



Viewpoint

Over fishing: Hong Kong's fishing crisis finally arrives

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Wherever I go in the world today, newspapers invariably contain a story about over fishing. In Australia, it is Patagonian toothfish, abalone and the resources of the Great Barrier Reef. In Asia, shark finning. In the Caribbean, Garoupa's. In the Pacific, Tuna, and in the Atlantic, Cod. To name but a few. We have come to regard over fishing as a fact of life, but in a few places it has become a major social problem. One such place is Hong Kong.

There has been a steady decline in fish catches from Hong Kong waters over the last 25 years or so and in 1998, the Agriculture and Fisheries Department of the Hong Kong Government commissioned a consultancy study to assess the situation and identify ways to remedy any identified problem. The study found that the catch had indeed fallen by ~50% and that fish fry production had decreased by 90% over the last decade. Twelve of the 17 commercial fish species assessed were "heavily over-exploited" and the remaining five "fully exploited". The local fishery was further shown to have shifted from one dominated by large, slow growing, high value species to one comprising small, faster growing, low value species. To understand how this situation has come about, one has to delve into history.

Prior to the Second World War, Hong Kong was a remote colonial outpost far from the gems, such as India and Malaysia, in the imperial crown of the British Empire. Artisanal fishing easily provided for the few people then resident in the infant colony. In 1928, one of the most important persons in the history of colonial Hong Kong, G.A.C. Herklots, was appointed as a Reader in Biology at the University of Hong Kong. Herklots set about developing the subject of biology in Hong Kong by inviting to it various marine (and other) scientists

and founding in 1930 *The Hong Kong Naturalist*. In 1937, Herklots was given a small grant by the Hong Kong Government to set up a Fisheries Research Unit within the University of Hong Kong. This was because, pre-war, local fishing vessels were unable to compete with an increasingly aggressive and mechanized Japanese fleet. Although the Fisheries Research Station was not formally established within the similarly newly founded Department of Biology of the University until 1940, Herklots, in co-operation with S.Y. Lin, the Superintendent of Fisheries Research, began in 1937 to salt dried fish in response to the Japanese invasion of China and to counter the lack of fresh seafood subsequently arriving in Hong Kong from that country. It was called "siege fish" and the Government encouraged its stockpiling. Herklots also produced a fisheries research publication—the *Journal of the Hong Kong Fisheries Research Station* of which three issues were published (Vol. 1, No's 1 and 2, 1940 and Vol. 2, No. 1, 1949). Japan's invasion of Hong Kong in December 1941 put an end to such research but, interestingly, the occupying Japanese began to overhaul and improve the local fleet, albeit, of course, for their own self interests, but did set up a Fisheries Department within their government framework where none had existed hitherto.

After the war and with the liberation of China and Hong Kong in 1946, the University's Fisheries Research Station reappeared as a division of the Department of Agriculture, Fisheries and Forestry, albeit with laboratories within the University. Such a situation could not and did not last long and in 1952 a Fisheries Research Unit was inaugurated as a sub-department of the Department of Zoology of the University. A research vessel, the r.v. *Alister Hardy* was launched in 1953. Between 1952 and 1960, fisheries research results were published in the *Hong Kong University Fisheries Journal* (No. 1, 1954; No. 2, 1958; No. 3, 1960), a successor to

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the earlier journal. But, post-war, though large, the Hong Kong fishing fleet was still essentially wind-driven and once again in competition with the untouched resurgent Japanese fleet and the developing Chinese one. Hence, although academic fisheries research was needed it was not the most important priority. What was an essential priority was the reorganization and modernization of the fleet. To achieve this, in 1960, the Hong Kong Government placed the University's Fisheries Research Unit under its control and created a Fisheries Division within the Co-operative Development and Fisheries Department with laboratories and offices at Aberdeen adjacent to the largest local fish market. A larger fisheries research vessel, the r.v. *Cape St Mary*, arrived, as a gift from the British Government, from duty off West Africa and it too became operational in 1960. In 1964, the Agriculture and Forestry Department and the Co-operative Development and Fisheries Department were amalgamated to form the Agriculture and Fisheries Department that initiated publication of the *Hong Kong Fisheries Bulletin* of which four issues were produced (No. 1, 1970; No. 2, 1971; No. 3, 1973; No. 4, 1974). It is interesting to examine the charcoal portraits of the four Chinese fishermen that illustrate the front cover of Issue No. 1 of the *Bulletin*. They all have visionary, even heroic, expressions that capture, as the Department's director, E.H. Nichols, wrote in the foreword (p. 1) to the issue "the bold new spirit which now actively prevails in many sections of our fishing industry". The Director continued: "with both technical and financial encouragement given by Government and from the Fish Marketing Organization, the leaders of Hong Kong's fishing community have in recent years abandoned their traditional sailing junks in favour of modern boats. As a result fishing has become more competitive following the more intensive exploitation of traditional grounds and the search for new and more distant grounds, thereby necessitating the application of more sophisticated fishing gear and fishing techniques". "Arising out of these changes—and other developments such as the provision of wholesale markets, low-interest loans, schools for the children of fisher-folk and new homes ashore—an efficient and confident *new breed* of fishermen has emerged".

