THE TRADE IN LIVE REEF FOOD FISH

GOING GOING GONE

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

Since the late nineties, intergovernmental agencies, NGOs, academics and extensive literature have highlighted the unsustainability of the South East Asian Live Reef Food Fish Trade (LRFFT). Despite the economic benefits for many involved, there is undeniably a dark side to this lucrative trade in colourful fishes which involves a wealth of issues. Collectively, these represent a major challenge to ensuring the LRFFT's long-term sustainability. A disturbing pattern has emerged of overfishing, illegal trade, tariff avoidance, of conservation threats to several species, destructive and damaging fishing methods and even corruption. This darker side is particularly relevant to the wild capture aspect of the trade.

While many of these issues were recognised more than two decades ago, concerns continue to be expressed. Despite various interventions having been launched and completed, the overall result has not reversed the worrying trajectory these fisheries are on and, today, continued overfishing and unregulated and unsustainable practices persist. If not addressed, the future of the trade looks bleak, potentially impacting thousands of livelihoods in the region, not to mention the viability of populations of several particularly favoured LRFF species.

The report, *The Trade in Live Reef Food Fish – Going Going Gone* aims to reflect upon why so little progress has been made to date, towards achieving a sustainable LRFFT, by examining the trade's many components and characteristics. It thus provides a comprehensive profile of the LRFFT over two decades, based on the best available information from both major exporting and importing countries, as well as from independent surveys and studies. It is hoped that it will serve as an important reminder of the inertia that has plagued efforts to reform the LRFFT, and also as a catalyst for a reinvigorated pursuit of options that could direct the LRFFT towards a sustainable path.

Relatively and Absolutely, the LRFFT is a High Value and Regionally Important Trade

For almost three decades, an international trade in live reef fishes has grown and flourished in the Indo-Pacific region in response to demand for ultra-fresh seafood, which is part of the culinary tradition of southern China. The trade is not large by global fishery standards, estimated to hover between 20,000 and 30,000 Metric Tonnes (MT) annually, but it is disproportionately valuable because it supplies a luxury seafood market with high value fishes. Its annual retail value is estimated to substantially exceed US$1 billion, with some species fetching in excess of US$600 per kg at retail. To place this in a global context, the annual trade value is roughly four times the global value of the marine aquarium trade and about one third of the valuable Western and Central Pacific tuna fisheries. In the context of Hong Kong, the global trade hub for the live fish trade was worth almost six times the total production of the city's own fishing fleet in 2016.

Importantly, the LRFFT is capable of providing income and good profits along the trade chain, from fishers and their communities to exporters, transporters, importers and retailers. Given the high values involved, it should also generate substantial export and import tariffs and income tax returns for trading countries. However the clandestine nature of the trade, a culture of deliberate tax avoidance, poor governance, and lack of transparency in transport of live fish collectively result in significant erosion of these potential revenues.

Unrelenting Overexploitation Persists

Since the late 1990s the relentless overexploitation of LRFF has been repeatedly documented, and bought to the attention of both exporting (source) and importing countries, and the trade is growing. Hong Kong's trade data, which serve as a proxy for trends in the LRFFT, indicate that in 2016 imports were some 32% higher than in 1999.

The extent of overexploitation is clearly evidenced by the serial depletions of LRFF fisheries, whereby the trade takes advantage of once easy and voluminous catches when initiating a fishing and export operation in one area, then moving on to new fishing grounds when catch rates decline, oftentimes leaving behind severely degraded fisheries and dislocated communities. The result is the shifting of fishing grounds, from the now depleted northern sector of the South China Sea to the increasingly depleted waters further south. In many places, catch levels continue to outstrip the naturally sustainable supply rates of target populations by between two-and-a-half and six times.

Popular Species Traded are Inherently Vulnerable to Over Exploitation

A major contributing factor to LRFF overexploitation is the biological vulnerability of the popular species in this trade. The LRFFT involves the sourcing of approximately 15-20 species of reef fishes, the great majority being groupers, which come predominantly from developing countries in Southeast Asia. A notable exception is the Leopard Coralgrouper, *Plectropomus leopardus*, which is also sourced from Australia. The biology of many of these species, which includes late sexual maturation, long life and aspects of their reproduction (e.g. sex change and spawning aggregations), makes them particularly vulnerable to fishing pressure and more susceptible to overfishing than many other exploited species in the coral reef ecosystem.

