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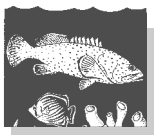

A note on cyanide fishing in Indonesia

by Jos S. Pet[1] *& Lida Pet-Soede*[2]

In Indonesia reef fish stocks are declining as a result of over-fishing and destruction of habitats. The latter is caused by the dying of corals from cyanide and by the breaking of corals around holes where fish are hiding. In the capture of a single grouper, more than a square meter of corals is destroyed when the fish is removed from its hiding place. In areas where cyanide fishing has been practised intensively, the reef is mostly dead, overgrown with algae, and has only very few animals still living on it. The target fish species in the cyanide fisheries are all species which aggregate at specific sites to spawn. Groupers and Napoleon wrasse migrate many miles each season to aggregate at the sites where they reproduce. Spawning aggregation sites are extremely vulnerable since experienced cyanide divers are skilled in locating them. Wiping out the fish in one aggregation site equals the elimination of top predators from several square miles of reef. Spawning aggregation sites of grouper and Napoleon wrasse therefore need to be protected wherever possible.

There are several types of cyanide fishing operations in Indonesia: large-scale operations working mostly in remote and pristine areas, and small- and medium-scale operations working in more densely populated and exploited reef areas. The large-scale operations use motherships with skiffs, and have crews of some 20 persons. These boats make one-month trips after which the catches are transferred to floating cages or to concrete basins on shore. The fish from the cages are transported by Live Fish Transport Vessel (LFTV) to Hong Kong. The fish from the concrete basins are air-freighted out. The medium-scale operations employ 5 crew of which a minimum of two dive with hookah gear. They make three-day trips. The small-scale operators, with only a single fisherman, free-dive from outrigger canoes and are thus confined to shallow reefs. Small- and medium-scale operations sell their fish from floating live fish cages.

When a large-scale cyanide mothership with working boats enters a pristine coral reef area the operators are only targeting prime species such as Napoleon wrasse, barramundi cod, coral trout and large groupers. The divers are especially keen to spot a grouper spawning aggregation. By the time a mobile large-scale operation has taken its quarry from a reef, local fishermen have learned the practice and start fishing with cyanide. This continued poisoning prevents new coral recruits from successfully settling on the dead reefs.

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Cyanide is cheap and easy to obtain. The costs per 0.5 l solution are about Rp 5000. Small-scale operations use 2 bottles per diver per day-trip, medium-scale divers use 15 bottles per 3-day trip and the large-scale operations use some 750 bottles per 1-month trip. Catches of large-scale cyanide operations average around 2500 kg per trip. A regular medium-scale dive operation catches around 20 kg of live groupers per trip. Small-scale operations average 1 kg per trip. The cyanide fishermen in Indonesia receive prices ranging from US$ 5.00 to US$ 35.00 per kg, depending on species, size and quality. The net profits per boat-owner per month in the cyanide fishery are US$ 100 for the small-scale operations (owner = crew), US$ 413 for medium-scale operations and no less than US$ 35 000 for large-scale operations. Crew members on average earn incomes per month of US$ 100 in small-scale operations, US$ 252 in medium-scale operations and US$ 400 in large-scale operations.

The profits and incomes are higher than in any type of conventional fishery. The large financial rewards (although short-term) lure many fishermen into the practice, even when they are aware that the resources will eventually cease to provide them and future generations with employment, income and food. It is more a matter of greed than a matter of need (Pet-Soede & Erdmann, 1998). Even if fishermen have other options to make a living at sea, in many cases they deliberately choose this lucrative practice. Cyanide fishing is also a profitable enterprise for investors and boat owners.

The Fisheries Law No. 9, signed on 19/6/1985 by the President of Indonesia, includes a specific prohibition of the use of destructive fishing techniques such as explosives and poison. The penalties are up to 10 years of jail and/or 100 million Rp. fine. The marine police and navy, together with the fisheries service, are responsible for law enforcement. Profit margins in the cyanide fisheries and live reef fish trade are large enough, however, to allow for very large bribes. Corruption therefore makes the eradication of this illegal and destructive fishing method extremely difficult. Very few cases of cyanide fishing are brought to court, and usually the offenders are released after payment of a 'fine'.

Corruption at the lower government levels is almost inevitable, considering the large bribes paid and the low salaries for government officials. This combined with a lack of funds and facilities for enforcement, lack of knowledge and awareness with the authorities, and lack of political will at all levels, means that the cyanide fishing still continues largely unhindered.

The biggest problem is finding support at higher levels for banning destructive practices. Most authorities seem disinterested. Political will has to be developed through increased awareness of macro-economical problems caused by destructive fishing such as its impacts on tourism and fishing.

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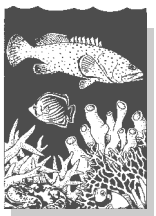

Krismon & DFP: some observations on the effects of the Asian financial crisis on destructive fishing practices in Indonesia

by Mark V. Erdmann [1] & Jos S. Pet [2]

Primary effect of the crisis: Increasing export fisheries

In recent months, various marine scientists and concerned environmentalists have approached us for information on the effects of the current Asian financial crisis (known as 'krisis moneter,' or 'krismon' in Indonesia) on destructive fishing practices (DFP) here. Specifically, we have often been asked to confirm if blast fishing has increased as the Indonesian rupiah devalued precipitously and prices within the country soared. Our combined observations in the regions of South and North Sulawesi, Komodo, East Kalimantan and Maluku suggest that krismon has indeed had major effects on DFP in Indonesia, though different fisheries have been affected differently. In particular, fisheries targeting species for export (such as the live reef fish trade and lobster, shark fin, and tuna fisheries)

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