Such a significant new investment in the fleet and its workers was given impetus by the Great Proletarian Cultural Revolution in China (1966–1976—"the 10 lost years") whereupon, Hong Kong was forced to become more self dependent in terms of one of the few primary resource products it could develop. The charcoal portrait on the cover of the next issue of the *Fisheries Bulletin* (No. 2, 1971) is not of Geoffrey Herklots but of Ken Stather upon his retirement and who (p. 1) it was said "played a major part in providing a solid foundation for a truly modern fishing fleet in Hong Kong". Hong Kong's fleet was completely modernized to wes-

tern designs, with the development of larger engines and ice storage facilities (both allowing vessels to fish further offshore), steel otter boards, electronic fish finders, plastic nets and even ferro-cement hulls.

Such government-sponsored interest in the local fishing industry continued into the 1980s with the purchase by the Capture Fisheries Division of the Agriculture and Fisheries Department of a yet larger fisheries research vessel, the r.v. *Tai Shun*. A change in Government attitude towards the fishing industry, however, can best be identified by the sale in 1986 of the *Tai Shun*. The basic question being asked within the higher echelons of the Government was "Why is the public purse being used to support an industry when, with the opening up of China during this period and the market internationalization of the industry, there is no necessity to do so?" After all, the Government policy had worked. For example, from 1960 to 1990, the capture fisheries catch had risen from 53,000 to 224,000 tonnes. As noted in the introduction above, however, it was beginning to be realized in the late 1980s and early 1990s by fishermen and fisheries officers alike that if catches were not declining, they were so in terms of unit effort. The over fishing problem had begun.

China, including Hong Kong always had a history a freshwater fish culture in ponds and a traditional form of shrimp (and fish) mariculture using tidally inundated ponds locally called *gei wai*. The pond fish industry increased to 1970 hectares in 1978. Such practices require large areas of ponds to be financially viable and because of Hong Kong's demand for land, particularly in the New Territories post 1970, most ponds have subsequently been filled in. Similarly, the local *gei wai* survive now only at the Mai Po Marshes Nature Reserve in Hong Kong's northwest. Concomitantly, however, local fishermen began to build cages in the sea, typically in protected embayments, to rear and hold commercially important species of fish, such as garoupas, sea breams and snappers. The industry reached a peak in ~1988, there being then 1837 licenced operators now organized into 26 Fish Culture Zones. The fish farmers provide Hong Kong with a steady flow of fresh, and importantly, living fish, but not without problems. Because of generally increasing pollution problems as Hong Kong's human population has risen, the caged fish have sometimes died. The cages are tightly packed into small bays with limited water exchange and because the fishermen, until very recently (although many still do), fed their captives on chopped up so called "trash" fish (but actually many of them are fingerlings of commercially valuable species), most of which fell through the nets onto the shallow sea bed beneath, they have been essentially polluting their own waters. The created problems of anoxia, high nutrient loadings and often red tides, predictably resulted in episodic fish deaths and problems of compensation for the Government since

the fishermen claimed that the kills were because of pollution, but not of their making.

In addition, with the opening up of China following the end of the Cultural Revolution, Hong Kong, at first the only door into this new commercial arena, has literally boomed as real estate prices and investment bases have risen and broadened, respectively. With the rapid development of Hong Kong, the need for a more modern infrastructure has arisen and this has been accommodated on reclaimed land so that, today, approximately one quarter of Hong Kong's shoreline is unnatural. Most of this reclamation was for the Kowloon West development and the associated road and rail networks connecting this to the New Airport at Chek Lap Kok. To reclaim Kowloon West, the toxic sludge of the harbour bottom had first to be removed and dumped at marine sites. The fill for the reclamation of the harbour and the new airport came from the sea bed—an estimated 500 million tonnes—such that at one time over 70% of the World's dredging fleet was operating in Hong Kong waters.

Fishermen, capture and mariculture alike, blamed pollution, dumping, dredging and reclamation for the loss of their inshore incomes and certainly such intensive activities in such a small body of territorial water (1650 km²) must have been a contributing factor to the decline in fish catches. But, it is probably not the main reason. Benthic surveys of Hong Kong's sea bed were conducted by staff of the Swire Institute of Marine Science in 1992 (pre-dredging), 1995 (dredging) and 1998 (post-dredging) and surprisingly, in terms of fish, numbers increased in 1995, possibly because the fish found refuge from trawlers in the deeply dredged pits, whereas in 1998 the downward trend continued as confirmed by the 1998 consultancy study. Hong Kong's waters *are* badly over fished.