The fishes included in the LRFFT come from both wild populations and from mariculture/ farmed sources with the major source countries, currently, being Indonesia and the Philippines; several Pacific Island nations commenced and then stopped exporting their live fish due to concerns over trade operations and fishery sustainability. Several grouper species that make up the trade have been overexploited to the extent that they are considered 'Threatened' or 'Near Threatened', according to the IUCN Red List. The Napoleon, or Humphead, Wrasse, *Cheilinus undulatus*, albeit a relatively low volume species, was listed on CITES Appendix II in 2004 as a direct consequence of declines due to exploitation pressures from the trade. It lives longer than three decades and is naturally uncommon. The targeting of spawning aggregations (especially those of the Camouflage, *Epinephelus polyphekadion*, Squaretailed, *P. areolatus*, and Tiger, *E. fuscoguttatus*, Groupers) can quickly lead to population declines, while the blatant and illegal taking of threatened species plague parts of an industry that is poorly monitored and virtually unmanaged.

An Extended Regional Trade Chain, Supplied by Many and Controlled by a Few

Wild fishes typically pass along an extended trade chain, caught in small numbers by tens of thousands of small-scale fishers, then consolidated by a small number of traders, and exported in large fish carrier vessels or by air, mainly to Hong Kong.

While Hong Kong is also a consumption centre for live fishes a substantial amount of live seafood imported into the city is re-exported to mainland China. Initially these fishes were destined for Guangzhou and Shenzhen, southern China, but interest in the colourful reef fish has grown and they are now also shipped to high end restaurants in Shanghai, Beijing, tier 2 cities like Qingdao and beyond. A handful of traders, therefore, control a trade that is supplied by tens of thousands of fishers to supply millions of consumers. In reality, wholesalers in Hong Kong appear to control the market both up and down the supply chain and often maintain control over the fishers, and middlemen who buy from them, through 'patronage systems'. This indebtedness, along with limited alternative livelihood options that can match LRFFT incomes, repeatedly forces fishermen to continue fishing to meet debt obligations even as fish become scarce. Small and strong trade networks limit newcomers from entering the centre of the trade chain.

Conspicuous consumption is a hallmark of the LRFFT and continues to drive overexploitation The trade satisfies a major consumer interest; extremely fresh and highly desirable reef fishes that are attractive to look at and diverse in character. This is a major draw for seafood tourism especially for Chinese diners. Live reef fish are amongst the most desired dishes in high end restaurants, including major hotels and resorts, and a regular central feature of banquets, weddings and seasonal celebrations such as Chinese New Year and Mother's Day. This rise of conspicuous consumption is a hallmark of the LRFFT, associated with rising incomes and motivated by the desire for social status, for engendering personal and business relationships and for cultural reasons (i.e. health and well-being). Paradoxically, it is the high prices paid by consumers that enable the trade's ongoing viability, despite high transport costs and ongoing overexploitation of target species, leading to population declines. The trade has also stimulated the grouper mariculture industry, which helps to meet demand and supplies several lower priced species.

Economic Characteristics Mean that Perverse Incentives Lead to Overfishing

From an economic standpoint, the LRFFT is a high-value, low-volume, fishery that can deliver large profits and sustain a highly lucrative business, even at relatively low volumes of trade, despite high transportation and transaction costs and high levels of risk around transport mortality. The profitability of the trade acts as a considerable incentive to persistently overfish areas that are poorly or entirely unmanaged, and drives the 'boom and bust' nature of the fishery. As stocks become depleted, in some cases locally extirpated, traders turn their attention to seek ever new fishing grounds.

There is a perception that the value arising from trading in live fish is being inequitably distributed along the supply chain, with downstream traders unduly benefiting, to the detriment of the many fishers and middlemen in the chain. While there are pragmatic reasons for some agents in the supply chain extracting more value, many families engaged in the LRFFT still earn above average incomes thus providing considerable incentives, in the face or limited or no regulation, to continue fishing beyond sustainable limits.

In conventional markets, price is an indicator of supply relative to demand. In the LRFFT, however, increasing scarcity and/or supply can have the perverse impact of further increasing prices of this 'luxury good' providing yet greater incentive to continue fishing unsustainably even as populations decline to very low levels. While scarcity can be a factor, consistent with its status as a luxury good, an underlying element sustaining the trade has also been the steady rise in incomes in both Hong Kong and China and, in the case of China, a burgeoning middle-class.

