

Even endless ocean has its limits, scientists say; Industrial-scale fishing taking a deadly toll Growing number of marine species nearing extinction

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ABSTRACT (ABSTRACT)

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Declining catches have led to fast growth in fish farming and other aquaculture. But these activities have exacted an ecological price, as well. Salmon and shrimp farms expanding in coastal waters from the Bay of Bengal to the Bay of Fundy displace ecosystems that are nurseries for much sea life, or they threaten local species through releases of nutrient-loaded waste, non-native species or diseases.

Harvest limits can be set, with quotas allotted to individuals in a fishery who can then trade them. Iceland has set the standard for this approach, which has also been adopted in a few American fisheries. By limiting the overall catch and allowing people to buy and sell their fishing rights, the system encourages some to leave the business, said William Hogarth, director of the National Marine Fisheries Service. Fishing pressure can also be cut by creating marine reserves or closing some areas to create nurseries.

FULL TEXT

Most of the Earth's surface is covered by oceans and their vastness and biological bounty were long thought to be immune to human influence. But no more. Scientists and marine experts say decades of industrial-scale assaults are taking a heavy toll.

More than 70 per cent of commercial fish stocks are now considered fully exploited, overfished or collapsed. Sea birds and mammals are endangered. And a growing number of marine species are reaching the precariously low levels where extinction is a possibility.

"It's an incipient disaster," said Richard Ellis, author of *The Empty Ocean*.

A rush of recent studies, reports, books and conferences have described the situation as a crisis and urged governments and the industry to enact substantial changes.

Behind the assault, experts say, are steady advances in technology, national subsidies to fishing fleets and booming markets for seafood. Demand is up partly because fish is considered healthier to eat than chicken and

red meat.

Directed by precise sonar and navigation gear, more than 23,000 fishing vessels of more than 100 tonnes and several million small ones are scouring the sea with trawls that sweep up bottom fish and shrimp; setting miles of lines and hooks baited for tuna, swordfish and other big predators; and deploying other gear in a hunt for seafood in ever deeper, more distant waters.

Flash freezers allow them to preserve their catch so they can sweep waters right to the fringes of Antarctica. The trade is so global that an 80-year-old Patagonian toothfish hooked south of Australia can end up served by its more market-friendly name, Chilean sea bass, in a San Francisco bistro.

Seafood industry officials say overfishing and disregard for environmental harm peaked a decade ago. They point to the spreading adoption of gear that avoids unintended catches, acceptance of quotas and other limits, and agreements to conserve ocean-roaming fishes like tunas.

"We now have a better understanding of the limitations of the resources," said Linda Candler of the National Fisheries Institute, a U.S. industry lobbying group.

As industrial fleets push into new waters, experts say, the danger and damage spread. The laws and international pacts that do exist can be circumvented, producing persistent illegal markets in coveted species.

The various fleets from around the world are sustaining harvests only by moving into untapped resources, said Daniel Pauly, a marine scientist at the University of British Columbia and co-author of a detailed analysis showing enormous drops in North Atlantic catches over the last century.

"It is like a ring of fire burning through a piece of paper," he said. "Since the 1970s, when the big fishing areas of the Northern Hemisphere saw catches drop, you've had this front moving out, with a massive effort off West Africa, in Southeast Asia, the southern Atlantic."

Moreover, scientists said, global fishing is spreading so fast that it is devastating marine ecosystems before scientists study them or get a rough idea of the size of populations. Off the coasts of North America and Australia, for example, biologists probing ridges and seamounts have found areas where trawls have uprooted communities of cold-water corals and other bottom dwellers that are centuries old.

Recent studies have estimated that stocks of many fishes are now one-tenth of what they were 50 years ago. As prized species have diminished, fleets have gone further down the food chain, for smaller fish, more squid, even jellyfish and shrimplike krill.

International agreements protect some species, like tuna and swordfish in the Atlantic. But most fisheries in international waters are rarely monitored.

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Experts say the industry expansion has been driven by growing populations and prosperity around the world.

Almost a billion people now rely primarily on fish for protein.

A host of scientists and organizations have recently sounded alarms and proposed solutions. Last summer, nations at an environmental summit in Johannesburg, South Africa, agreed to manage fisheries in a sustainable fashion by 2015.

But long before then, ocean scientists and policy-makers say, the continuing fishing threatens to damage the ecological foundations of fisheries in ways that may last for generations. The most important recovery strategy of all is simply to fish less, experts say. This can be accomplished in many ways.

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Some biologists have proposed that 20 per cent of the oceans be set aside, although experts say that monitoring such vastness against piracy will be impossible.

Reserves in coastal waters have already proved their worth, with rising catches in nearby areas. A notable success has been in St. Lucia, in the Caribbean, where reserves established in the mid- 1990s increased nearby catches up to 90 per cent.

Hogarth said he sees ample reason for optimism if sound practices can spread before irreversible damage occurs.

Over-all, he and others said, fish can be extraordinarily resilient if their surroundings are not degraded too severely. Still, he said, change requires a huge shift in consciousness. "There's been too much short-term vision," he said. "You look at all that water and think, 'There's no way you could overfish it.' "

Illustration

REUTERS FILE PHOTO A tourist looks through a glass tunnel at large Grey Nurse sharks swimming in Sydney's open-ocean aquarium. Recent studies have described the rapidly declining state of oceans as a mounting crisis.

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