

A Food Fad's Ripple Effect On Reefs of Pacific: Cyanide

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Published: October 31, 1995

When diners in Hong Kong's famous waterfront restaurants savor fish picked live from a glass tank and steamed, a popular custom there and elsewhere in Asia, the price of the meal does not include what a new investigation says is a dreadful hidden cost: rampant destruction of the biologically richest marine ecosystems in the world.

The groupers, humphead wrasse and other fish taken from coral reefs in the southwestern Pacific Ocean and held in restaurant aquariums are commonly captured by divers who squirt sodium cyanide at them, according to the investigation.

The chemical -- used to execute criminals -- merely stuns the fish and is not toxic to people in the dose commonly used for fishing. But scientists have determined that the dose is more than enough to kill the sensitive corals that create and maintain the rich reef habitat.

The use of cyanide, which has been increasing since the mid-1980's, has become so widespread, the investigating scientists say, that it is destroying reef ecosystems and wiping out broad expanses of what ecologists say is the global epicenter of oceanic biological diversity.

"We've got a big environmental murder going on," said Dr. Robert E. Johannes, an American marine ecologist based in Tasmania. He is the main author of the voluminous new study initiated and financed by the Nature Conservancy and the South Pacific Forum Fisheries Agency, an association of regional governments.

The work of Dr. Johannes, a Pew environmental scholar, was also supported by the Pew Charitable Trusts. His co-author is Michael Riepen, an independent fisheries economist in Wellington, New Zealand.

Fishing for live reef fish now encompasses a swath from the Maldives in the Indian Ocean to the Solomon Islands and Australia in the Pacific, according to the report -- a range equivalent to about a quarter of the earth's circumference, containing the biologically richest one-third of the world's coral reefs. It is generally illegal to use poison in fishing throughout this region, the investigators say.

The trade in live fish, they say, is driven by demand that has brought the wholesale price

of some species soaring to more than \$40 a pound. Both the fishing industry and the market are primarily based in Hong Kong, according to the report, although, it says, other countries are also increasingly involved in fishing, trading or importing live reef fish. These include China, Taiwan, Singapore and Japan.

The authors based their conclusions on observations and interviews in nine countries. In a statement, the Hong Kong Agriculture and Fisheries Department said the evidence of widespread reef destruction "is anecdotal and without verification through survey." The authors of the report wrote that while the underwater surveys required to determine the precise extent of damage are prohibitively expensive, "the information we have obtained nevertheless paints an alarming picture."

The statement by the Hong Kong agency said that while reports of reef destruction by cyanide are "regrettable," the capture of reef fish "is a legitimate exploitation of a marine resource" whose regulation is in the hands of governments where the fishing grounds are situated.

It said that Hong Kong fishermen rarely fish illegally in other countries' waters, adding that the live fish business in Hong Kong is sustained by "legitimate trade between local reef fishing communities and Hong Kong traders."

Killing corals "has the same effect on a reef community's fish and invertebrates as clear-cutting trees has on forest animals; it destroys their habitat and they disappear," the report says. And while it has proved difficult to pin down offenders, the study concludes, there is little doubt that fishing with cyanide is causing widespread coral death.

It is, says the report, "a vast and expanding ecological tragedy." As fish stocks become depleted and fish get harder to find, the investigators say, fishermen sometimes dump entire 55-gallon drums of cyanide into shallow reef communities, making "aquatic graveyards" of them.

Coral reefs are the largest structures created by life. Biologically, their richness compares with that of tropical rain forests. They have come under assault in many places from a warming climate, pollution, overfishing and physical destruction, but the trade in live reef fish appears especially destructive.

If left alone, the reef ecosystems might recover in a few decades, but the report says this is not likely: Coastal populations are rising, and villagers who have long depended on the reefs for their livelihood and main source of animal protein are likely to denude them again as soon as they begin to recover.

The destruction of the reef ecosystems to supply markets in other Asian countries is devastating many local village economies in the Pacific, says the report, which adds that some divers have also been killed or disabled by the bends after pursuing the dwindling supply of fish to greater depths.

Despite the general illegality of poison in fishing, the investigators found, many governments have been unable to enforce the laws in the case of cyanide, and they cited allegations that bribery is sometimes practiced. The authors advocate giving control of fishing on remaining healthy reefs to villagers as the best way to preserve them.

Dr. Johannes said that Indonesia and the Philippines, where the destruction has so far been greatest, are beginning to recognize this and take action accordingly. Nevertheless, the report says, "no slowing in the geographic expansion of the fishery nor of consumer demand is in sight."

It has long been a popular Chinese custom to keep fish alive until moments before cooking, the authors wrote. But demand has recently been spurred, according to the report, by the rise of a growing class of newly rich business people in the rapidly expanding economies of southeast Asia.

"Along with a Rolex and a BMW," the authors write, "one can signal that one has 'arrived' by eating very highly priced fish in public." Demand seems to rise further if a particular fish is thought to be endangered, as happened in Hong Kong when newspapers reported that Indonesia had banned the export of humphead wrasse.

Fishing boats in search of live catches but using more conventional methods began to move southeastward into the Pacific in the 1960s and ranged ever farther as prey became scarcer. Philippine waters may already be nearly depleted of the sought-after fish, the report says, and last year fishermen began operating in the Solomons and also moved west to the Maldives, where depletion of some fishing grounds has already been noticed.

About 20 years ago, as demand soared, fishermen turned to cyanide. The poison, Dr. Johannes says, enables fishermen to take more fish in a shorter time and also to select individual fish.

Typically, according to the report, the fish are revived and kept in floating pens until picked up by specially appointed transport ships. Sometimes they are packed in plastic bags containing seawater laced with anesthetic and shipped by air. Many apparently die in transit, according to the report.