Hong Kong's Dataset Allows Monitoring, but Volumes are Underestimated

Hong Kong has a good monitoring system in place through its Customs and Excise Department (C&ED), which has enabled and sanctioned the regular collection of trade statistics through the government's Census and Statistics (C&SD) and Agriculture, Fisheries and Conservation Departments (AFCD). Monthly reports by these agencies on live fish imports, both by air and sea, have provided an extensive dataset of imports, down to the species level, for ten of the more prominent traded species, by volume, country of export and mode of transport. This has undoubtedly facilitated better understanding of the trade.

There are indications, however, that LRFF volumes imported into Hong Kong are being considerably underestimated, perhaps by as much as 50%, due to a combination of inadequacies in the monitoring protocols, particularly of imports by sea, and because of deliberate misreporting. Nevertheless, while there are well-founded concerns over the comprehensiveness of the government data, they have nonetheless enabled detailed analysis of trends in this trade over almost two decades, ranging from fluctuations in trade volumes for certain species to preferred modes of transport in terms of economic and quality considerations. This information is especially useful for pinpointing legal and regulatory shortcomings in managing the trade in both source and demand countries and for highlighting the policy interventions needed to close these loopholes.

Relying on Mariculture is Not the Solution

Although much of the volume of the trade, and most of the species, are taken from wild populations, an increasing proportion of live fish traded over the last decade has been generated by mariculture operations, which include hatchery production. Of the roughly 15-20 species commonly traded, a handful are regularly hatchery-produced. Despite the small number of these cultured species, at least half of all live groupers (by weight) on sale are now likely to have been farmed. This 'farming' or 'grow-out' of juveniles, however, depends not only on hatchery-produced young but also, for many species, on unknown numbers of wild-caught juveniles. Importantly, there is little evidence to support the oft-held contention that cultured product will substitute for wild-caught fish and thereby relieve fishing pressure. Rather, evidence indicates fishers continue to target and trade wild-caught species, regardless of increased availability of cultured product, leading to differentiated markets and higher overall volumes being traded. For a variety of reasons, including consumer preference and the suite of species that are suitable for culturing, the reliance on wild-caught species is expected to remain high.

The mariculture industry is evolving, both in terms of moving to meet and address the market and because of increased consumer acceptance of cultured fish. It is unclear at this stage what its future holds. For example, recently there has been growth in the production and demand for hybrid fish, the Sabah grouper in particular, bred for their desirable combination of taste and growth characteristics. The aquaculture industry in Asia has a history of rushing to exploit new opportunities, like Sabah grouper, inevitably resulting in oversupply that depresses market prices. As a result, for Sabah grouper, as with other species, this can sometimes lead to prices below break-even. The market for Sabah grouper, however, is now stabilizing and maturing.

Several of the more highly valued species that are overwhelmingly wild-caught, such as the Leopard Coralgrouper and Humphead Wrasse, are captured not only as adults but also heavily taken as juveniles and grown out to market size for months or sometimes even for years. Such 'ranching' or grow-out, in captivity of these high value species has significant implications for the productivity of targeted fish stocks and the implications need to be better understood; this practice calls for greater management attention and has recently been designated as capture-based aquaculture, in need of both mariculture and fishery management good practices.

As a high trophic level species, the farming or grow-out of grouper and other species raise several environmental concerns. Historically, the most notable of these was the high demand for wild, or so-called 'trash' fish, which are used for feed. The heavy demand for 'trash' fish (which, of course are not trash, can fetch good prices and include juveniles of commercial species) has implications for its impacts on fisheries and marine biodiversity and is receiving growing scrutiny in relation to its long-term sustainability. More recently, the increase in the use of pellet feeds is lowering the input of wild fish into the diets of these species, in some cases by more than half, although a heavy dependence on 'trash' fish continues. Coastal grow-out operations, whereby fish are held in floating net cages in the sea, also create impacts on the marine environment from chemicals, discharges and wastes emitted into surrounding waters.

