Dying sea: Corals in deep peril

MD ASADULLAH KHAN

WITHIN the past decade, whole species of marine life have been depleted to the edge of extinction. Pollutants from oil to plutonium foul the deep blue seas. Many of the billion or so people whose life depends on the bounty of the sea face severe privation. This human assault upon the sea, devastating though it may be, goes largely unnoticed. With the exception of the occasional oil-covered shore bird or plastic debris at the tide line, the injuries lie hidden. "You can see a forest fire, but you can't see a damaged reef," says Rilli Hawari Diohani, an Indonesian marine biologist who is assistant director of the U.S. based Nature Conservancy. Visible or not, the damage is there, it is increasing, and in many cases it may be beyond control or recovery. Noticeably, as much as 10 percent of the world's coral reefs have been wiped out, largely by pollution and destructive fishing methods. At the present rate of devastation, another 60 percent will be destroyed in 20 to 40 years.

Of the world's 15 major ocean fisheries, 13 are being exploited at a rate that challenges their ability to sustain fish populations. World food experts predict steadily declining catches in the coming years.

"Dead zones" cause similar havoc. Reports have it that huge chunks of reef in western New Guinea and off Zambales in the Philippines have been blown apart by dynamite charges used to kill targeted fish (along with young fingerlings, plankton, larva, eggs and the reef itself). Traditional fishermen say the practice has brought an eerie stillness to waters that once teemed with sea life. "In the past, flying fish jumped over the prow of fishing boats heading out to sea," say Jun Filoteo, a deep-sea fisherman from Zambales. "Now there is no longer such a spectacle. Aside from the motion of the waves, the sea appears so calm that it is almost scary."

Scary too is the collapse of fisheries around the world. Even in areas where nothing illegal goes on, fishing technology has become so sophisticated that it is nearly as devastating as dynamite. In 1950 the worldwide fish catch was 20 million tons, most of it from small boats using technology unchanged since the age of sail. By the end of the 1980s, the catch had peaked at more than 85 million tons, much of it swept up by factory ships trailing nets the size of Manhattan.

Fisheries experts estimate that another 27 million tons of unwanted fish, called the "by-catch," is thrown back dead into the ocean. "There are too many people going after too few fish," says Rolland Schmitten, assistant administrator of the U.S. National Marine Fisheries Service.

Natural calamities are blamed for much recent harm to marine ecosystems. Sudden warming of waters off the south western U.S. coast in 1993, a result of upwelling "El Nino" currents from South America, brought up swarms of marauding mackerel that are depleting sea resources. But worse by far than natural accidents are the insidious man-made disasters of ocean pollution. More than half of the world's people live within 100 km of a seashore, and nine of the 10 largest cities sit upon a sea coast. Sewage, sediments, chemicals and fertilizers flow from that mass of humanity and spill into the sea. Waste poisons kill off fish, fowl and marine plants, and waste nutrients give sustenance to mammoth blooms of oxygen-hungry algae that choke other sea life.

Little do we know that the sea shapes the character of this planet, governs weather and climates, stabilises temperature, yields to the atmosphere the moisture that falls back on the land, replenishing Earth's fresh water to rivers, lakes, streams -- and us. Every breath we take is possible because of the life-filled, life-giving sea; oxygen is generated there, carbon dioxide absorbed. Both in terms of the sheer mass of living things and genetic diversity, that's where the action is. Rain forests and other terrestrial systems are important too, of course, but without the living ocean, there would be no life on land.

Most of Earth's living space, the biosphere is ocean -- about 97 percent. And not so coincidentally, 97 percent of Earth's water is ocean. The sea, as such is Earth's life-support system. The services provided are so fundamental that most of us who live here tend to take them for granted. In the past century, without much thought about the consequences, we have removed billions of tons of living creatures from the sea and added to it billions of tons of toxic substances. These days fish, whales, shrimp, clams and other living things are regarded as commodities not as vital component of the living system upon which we are utterly dependent.

By far the most precious resources of the sea are its coral reefs lying deep underneath the sea. Shockingly, across the globe, from the Gulf of Mexico to the South China sea, people are killing reefs. Fishing with cyanide, harbour dredging, deforestation, coastal development, agricultural run off, shipwrecks and careless divers are putting so much pressure on these ecosystems that they may not survive beyond the next century. Scientists around the world are alarmed at the way reef killing is going on. Already, some experts estimate, 10 percent of the earth's reefs have been mortally wounded. About 30 percent are in critical shape and may die within the next 10 to 20 years. And an additional 30 percent are coming under such sustained attack that they may perish by the year 2050.

Coral reefs are more than beautiful structures admired by divers. Their stony ramparts serve as storm barriers that protect shorelines and provide ships with safe harbour. Their nooks and crannies accommodate fish and shellfish that are important sources of food and livelihood for millions of people. And like the tropical forests to which they are frequently compared, reefs are vast biological repositories -- as yet untapped -- for medicinal and industrial uses.

Nowhere in the world have they been subjected to more abuse than in the Philippines, says University of the Philippine marine scientist Edgardo Gomez. According to environmentalists, a staggering 90 percent of the archipelago's 34,000 sq km of reef is dead or deteriorating. Among other things, Philippine reefs are being buried by tons of soil that washes from deforested tracts of land. They are also being damaged by pollution that seeps from factories, farm fields and sewers. But above all they are being destroyed by too much fishing.

The destructive cycle began when villagers started stripping nearshore reefs of giant clams, groupers and other fish. Then the fishermen upped their productivity by blasting the reefs with dynamite and scooping up the dead fish. Now they have adopted what may be the most insidious fishing method of all. Philippine divers are hunting down big reef fish, stunning them with cyanide and hauling them to the surface alive. The practice allows traders to supply Chinese restaurants with the live fish, their affluent customers covet. Meanwhile, the 150,000 kg of cyanide the divers dump onto living corals each year is poisoning the reefs.

Unhappily for reefs, humans upset the balance between corals and their competitors in many ways. Consider the erosion that follows deforestation and agriculture. No longer held back by tree roots, soil laden with nitrogen and phosphate washes into rivers and then sweeps into the sea, forming a muddy plume that may be hundreds of kilometers long. As this nutrient-rich water flows over a reef, it spurs the growth of algae-including the microscopic diatoms and dinoflagellates that nourish reef animals like the crown-of-thorns starfish. In recent years hordes of these coral-devouring starfish have infested Australia's 2,000 km-long Great Barrier Reef, and soil-borne nutrients are at least partly to blame.

The stress that caused recent bleachings, scientists say, was a seasonal spike in sea temperatures. But other sources of stress, such as overfishing and nutrient overload, may have made the corals and their symbiotic friends unusually sensitive to heat. Scientists are alarmed at the trend of swings of temperature caused by global warming. That possibility alarms marine scientists, because bleaching -- the coral equivalent of running a fever -- can be fatal. In 1983 bleaching killed 95 percent of the corals off the Galapagos Islands. Warming may also trigger more intense hurricanes, scientists fear. And while healthy reefs would no doubt recuperate from the pummeling, sick reefs might not. In the next five decades, the number of people on earth may nearly double, to more than 10 billion, and the pressure that will place on reefs is almost too enormous to contemplate.

Md Asadullah Khan, formerly a teacher of physics, is Controller of Examinations, BUET.