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An integrated attitude survey on live reef food fish consumption in Hong Kong

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This report presents the results of the first integrated survey to document and elucidate the attitudes and eating habits of Hong Kong people in relation to the consumption of live reef food fish (LRFF), their attitude towards possible alternatives, and their supportiveness of conservation and regulatory measures. The results should assist in the development of strategies for a consumer awareness campaign and the implementation of conservation measures for LRFF. The integrated survey includes three parts: a telephone survey of 1,604 people representing the Hong Kong general public, a face-to-face survey of 321 Chinese seafood restaurant customers, and a qualitative survey of 36 LRFF stakeholders (seafood traders and restaurant managers).

Hong Kong is the largest consumer of LRFF worldwide. Annual imports of LRFF into Hong Kong in 1997 totalled 32,000 tonnes from over 10 different countries, mostly in the Southeast Asia region. The sheer volume documented immediately raises doubt about the sustainability of the trade and coral reef resources.

Further, the high demand for LRFF in Hong Kong has led to the LRFF trade becoming a lucrative business, driving many fishermen in Southeast Asia to use sodium cyanide to catch the fish alive. Cyanide may leave the structure of coral reef intact, but can kill corals and the surrounding marine organisms. Moreover, the preference for giant grouper *Epinephelus lanceolatus* and hump-

head wrasse *Cheilinus undulatus*, both listed as “Vulnerable” on the IUCN Red List of Threatened Animals and also for small and probably sexually immature specimens of these and other species are issues of great concern.

To address the threats of overexploitation of coral reef fish and destructive fishing practices, *in situ* conservation of LRFF and legislation measures in source countries are needed. It is also important to adjust demand for LRFF by changing the consumption attitudes and behaviour of Hong Kong people.

Survey results

The telephone survey found that about 60 per cent of the polled population liked eating fish and 40 per cent liked LRFF. The major consumers identified in the two surveys were middle-aged professionals, blue-collar workers and clerks, and housewives. The majority gave their reasons for eating LRFF as good taste, good texture and freshness of the fish. Consumption was frequent, usually once a week to once a month, and most often at Chinese seafood restaurants located in urban areas (“Downtown Restaurants”), followed by at home and at Chinese seafood restaurants located in tourist areas famous for seafood (“Premium Restaurants”). Family/social dinners and banquets were the two most usual occasions to order LRFF. Over 50 per cent of respondents usually asked for the recommendation of restaurant managers or chose from the menu when ordering LRFF.

Popular LRFF species identified were: leopard coral grouper *Plectropomus leopardus*, mangrove snapper *Lutjanus argentimaculatus*, humphead wrasse *Cheilinus undulatus*, orange-spotted grouper *Epinephelus coioides* and Russell’s snapper *Lutjanus russellii*. In particular, over 50 per cent of the respondents had eaten humphead wrasse *Cheilinus undulatus* or giant grouper *Epinephelus lanceolatus*; 40 per cent of the general public preferred wild-caught to cultured LRFF while 23 per cent held the opposite view.

Fish ordered usually weighed 1–2.5 catties (c. 0.6–1.5 kg) and cost less than HK\$ 200 though higher-income customers usually ordered fish costing HK\$ 200 to HK\$ 400 (*Editor’s note: HK\$ 1.00 = US\$ 0.128, Feb. 2001*). In addition, customers at Premium Restaurants were more selective, exhibiting a marked preference for particular species. They also preferred wild-caught LRFF to cultured fish.

When sufficiently informed of conservation concerns, respondents exhibited a high willingness to change consumption behaviour. About 80 per cent expressed a willingness to reduce or stop eating

species that are vulnerable or declining, and about 60 per cent would support the HKSAR Government in banning the import and sale of vulnerable species.

However, general awareness of conservation concerns related to LRFF was low. Over 70 per cent of the polled population did not know that humphead wrasse and giant grouper were vulnerable species; 49.3 per cent had never heard of cyanide fishing, and over 80 per cent did not know that cyanide might kill many fish and destroy the coral reef habitat.

