

Weekend Guide



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Saving the Coral Reefs

Some local villages in Indonesia have renounced bombs and poisons in favor of the hook and line

By Ron Moreau

NEWSWEEK INTERNATIONAL

Nov. 12 issue — For 34 years said Nuhung made a fairly easy living as a fisherman. He would take his small boat out off the coastal village of Tumbak, on the eastern coast of Indonesia's North Sulawesi province, to the reefs. Looking into the clear water, he would see schools of groupers, wrasse and coral trout feeding off the protozoans, algae and crustaceans that live among the coral. Then he would make use of the fishing techniques handed down from his father and his grandfather: he filled empty Coke bottles with fertilizers and kerosene and fashioned matches into fuses that could burn underwater. Five or 10 bombs dropped one by one over the side would send plumes of water 15 feet into the air and kill fish anywhere within a dozen meters. Nuhung had only to dive down and collect a boatload of the larger, marketable fish and leave

the rest for the gulls and sharks.

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LIKE THOUSANDS OF other demolition fishermen, Nuhung never gave much thought to the coral below. The waters of the Indonesian archipelago hold 450 different species of these tiny shelled creatures (15 percent of the world's total), which congregate in shapes resembling deer antlers, tree branches, feathers, domes and tables. He never appreciated the vast ecosystem that the coral support, which includes a quarter of Indonesia's fish species. About five years ago he noticed that his explosives handiwork was netting fewer and fewer fish. He had an epiphany. "I always knew blast fishing was harmful," says the 56-year-old. "Then I suddenly realized that by bombing the reefs I was destroying not only my own but my children's future."

Indonesia's coral reefs are in trouble. Coral mining, industrial pollution and toxic agricultural runoff all play a role in their destruction, but the fishermen have been the worst offenders. They not only bomb fish but also poison them with cyanide, an equally destructive practice. The fishermen are also among the biggest potential victims of the devastation. Two thirds of Indonesia's 7,000 coastal villages are adjacent to coral reefs and thus depend for their livelihood on the harvest of reef fish and crustaceans. The disappearing reefs are already leading to a dramatic decline in the productivity of coastal fisheries and to increasing turf wars among fishermen for the remaining spoils. Indonesia's reefs are vast—they cover 51,000 square kilometers, surround 17,500 islands and stretch 3,500 kilometers from Sumatra to Irian Jaya—but they are not infinite. Many foreign experts and Indonesians fear that the region's entire marine environment could be seriously and

irreversibly damaged if the reefs keep dying at their present rate. “The overall picture is incredibly depressing,” says Ian Dutton, Indonesian director of The Nature Conservancy (TNC), a U.S. environmental group.

Depressing, but not hopeless. Despite the devastation, environmentalists have in recent years made significant progress in changing the hearts and minds of the fishermen. Working closely with local Indonesian authorities in North Sulawesi and less populated eastern Indonesia, where most of the country’s intact reefs are located, they have succeeded in preventing destructive fishing practices and coral mining from overwhelming the reefs. Increasing numbers of fishermen like Nuhung are waking up to the threat and protecting the life-sustaining coral before it’s too late.

At Tumbak, Nuhung and the 327 other family heads in the village have organized a marine-protection campaign with the help of Proyek Pesisir, an Indonesian nongovernmental agency funded by the United States Agency for International Development (USAID). In 1998, the villagers decided to abandon blast and cyanide fishing completely, and to turn 20 percent of the 300 hectares of damaged coral reef in front of their village into a marine sanctuary. They agreed to stop quarrying coral for use as foundations for their houses, and they banned fishing, swimming and even the passage of small canoes and outrigger boats. On the remainder of the reef, fishing is allowed only with hand lines, small nets or spears. Nuhung, who chairs the committee, has become a crack spearfisherman: each day he brings in several sweetlips and other varieties of reef fish. “It was easier to fish with bombs,” he says, “but spearfishing is more fun and better for the reef.”

The villagers say they noticed an increase in the size of fish schools soon after they stopped reef bombing. “It was a hard sell to persuade the fishermen to try a new way,” says Christovel Rotinsulu, a Proyek Pesisir community organizer. “But they’re happy with the results.” Villagers take turns mounting a 24-hour reef-watch patrol to make sure that no one, local or outsider, violates the rules. When one villager was caught blast fishing one night last year, the committee confiscated his boat’s small engine. Proyek Pesisir now hopes to expand its success in Tumbak and three other villages to 20 North Sulawesi coastal communities. “Imagine the positive impact on fish and marine biodiversity if every coastal village in Indonesia declared only 10 hectares of the reef in front of their homes as a marine sanctuary,” says Dutton.