As a Leading Importer, Hong Kong Needs to take Responsibility and has an Obligation to Act

Hong Kong's role in the LRFFT and the trade's poor record in sustainability and transparency must not be underestimated. Traders, transport and logistics carriers are allowed to exploit a vacuum created by inadequate and outdated regulation, loopholes in the law and lax enforcement of live seafood trade into, within and through Hong Kong. The rationale underlying Hong Kong's current LRFFT-related legislation and enforcement mechanisms is influenced by: the city's free port status; customs regulations; food health concerns; environmental conservation; relevant legislation; historical factors and its international obligations and responsibilities. In practice, little consideration is given to environmental conservation and biological diversity, natural resource sustainability, commodity traceability, illegal wildlife trade, food safety or international obligations. The outcome is a trade in live seafood that is largely unregulated and substantially unmonitored, even for the CITES-listed Humphead Wrasse, and with potential health risks to consumers. Indeed, fishes brought in from hotspots of ciguatoxins regularly cause fish poisoning among diners in Hong Kong. The fact that many of the relevant laws and regulations are outdated or no longer fit-for-purpose to control and address this trade is also a major factor in lack of oversight.

Limited Progress has Been Made, but is Not Enough

To temper and control this trade and move it towards more responsible practices, there has been some, albeit limited, progress. For example, assessments of Leopard Coralgrouper fishery status in the Palawan province of the Philippines are supporting local efforts to control export levels. In Indonesia, NGOs and researchers are working with the country's largest trader to support efforts to source more responsibly via input and output controls, all while demonstrating economic viability in the long-term. The CITES-listed Napoleon Wrasse, while still traded, is subjected to scientifically determined export quotas for wild fish implemented in the major source country, Indonesia. Other countries, such as the Maldives, Fiji and Seychelles, opted to stop exporting the species due to concerns about the trade.

Recent efforts by the Hong Kong government to better control trade in Humphead Wrasse has resulted in prosecutions and lower numbers on sale, although the number of this species on sale are still at least double the legal limit. In China, the government's crackdown on use of public funds to buy luxury food at official banquets has had the effect of reducing demand for LRFF in some northern Chinese cities, although persistent rising incomes continue to fuel demand for luxury goods like LRFF. Nonetheless, the provenance of the Humphead Wrasse on sale in the mainland is unknown and entirely unmonitored and unreported (to CITES).

Elsewhere, the Maldives is exploring the protection of its grouper spawning aggregations sometimes targeted for live fish and several western Pacific countries have already protected some of theirs, including the Solomon Islands, Palau and Papua New Guinea. Both Fiji and Pohnpei are about to protect their grouper spawning aggregations. To better control live fish carrier vessels, Indonesia has moved to bring foreign cargo vessels, including those that collect live fish, under greater control and scrutiny, while Hong Kong recently reminded its own live fish carrier vessels of their legal reporting requirements when importing live fish cargo.

The LRFFT is Currently Steering Towards a Perfect Storm

The many characteristics of the LRFFT, as currently practiced, collectively and synergistically, make the trade extremely difficult to control and monitor and have created a scenario analogous to a ‘Perfect Storm’. In reality, the LRFFT, particularly the component of it that relies on wild fish capture, is an industrial-scale fishery with a demand for fish going well beyond the biological levels that can be sustained within a small-scale fishery context that is without management or controls. A clear example is the increasingly large numbers of juvenile fishes retained for grow-out to market size in many locations which is evidence of fisheries that have removed most of the larger specimens and is now entering a phase of recruitment overfishing.

The following factors, in combination with the following prevailing issues, make the trade exceptionally difficult to manage:

- lack of sufficient oversight of trade by both exporting and importing countries;
- illegal trade;
- heavy focus on species naturally susceptible to overfishing;
- a complex and opaque trade chain;
- poor data on natural resources;
- shortcomings with trade monitoring;
- outdated or inappropriate legislation; and
- a general lack of political will to manage either the trade or coastal fisheries in the region.

In the long-term, if the trade in wild fish continues as is currently practiced, with few controls, virtually no natural resource management and little traceability or accountability by businesses, the benefits to fishers, as well as others along the trade chain, will be increasingly compromised. Taking a broader view, reputational risks to companies selling live reef fish will increase as trade practices come under greater scrutiny by a public which is growing more mindful of sustainable consumption and the need for responsible practices. International calls for greater traceability of seafood and accountability, especially by vessels involved in fishing and seafood carriage, are growing louder, while Hong Kong has international obligations to ensure it does not contribute to the plight of threatened species beyond its borders. Despite multiple efforts by NGOs over many years, very little progress has been made to divert the trade towards a more biologically sustainable and transparent pathway. Clearly it is time for a new and tougher approach to reduce the threats to wild fish populations and ensure ongoing benefits.