Compounding the problem, it has recently been estimated that there are some 400,000 recreational fisherman in Hong Kong and American studies have shown that such activities remove from the fish population those individuals (trophy fish) that, inshore, can grow to maturity free from the attentions of the commercial fleet. Since the mariculture rafts and cages also have to be stocked with fingerlings from somewhere, the local fleet of around 2500 P4 (four person) sampans scours the rocky shorelines with traps, pots and fine-meshed purse seines so that, in reality, virtually every marine niche in Hong Kong is wholly exploited. In the 1990s, the Government invested HK \$100 million (US \$13 million) to develop a network of artificial reefs. Such structures are, however, contentious but, nevertheless, have quickly become over fished too. Add to this the fact that Hong Kong is the focus for some 60% of the live reef fish trade, it is easy to ascertain that not only are local resources dreadfully over fished but that the arm of the modernized fleet is, now, very long.

To try and alleviate or at least control the problems with Hong Kong's fishery resources, the Agriculture, Fisheries and Conservation Department of the Hong Kong Government has produced a consultation paper on their proposals to amend the Fisheries Protection Ordinance, Chapter 171. In essence the Government proposes: (i) the establishment of a fishing licence system and limiting new entrants to the industry; (ii) the development of fisheries protection areas and (iii) the implementation of a territory wide closed season for fishing. The fishing licence would be vessel based, targeting fishing vessels that generate considerable pressures on resources, that is, trawlers, and be valid for 2 years. Importantly, however, the licencing system could allow the Director of the department to impose new regulations upon the industry, for example, by imposing conditions on the permit as situations change. The establishment of fisheries protection areas are proposed for Tolo Harbour and Three Fathoms Cove, and Port Shelter, both in Hong Kong's eastern waters and accounting for 8.3% of the territorial sea area. The annual two month long moratorium on fishing essentially brings Hong Kong's fishing policy into line with that of China that bans trawling, purse-seining and methods other than gill-netting, long-lining, hand-lining and cage-trapping in its waters for different times of each year but each of roughly two months, between June and September in all its territorial waters.

Not unpredictably, although some of Hong Kong's fishermen are in favour of licencing and the designation of Fisheries Protection Areas, the majority are against the two month moratorium in particular, understandably since they see their livelihoods threatened yet further and their "traditional" rights to free access of any and all waters constrained. In this discussion, the fishermen have the support of some local politicians that constitute Hong Kong's Legislative Council but against them is an increasingly vociferous and influential consortium of green groups and its politicians. World Wide Fund for Nature Hong Kong, for example, supports the licencing system but also wants a vessel catch quota. It also supports the two month long territory wide closed season. Most importantly, however, it wants all of Hong Kong's waters to be designated as a Fisheries Protection Area thereby ending all trawling in them. WWFHK further argues that all of Hong Kong's eastern waters should be designated and managed as recreational fishing areas. Finally, WWFHK argues that the Government must end all subsidies and assistance to an industry that has no interest in sustainability and whereby therefore the Hong Kong taxpayer is essentially propping up a dying fishery. WWFHK also questions the role of the Government's Agriculture, Fisheries and Conservation Department in acting as both game-keeper and poacher. That is, continuing to subsidise the fishing industry on the one hand, but bemoaning

the fact of over fishing on the other. Actually, I do not see such a contradiction when one is discussing inshore waters, in contrast to blue water fisheries, but nevertheless the department could do with reorganization into a Department of Natural Resource Management with its at present different arms united in common policy. The scientific community of the Marine Biological Association of Hong Kong generally supports the views of the Agriculture, Fisheries and Conservation Department and WWFHK, but add that recreational fishermen should also be licenced and quotas established for all. The association also argues that existing and proposed marine parks should now be declared No Take Zones and closer attention given to the timing of any fishing moratorium(S) in local waters to take into account the fact that local, subtropical, species probably spawn earlier than in China's northeastern seas.

As always in fishing disputes, Governments find themselves between a rock and a hard place, but the problem is that something has to be done, or does it? One could argue that the Government should wash its hands of the fishermen and simply let the industry die a natural death—after all, most scientists agree that, worldwide, over fishing is largely the consequence of the fishermen's own activities. But Governments cannot do such things otherwise there is no point in government and anarchy reigns.

