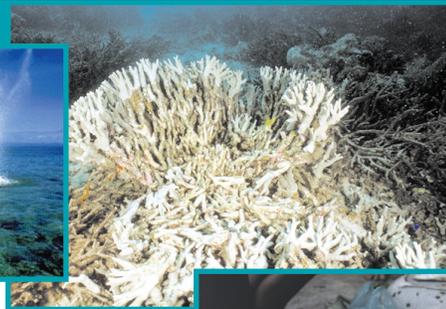


CORAL REEFS & EXPLOITIVE FISHING



Short-term gain, long-term loss

Coral reef fisheries are a vital source of protein for coastal communities throughout the tropics. Coral reefs contain over 4,000 species of fish as well as other edible invertebrates and contribute about one-quarter of the total marine catch in developing countries. Exploitive fishing, which includes overfishing and destructive fishing, occurs on most of the world's reefs. It yields short-term economic benefits for fishers, but endangers the long-term sustainability of fishing and other reef-dependent industries.

WHAT IS EXPLOITIVE FISHING?

"Exploitive fishing" refers to fishing practices that are unsustainable and damage the long-term health of fishery resources in order to profit from them.

Overfishing occurs when fish or other marine animals are harvested at rates faster than they can reproduce. Most reefs in the world are impacted by overfishing. Many reef animals are especially vulnerable to overexploitation because they take time to mature sexually. Scientists estimate 36 percent of the world's reefs are already overexploited by overfishing (Reefs at Risk, 1998). In some areas, overfishing has already resulted in the local extinction of highly-valued species such as giant clam and grouper.

Destructive fishing refers to any type of fishing technique that destroys fish habitat. Scientists estimate that 56 percent of the coral reefs in Southeast Asia are at risk from destructive fishing (Reefs at Risk, 2002). The two most common forms of destructive fishing are dynamite and poison fishing:

Dynamite fishing or "blast" fishing, is done easily and cheaply with dynamite or homemade bombs created from locally available materials. Fish are killed by the shock waves from the blast and are then skimmed off the surface or collected from the bottom by divers. These explosions not only kill large numbers of fish and other marine organisms in the vicinity, but they also destroy the physical structure of coral reefs. This physical structure is critical to the functioning of coral reef ecosystems and other coastal processes. On average, a 1-kilogram (35 ounce) beer bottle bomb can leave a rubble crater of approximately 1 to 2 meters in diameter, killing 50 to 80 percent of the coral in that area (Reefs at Risk, 2002). It can take hundreds of years for the physical structure of a coral reef to rebuild after being reduced to rubble by fishers using explosives. Although illegal, dynamite fishing is practiced in up to 30 countries in Southeast Asia and Oceania and is also common in Eastern Africa.

Poison fishing commonly referred to as "cyanide fishing," is another popular destructive fishing method used to capture live fish for the aquarium and food trades. Most fish caught using cyanide are sold in restaurants, primarily in Asia, where live fish are prized for their freshness. Fishers using this method dive down to the reef and squirt cyanide or other poisons in reef crevices to stun fish, making them easy to catch. Sodium cyanide and bleach are the two most commonly used poisons. The impact of these poisons on the reef ranges from coral bleaching to death. The full extent of the impacts from poison fishing is unknown.



CORAL REEFS & EXPLOITIVE FISHING *continued*

EXPLOITIVE FISHING AND ITS IMPACT ON CORAL REEF ECOSYSTEMS

- **Destroys habitat.** Destructive fishing destroys the habitat where reef animals live and breed and overfishing disrupts the ecological food chain. Recovery, if possible, may take decades.
- **Inhibits the growth of new corals.** The sediment left behind from blast fishing makes it difficult for juvenile corals to settle and grow.
- **Reduces fish stocks.** A loss in the number of fish due to overfishing and/or habitat destruction can lead to fewer fish and reduces the ability of fish to reproduce. A significant number of non-targeted species are also killed through destructive fishing.
- **Disrupts the food web and ecosystem balance.** By reducing or removing a specific species, overfishing changes the coral reef food web. For example, removing an algae eating species, like parrot fish, could create conditions where algae may replace corals.

EXPLOITIVE FISHING AND THE COSTS TO SOCIETY

The cost of exploitive fishing to society is overwhelming when measured by loss of potential income from sustainable fisheries and tourism, coastal protection and lives.

- **Loss of fishery jobs & income.** A sustainable fishery can produce jobs for approximately 10,000 Indonesian fishers for many years and generate upwards of US \$321.8 million in income over a 25-year period (Cesar, 1997). When harvested sustainably, live fish from a healthy coral reef in Southeast Asia can yield up to 0.55 to 1.1 tons per year with an annual net benefit of US \$2,500-\$5,000 per square kilometer (0.3 square nautical miles). However, the pervasiveness of overfishing in Indonesia results in massive societal loss, estimated at US \$1.9 billion over twenty years (White, 1998).
- **Loss of coastal protection and tourism.** For example, in Indonesia the net cost from loss of coastal protection and tourism is US \$46 million over a 25-year horizon (Pet-Soede, 2000).
- **Loss of lives.** Bombs can explode prematurely and result in severe injury and death.

POSSIBLE WAYS TO PREVENT DESTRUCTIVE AND EXPLOITIVE FISHING

1. **Enforce the Law.** Many countries have laws, but they are not enforced. To improve compliance, a multi-faceted approach is needed: increase enforcement, raise local and national awareness, and educate fishers on alternative fishing methods.
2. **Create Effective Marine Protected Areas (MPAs).** Create more MPAs and improve the management of existing MPAs. This includes patrolling the area for illegal fishing practices and creating "no-take" MPA zones.
3. **Regulate the International Trade of Live Fish & Other Live Reef Organisms.** At the international level, countries need to work together to regulate the export and import of fish, and to identify and endorse live reef organisms caught in a sustainable manner. The Marine Aquarium Council (MAC), based in Hawaii, certifies products from the live fish and reef organism trade.
4. **Create Alternative Livelihoods.** We need to invest in creating alternative livelihoods for local fishers and create opportunities in non-extractive industries such as sustainable tourism.
5. **Adopt the U.N. Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries.** Adopted by the FAO in 1995, this has helped modify national fisheries laws by creating a Code of Conduct in cooperation with governments, NGOs, and industry in support of sustainable aquaculture, fisheries operations, fisheries management, fish processing, and trade.

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