The Time for Action, is Now

Projecting into the future, this report identifies areas where effective action could help to move the trade into calmer waters and highlights emerging issues that call for immediate attention. It provides a series of recommendations categorized by four major sectors and/or actors:

- source countries
- traders and retailers, including the transport sector;
- destination countries; and
- non- and intergovernmental organizations and sectors, including consumers.

For **source countries**, the key issues identified are poor monitoring and stock assessment, limited institutional capacities to assess and control the trade and the impact of hatchery based mariculture (the important issue here is in relation to wild fish populations).

For **traders and retailers** these issues boil down to the urgent need for responsible trade practices, the role of retailers in demanding responsibly sourced products, in enabling or facilitating better consumer choices as well targeting consumers directly through outreach, and the need for stronger engagement with the transport sector.

The **transport sector** needs to know what it carries, and particularly for sea vessels to report more completely and consistently.

For **key destination country** governments, mainly Hong Kong and China (although live fish does go to Taiwan, Singapore and Malaysia), improved regulation (which may require revisions of some laws) and monitoring of international trade is needed. In particular, much better oversight of live fish cargo vessels is needed, an issue raised as a priority almost 20 years ago. The role and obligation of these governments to provide better information to consumers through improved labelling and to promote sustainable use of biological resources ('green sourcing') needs to be realised, as does the importance of traceability. There are also responsibilities to meet the growing number of internationally agreed and ratified sustainability obligations.

Lastly, it is beholden on the **intergovernmental organizations and non-governmental sectors** to play a greater role in facilitating and implementing region-wide initiatives to: improve data collection and resource utilization; promote the harmonized uptake of better practices; and facilitate public-private partnership to implement and support LRFFT specific initiatives, such as stock assessment, education and outreach. This sector can also play a larger role in educating consumers so that they understand the need for more sustainable choices in seafood, and, if such options are available to them, opt to make them.

Finally, several emerging issues need to be understood and monitored, these include:

- increasing use and value of frozen and chilled fish, particularly groupers, in the Chinese seafood market;
- new species entering the live fish trade in quantity, such as several *Plectropomus* species and the Tomato Hind not previously heavily targeted;
- the growing interest in 'green' marketing in Hong Kong; and

- China's premise of eco-civilization in it's 13th 5-year plan, which has both national and international implications.

It is important to note that an increasing focus on food security, ecosystem (especially coral reef) health and threatened marine species, and the need to address these have direct implications for making progress with the LRFFT. It may be argued that, historically, interventions have not adequately considered the economic livelihood and food security benefits nor implications of the trade in source countries, and have tended to focus more on conservation outcomes. Thus governments have not implemented approaches that can incentivise effective change.

In all, this report contains just over 50 recommendations under the four major categories, 23 of which are seen as priorities. While a number of these have been raised in numerous earlier reports, and remain worthy of reiterating, many are new and reflect both changing trends and new opportunities. It is hoped that they can provide a workable and practical framework for the way forwards and for smoother sailing. The key emphases of the major recommendation areas are:

I. much greater attention to coastal fishery management and assessment in source countries for food security including monitoring and assessment, especially for threatened species and through vulnerable life history phases (like spawning aggregations), and also to ensure that economic benefits from exports to source countries are maximized through better trade controls, tax collection and value-adding;

II. better control over the trade chain which calls for effective oversight of live fish carrier vessels and their activities, in both exporting and importing countries, updated and enforced regulation and more effective monitoring of the international live seafood trade. This is closely linked to a growing call for better traceability and calls for greatly improved compliance by air and sea traders regarding reporting and legal carriage of threatened species;

III. major destination countries need to mainstream and actualize environmental thinking and actions into laws, policies, regulations and planning and outreach to its citizenry. These countries are already demonstrating their appreciation of global expectation, ranging from biodiversity planning in Hong Kong and reducing the city's footprint beyond its borders to China's touted Eco-Civilization vision and meeting international environmental obligations; and

IV. a better informed consumer-base leading to an elevated awareness of and interest in sustainable consumption will be a critical driver of change back down the trade chain; this requires considerable media engagement and direct outreach and is a major role for the consumer-facing retail sector and non-government organisations and interests. Consumers must be encouraged to select responsibly or sustainably sourced seafood, to understand why this is important, and to ask for this when they have the opportunity to do so.

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