Cultured LRFF or freshwater fish were acceptable substitutes for wild-caught LRFF to over 60 per cent of those polled because of lower risks of ciguatera poisoning (73% of the respondents) and cheaper price (68% of the respondents). However, willingness to change to substitutes might be constrained by lack of true understanding of the issues; although 86.5 per cent of the respondents knew that wild-caught LRFF might contain ciguatoxin, 50.6 per cent did not know that cultured and freshwater fish were ciguatoxin-free. Meanwhile 22.5 per cent of the surveyed customers refused to accept any alternatives primarily because of the perceived inferior taste of cultured specimens and freshwater fish.

A qualitative survey of LRFF stakeholders found that most traders were aware of the decreasing supply of LRFF from Southeast Asia and the destructive effects of cyanide fishing. The outbreak of ciguatera and the economic downturn of the last two years had severely affected their business. Some of them believed that cultured reef fish techniques should be developed in order to reduce pressure on wild stocks, lower the risk of ciguatoxin, and at the same time improve the taste and texture of the fish. However, they were not optimistic about eco-labelling of LRFF in view of the complexity of the trade and the fact that over 40 species and 10 countries were involved.

Interviewed restaurant managers were less aware of the unsustainability of LRFF fisheries and said they usually purchased LRFF as small as 14 taels (c. 0.53 kg). Most of the Downtown Restaurant managers expressed little objection to the proposed ban on the import of giant grouper and humphead wrasse. In addition, they were more willing to serve cultured fish that were more affordable to general customers. All the interviewed managers strongly opposed the use of cyanide to catch LRFF and said they would refuse to purchase fish known to be caught with cyanide. Lastly, most of the managers said they supported the implementation of conservation measures and eco-labelling of LRFF.

Recommendations

Educational campaigns aimed at effectively shaping consumer preferences regarding LRFF consumption should be launched to target the major LRFF consumers: middle-aged (31 or above) professionals, blue-collar workers, clerks and housewives. These three groups together accounted for 80 per cent of LRFF consumers in Hong Kong.

In view of the unsustainable volume and destructive fishing methods of the LRFF trade, which often involves the capture of vulnerable species and sexually immature specimens, the message of the campaigns should encourage consumers to:

- avoid the consumption of humphead wrasse and giant grouper, which are vulnerable species;
- reduce the consumption of wild-caught LRFF specimens such as leopard coral grouper whose capture involves destructive fishing methods and are in high demand;
- avoid the consumption of sexually immature or undersized LRFF specimens; and
- when necessary, change to substitutes such as cultured LRFF and freshwater fish.

The appeal to the various consumer groups for behavioural changes are formulated based on analyses of their profiles, eating habits and attitudes towards LRFF consumption and conservation.

Middle-aged professionals should be reached through electronic (i.e. internet) and print media, such as magazines and newspapers, and presented with evidence and problems of LRFF stock over-exploitation in Southeast Asia, especially regarding wrasses and groupers, growth overfishing of sexually immature individuals, and cyanide fishing driven indirectly by mass consumption demand in Hong Kong. In addition, the plea should focus on the lower risks of ciguatera poisoning by substitutes. Since customers tend to forget about the ciguatera problem soon after an outbreak and return to eating LRFF, the campaign should be periodically revived. Supplementary information on availability of cultured substitutes in local markets should be provided.

Middle-aged blue-collar workers and clerks could be effectively reached by mass media such as television and advertisements in the MTR. The surveys also found that this group is less choosy and more sensitive to price considerations. Hence, in addition to the lower risk of ciguatera fish poisoning, the appeal should emphasise that substitutes are cheaper in price and better value for money. Again supplementary information on available

substitutes, in the form of seafood guides or pamphlets, could be provided.

In terms of consumptive behaviour, the survey found that housewives and blue-collar workers and clerks were similar. Campaigns through the mass media channels should also reach housewives. This survey discovered the importance of domestic consumption — the home is the second most important place to eat LRFF in Hong Kong. There should therefore be an in-depth trade survey to understand the quantity, price, species and size of LRFF traded through local municipal markets and supermarkets.

Occasions when LRFF are most often consumed, banquets for festivals and celebrations, and dinners with family and friends in restaurants, should be highlighted in the campaign. Information on possible alternatives such as cultured fish or freshwater fish, and guides for making environmentally-sound choices in LRFF for banquets should be produced and provided to banquet holders, such as via the marriage registry.

