by Singapore comes from nearby Indonesian islands.

The industry has progressively expanded into the more remote areas of the region. This is illustrated well in Indonesia where official export data are available for each port. Analysis of these data reveals some striking trends. For most regions, once exports began, it took only three-to-four years for them to reach a peak and then to decline. Like a wave, the industry has spread throughout the country; live fish exports rising and falling in its wake.

The live reef food fish industry in Southeast Asia is complex, involving several tiers of trade, the characteristics of which vary from region-to-region and have changed over time. Although the fishery began with foreign vessels and crew, there was often a rapid turnover to local operations. The high value of live reef food fish, was a persuasive attractant to local fishers. At the same time, exporters found it cheaper to employ locals than bring in their own crews. Thus the fishery, which had been dominated by large, self-contained foreign vessels, soon became a local-based industry in many areas. The mode of export of live reef food fish has also changed considerably. When foreign vessels dominated the industry, they often took fish to the market themselves. However, with the shift towards local operations, live fish transport vessels have taken over this role. Although these vessels are still important in some areas, air shipments have become increasingly common. Airfreight is now responsible for all of the live fish exports from Sabah and most of those from the Philippines. In Indonesia, exports by air rose from 5% to 40% between 1991 and 1995.

The dominance of Hong Kong as the main export destination has also diminished. China and Malaysia in particular are demanding increasing quantities of live reef food fish. Although much of the product that is exported to China first travels through Hong Kong, an increasing proportion goes there directly. For instance, direct exports to China from Indonesia increased from 0% to 27% between 1991 and 1995. This was probably facilitated by the shift towards air exportation.

The shift to local operations was accompanied by an inevitable increase in the industry's diversity. The influence of local fishing methods was particularly strong. Although some local fishers were trained by foreign fishers to use cyanide as a stupeficient, others found that they could catch live reef food fish using traditional methods, or varia-

tions of them. Several methods are currently used to catch live fish and they vary among regions, villages and fishers. The most common methods are cyanide, hook and line and trap fishing.

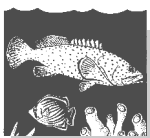
The available evidence suggests that there has been widespread overexploitation of live reef food fish stocks in Southeast Asia. Global experience has shown overexploitation often occurs when access to the fish stocks is open to all and when commodity prices are high. This situation is exacerbated by the poverty of many coastal communities in Southeast Asia. A fisher's considerations of the long-term sustainability of the resource are often overridden by the need to feed his family. In the unlikely case that the live reef food fish stocks of Southeast Asia are not already overexploited, then without some form of management, they will be in the near future.

There is further concern that some of the methods used to catch live reef food fish cause damage to the coral reef ecosystem. The use of such destructive fishing methods not only impacts directly on the industry itself by degrading the reef habitat on which the fish rely but also impacts on the wider coral reef ecosystems. Coral reefs are an important resource for Southeast Asia; their value extending far beyond the extraction of fish. Destructive fishing methods associated with the industry need to be eradicated.

It is easy to dismiss the overexploitation that is currently occurring in the live reef food fish industry as another example of the 'tragedy of the commons'. The lack of data on which to base management decisions could also be used as an excuse for inaction. Such procrastination would be irresponsible. Export quotas provide an effective means of controlling exploitation rates of live reef food fish that could be implemented soon. Initially, they could be set conservatively based on existing information and then refined as further information becomes available on the population dynamics of reef fish. Complementary regulations on the allowable sizes of fish and their method of capture could be applied across all trading levels.

The involvement of members of the live reef food fishery is critical to the success of these management strategies. They already recognise that overexploitation has occurred, and have a vested interest in ensuring the sustainability of the stock. Given the forecasts for increases in wealth of the Chinese population, demand for live reef food fish is likely to increase significantly. This combined with the fact that live reef food fish are goods associated with 'conspicuous consumption', means that suppliers may be able to demand higher prices if market quantities are restricted. If this is the case

then there are incentives for the live food industry, from fishers through to wholesalers, to reduce the current catch to ensure the industry's sustainability in the future. Co-operation at an international level is imperative; some reef fish stocks are likely to straddle borders as will fishing effort and the transport of live fish. Without formulation under an international agreement, voluntary reductions in trade are unlikely to arise or to succeed.



The Hong Kong trade in Live Reef Fish for Food

by P. Lau & R. Parry Jones¹

Despite world-wide concerns about the methods used of catch live reef fish and the portable unsustainability of the trade, scant detailed information was available at the consumer end. This project was thus carried out, from May 1997 to February 1998,² 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 an re-exported out of Hong Kong, the structure and dynamics of the Hong Kong trade, and demand in 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 entrepôt for re-export of LRFF (Johannes & 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 archipelagos. 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

The live reef food fish industry is a valuable fishery for Southeast Asia. Effective co-operation of governments, industry and other stakeholders, has the potential to ensure live reef food fish stocks are sustainably managed, to provide a sustainable livelihood for coastal fishers and thus an incentive for coral reef conservation throughout Southeast Asia.

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 & 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

1. This document is an executive summary (slightly condensed) of: LAU, P. & R. PARRY JONES. (1999). The Hong Kong trade in Live Reef Fish for Food. TRAFFIC East Asia and World Wide Fund for Nature Hong Kong, Hong Kong
2. Although this report was published in June 1999 it is based on 1997 data. Another report on the same subject, but based on 1998 data, was published after this issue of the Information Bulletin went to press. It is: PAWIRO, S. (1999). Trends in major Asian markets for live grouper. Infofish International 4/99: 20–28. The author describes a number of problems that hit the live reef food fish industry in 1998 and predicts that consumption, already falling in 1998, 'will continue to fall for the next few years.'