The problem is that fishermen, just like farmers, live in a world that is continually changing: the price of fish goes up, it goes down; there is glut of cultured prawns, the capture fishery for them collapses; one government subsidises its fleet, another does not; territorial water limits get bigger; sea areas are closed, sea areas are opened again; the weather is good, the weather is bad; the price of fuel rises, the price of fish falls; the economy declines, it rises; crews are hard to enlist, even, the crew is sick. Unlike our relatively ordered existences, life for a fisherman is not just hard, it is dominated by an array of vagaries and, as a consequence, he simply does what he does best—he fishes—anywhere and everywhere he can in the *hope* that he can maintain a living from his catch. He argues against all legislation to control him because any such restrictions lessen his spectrum of fishing options. If he can, he will break the law by working under the cover of darkness, falsifying his catch records, buying illegal fuel, hiring illegal crews—in fact anything to make a living the only way he knows how in a shrinking marketplace. Some go yet further, as was the case in March 2005 when four Hong Kong fishermen were caught trying to smuggle drugs into Thailand. Such activities are reprehensible, but most fishermen are not “criminals”; their actions simply reflect their need in today's world to be opportunistic and as economical as possible in the face of hardship even though the fishing masters may have brought it on themselves. We have to remember that, in Hong Kong, it is still the capture fish-

erman who puts 95% of the fish on our plate, often under conditions of great hardship and danger, at a price we can afford and, thus, we should provide him with the respect he deserves. Especially today, moreover, because over the 33 years that I lived in Hong Kong, local fishermen have gone from being ignored, lionized, derided and now vilified. In many ways, the present situation is not wholly of their causing, but the consequence of previous government policies.

Hong Kong's problems are actually not that unusual. In fact, they are the same as those posed elsewhere in the world. For example, post retirement from Hong Kong, I have lived in Great Britain and come to understand that fishing problems here are, essentially, the same as in Hong Kong. In January 2005, for example, WWFUK reported that 13 of 16 surveyed marine species are in decline, including commercial fish species. Causes for the decline include over fishing, dredging, increased shipping traffic, oil and gas exploration, fish farming and coastal developments. It all sounds sadly very similar to Hong Kong. As a consequence, in December 2004, British conservationists called for large areas of the North Sea in particular to be designated as no fishing areas because of a perceived decline in stocks. However, the British fishing industry breathed a sigh of relief after European Union Fishing Ministers rejected such a plan preferring to agree to less draconian measures including tougher surveillance on illegal fishing and the introduction of measures to help threatened species. As a consequence, the days that European vessels can fish was reduced from 15 to 14 each month, although excluded from this constraint were trawlers that use mesh sizes large enough to avoid catching juvenile fish. The most endangered species, Cod, was afforded further protection by a ban of 18 weeks duration on fishing in the Baltic and mandatory inspections of vessels catching more than one tonnes of Cod in the North Sea.

Hong Kong can learn from the European experience because, in reality, its fishing problems are simple in comparison to the multi-national complexities of the European Union's fishery politics. The global experience has, moreover, collectively identified a suite of economic and political measures and innovative and practical strategies that can be used to manage any fishery. Whether they succeed or not, however, is largely a result of one simple human characteristic—goodwill. Conservationists often have a very poor understanding of a fisherman's life, never, for example, neither having been on a vessel nor talked to a fishing family. Conversely, fishermen, because of their adherence to tradition amongst a tight knit group of people with similar backgrounds, often have a poor understanding of the changing world. Many, even today, are illiterate and because of a lack of understanding of the issues and concerns expressed by others, simply cling to the past and what they know worked for their fathers. For example, Hong

Kong's eastern waters are the cleanest and hence in particular are now perceived to have a greater value in terms of recreational fishing, ecotourism and recreation rather than solely commercial fishing. The fishermen argue against this because they simply do not see that other people's opinions about their waters are of any value.

Fishermen are resistant to change, especially where it affects their perceived right to free access of what they regard as theirs. But, they must change and what is needed are new initiatives that will help them understand that a new order is inevitable and that it is better to work with rather than against the other components of an increasingly complex society who have other suggestions for the use of the world's seas. On the one hand, fishermen fail to recognize that fisheries resources are in fact the common property of every Hong Kong citizen

while the green groups fail to understand the long history and pride of local fishermen who exploit the resource, admittedly for their own livelihood, but also so that the residents of this city state have fresh fish in their markets every day. One cannot simply remove the income of 5000 fishermen and their dependents as society's views on the best use for local inshore waters changes, even if it is for all the benefits that conservation and sustainability would bring, without addressing the consequential socio-economic problems that such a policy shift would create. In this context, the Hong Kong Government's proposed improvements to the Fisheries Ordinance must be regarded as initial steps towards a long term, comprehensive but, hopefully flexible and innovative, fisheries policy that is acceptable to all. This may be an impossible dream but it is, in reality, the only option that we have today. As it probably is elsewhere.