TNC is also winning a crucial battle to protect eastern Indonesia’s Komodo National Park’s incredibly rich and beautiful coral reefs, which have a higher biodiversity than even

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Australia's famous Great Barrier Reef. But the park, like the reefs, is under siege. As the surrounding waters—near the islands of Sumbawa to the west and Flores to the east—become fished out, fishermen from the region and from as far away as Sulawesi are increasingly zeroing in on Komodo.

To fight back, TNC has helped the government beef up its park-protection force. It has funded the addition of two floating ranger stations, manned by eight rangers, policemen and soldiers, that make round-the-clock patrols searching for blast and cyanide fishermen and coral miners. So far this year local courts have slapped 24 fishermen with sentences from one to two years in prison. Last month rangers arrested three ringleaders of a coral-mining operation, and nabbed more than 70 fishermen from Flores who were beginning to place up to 600 bamboo fish traps on the park's coral reefs. TNC is also promoting community-awareness programs, such as a traveling puppet show for schoolchildren on neighboring Sumbawa and Flores islands. TNC has also pushed hard for districts on both islands to enforce the nationwide law against reef bombing.

To persuade villagers both inside and outside the park to stop blast and cyanide fishing and to stay off the reefs, TNC and other environmental groups have to offer the largely subsistence fishermen another way to support themselves and their families. TNC has set up three ingenious "fish-aggregation devices"—large, floating bamboo platforms that are anchored in 1,500 to 2,000 meters of water. Algae and other microorganisms that grow on the undersides of the platforms attract fish. More than 400 former reef fishermen use hooks and lines to catch Spanish mackerel, skipjack and yellowfin tuna. Aco, a former cyanide fisherman, says that on a good day he can catch from 10 to 15 tuna on his hand line around the FAD, which the Indonesians call a rompong, netting him a daily income of over \$10, more than he made when he was poisoning reef fish. "My catch is better now," he says as he dangles a hand line over the side of his outrigger boat, some 20 kilometers offshore.

Cyanide fishing is more resistant to the economic logic of nondestructive fishing. Huge ships from Hong Kong and Taiwan ply Indonesian waters supplying local cyanide fishermen with "hookah" air compressors, which supply air for long diving runs. A cyanide fisherman has to chase his prey into its hiding place in the coral, spray it with a plastic squeeze bottle of a potassium cyanide solution and then pry open the coral with a crowbar. The fish are taken unconscious, but alive. The big ships, which each hold thousands of tons of live fish, helped cause the near-total disappearance of groupers and other reef fish from Thai and Philippine waters in the 1980s, and for the past few years they have been zeroing in on Indonesia.

Recently cyanide fishermen have been targeting some of the 12 known grouper-spawning areas in Komodo Park. “These 12 grouper-spawning sites may be the last in this entire region,” says Phil Arumugam, TNC’s aquatic-ecology expert. “If we allow boats to fish there, it could be the end of the grouper in Indonesia.”

To counter the loss of fish, Arumugam is raising a breeding stock of six species of adult groupers and sea bass in deep nets suspended from a floating platform just offshore to provide fertilized eggs for the hatchery. He hopes to begin training local fishermen to raise the fingerlings on similar platforms in front of their villages. With the right training a local fishing family should be able to raise six tons of grouper a year on platforms half the size of a football field and earn \$6,000 a year, 10 times the annual per capita GDP.

On the tiny, arid island of Kukusan, just outside the park’s boundaries, TNC expert Herman Sofyanto is teaching former cyanide fishermen to raise seaweed instead. Zaenuddin, a 31-year-old fisherman, stopped using poison last April. Just last month he and his fellow villagers chased away 10 fishing boats from neighboring Mesa Island that were fishing with cyanide at night right where the village’s 25 poor families have set up their floating seaweed farm. (“If they come again they’ll be sorry,” he says.) The seaweed, which grows on a latticework of ropes attached to a bamboo platform, is used to make chemicals, food and cosmetics, and earns the village nearly \$250 a month.

Zaenuddin and other fishermen cooperating with TNC now believe they are under attack by outsiders who are trying to exploit the newly protected reefs and their rompong. Earlier this fall they watched helplessly as several big fishing boats from Sulawesi started trawling for the yellowfin tuna that frequent the rompong. For the first time ever, the fishermen are thinking of calling on the local authorities and the Indonesian Navy for

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help. “Now the local communities are fighting to protect their resources and manage them responsibly,” says Rili Djohani of TNC. “That’s a real sea change in attitudes.”

Not all attitudes. On the eastern front—or the “Wild, Wild East,” as Dutton calls it—environmentalists and law-enforcement agencies have met stiff resistance from fishing and mining interests. Reef bombers sometimes threaten Indonesian police and national park rangers with automatic weapons or with their lethal bottle bombs. If Indonesia is to save its coral reefs, fishermen in thousands more villages must get the conservation message, and soon.

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