The younger generation are potential LRFF consumers and therefore, where resources are available, travelling exhibition displays and pamphlets distributed in schools could be used to provide conservation information on LRFF issues.

Substitutes acceptable to the consumers must be available in order to lead to behavioural changes. Any substitutes must be demonstrated to have a taste comparable to that of wild-caught specimens. Further blind taste tests on popular LRFF species should be conducted with Hong Kong consumers to demonstrate that cultured fish could be equally as tasty as wild-caught specimens. This could provide an opportunity for a publicity event.

Meanwhile, research into improving the texture and taste of cultured species should be undertaken. Further research into hatchery mariculture should be encouraged as currently most mariculture operations are based on grow-out wild-caught juveniles that may be unsustainable. Possible environmental problems associated with commercial mariculture operations would also need to be addressed.

The restaurant sector plays an important role in influencing the choice of customers in selecting LRFF in terms of species and their size. Therefore, both restaurant managers and fish merchandisers should be targeted in future educational campaigns so that they could advise their customers to make environmentally-sound choices in LRFF. Engaging Downtown Restaurants, in particular, since these were the most usual outlets where peo-

ple consumed LRFF, should also facilitate dissemination of supplementary information about LRFF to consumers.

In view of the high public support and low opposition from the industry, the HKSAR Government should consider banning the imports and sales of humphead wrasse and giant grouper. At minimum the government should legislate in line with the laws of other countries, such as the Philippines and Maldives where the export of humphead wrasse is prohibited and Indonesia and Australia where size restrictions are imposed on the export of humphead wrasse and leopard coral grouper respectively. The Government should also recommend that wild-caught LRFF species in high demand, especially leopard coral grouper from the Philippines and Indonesia, be subject to catch and export restrictions in these countries. In parallel, there is an

urgent need to conduct further biological research into stocks and population trends of certain LRFF species for refining catch and export limits.

To help deter cyanide fishing in Southeast Asia, the HKSAR Government should ban the import of LRFF which test positive for unnatural cyanide, and the import of future LRFF from the same source. This would require research into a more sensitive cyanide detection device to be used in Hong Kong.

Finally, so that Hong Kong people might continue to enjoy LRFF sourced from sustainable managed fisheries and caught with non-destructive fishing methods, international cooperation and efforts should be encouraged to further explore the feasibility of establishing an eco-labelling scheme or cyanide-free certification scheme for LRFF.



The live reef fish trade in Vietnam: a preliminary report from the field

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Introduction

The International Marinelife Alliance (IMA) office in Hong Kong has noted for some time that significant numbers of live reef food fish are arriving from Vietnam. Little information is available on the fishery there, although anecdotal reports from importers and others indicate that the use of cyanide is widespread.

In October 1999 IMA, World Resources Institute, and Institute of Fisheries and Economic Planning (IFEP) met in Hanoi to discuss the possibility of initiating work under the Destructive Fishing Reform Initiative in Vietnam. Government officials noted their concern over reports of cyanide use in the live reef fish trade — and widespread use of other destructive fishing methods such as explosives, electricity, and fine-mesh nets — in several areas of northern and southern Vietnam. They admitted, however, they had little further information, and would be interested in collaborating with IMA to gather field information and develop a strategy for both controlling the live reef fish trade and combating destructive fishing practices.

IMA established an office in Hanoi soon thereafter, and in June 2000 conducted a preliminary field assessment at four sites, in collaboration with staff from IFEP and the People's Aid Coordinating Committee (PACCOM). This paper provides a preliminary assessment of the live reef fish trade and related issues in these four areas.

Cat Ba Island and environs, Hai Phong Province

Hai Phong Province has a coastline of 125 km, and large areas of coral reef, as well as one of Vietnam's largest industrial and fishing ports. Fishing has long been important for the province, but its marine resources have been severely depleted by destructive fishing methods including explosives, cyanide, and the use of "sweeper" (fine-mesh) nets. The province's mangroves have also been largely eradicated.

Prior to 1979, the province's fisheries were quite well developed by skilful ethnic-Chinese fishermen who had settled in the area. After 1979, however, nearly 30,000 of them emigrated to China, and Hai

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