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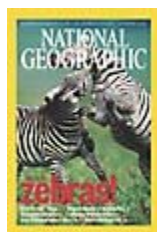
"Dirty Fishing" Emptying Oceans, Experts Say

Sharon Gynup
[National Geographic Channel](#)
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In June, along the shoreline of Mauritania, in northwest Africa, scientists made a gruesome discovery: the carcasses of 230 dolphins, a pilot whale, and 15 endangered hawksbill and

Shrimp trawlers off the coast of Florida may take pounds of bycatch for every pound of shrimp—and often deep-sea coral reefs in the

Photograph courtesy of

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leatherback sea turtles.

"Because of the mixture of species found, and the fact that some of them were entangled in sections of fishing nets, it is likely that these animals were killed as bycatch," said Jean-Christophe Vie, deputy coordinator of the World Conservation Union's species program, based in Gland, Switzerland.

Across the world's oceans, large commercial fishing boats haul aboard huge nets and 60-mile (97-kilometer) lines teeming with unwanted

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creatures—bycatch, sometimes referred to as "bykill" or "dirty fishing."

Bycatch is a mix of young or low-value fishes, seabirds, marine mammals, and sea turtles, often considered worthless and tossed overboard—dead or dying.

Collateral Damage

The collateral damage amounts to about 30 million tons (about 27 million tonnes) of sea life each year, says marine ecologist Jane Lubchenco of Oregon State University—about one-third the total global catch. Among the worst offenders are shrimp trawlers, who often discard up to 10 pounds of sea life for each pound of shrimp they catch.

"If a hunter is hunting for elk, he's not killing sparrows, eagles, coyotes, and pronghorn," said Elliott Norse, president of Marine Conservation Biology Institute (MCBI) in Redmond, Washington. "That's different in the sea. We fish blindly—and it's an exceedingly wasteful way of doing things."

A recent barrage of scientific reports detail alarming declines in many fish and other marine animal populations. One of these, published in the journal *Nature*, states that just 10 percent of swordfish, sharks and other large, predatory fish remain in the world's oceans after just 50 years of commercial fishing.

Without immediate action, they could go the way of the dinosaurs, warns study author Ransom Myers, a fisheries biologist from Dalhousie University in Halifax, Nova Scotia.

High-Impact Fishing

Bottom trawling inflicts the most damage on the undersea environment, according to an MCBI report funded by the Pew Charitable Trusts titled "Shifting Gears." Trawlers drag weighted nets up to a quarter-mile wide along the ocean floor, bulldozing deep-sea

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coral reefs and other seafloor ecosystems where many sea animals live or breed. It is the equivalent of clear cutting forests to hunt deer, said Norse.

The study also classified gill nets and longline fishing as "high impact". With these methods, "you're catching and killing everything that swims by," says Daniel Pauly, a marine biologist at the University of British Columbia.

Gill nets are transparent fences, suspended by top floats and stretched taught by a weighted bottom.

Longlining—one of the most common fishing methods—sets out miles of baited hooks that snag or entangle unwanted species, including at least forty seabird species.

The Scope of "Dirty Fishing"

"The enormity of the problem still isn't understood," said Jeremy Jackson, a marine biologist at Scripps Institution of Oceanography in San Diego, California.

All seven species of marine turtle are endangered. With better-protected nesting beaches, scientists believe bycatch plays a big role in population declines.

The rarest, the leatherback (*Dermochelys coriacea*), has declined by 95 percent oceanwide. The animals must navigate a gauntlet of coastal gill nets off Peru and Chile, at great cost, said Larry Crowder, a marine biologist at Duke University in Durham, North Carolina.

Research suggests that longlines take hundreds of thousands of leatherbacks and other turtles each year. "If longline fishing continues unabated, there's a 50 percent chance of turtle extinctions in the next 10 to 30 years."

Fisheries around the world kill seals, whales, dolphins, and other marine mammals in the course of operations. Some of these are endangered species.

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Controlling Bycatch

The bykill issue is a huge, complex problem. "There is no one-size-fits-all solution," says Lubchenco. "Bycatch must be addressed, fishery by fishery."

Some types of gear, like purse seines and hook and line are less damaging, says Ratana Chuenpagdee, a marine biologist at the Virginia Institute of Marine Science in Williamsburg, Virginia, and co-author of the "Shifting Gears" study.

In some cases, the answer is to modify gear. For example, in the Bering Sea, changing net's mesh size and shape cut bycatch of young pollock by 75 percent, said Ellen Pikitch, director of the Ocean Strategy Program at the Wildlife Conservation Society in New York City.

An abiding success is the dolphin. During the 1960s, 200,000 dolphins a year drowned in drawstring nets used for Pacific yellowfin tuna. Public outcry and a consumer boycott spurred Congress to pass the Marine Mammal Protection Act in 1972. Since then, nets are set to spare dolphins.

Another lifesaving technique is to outfit gill nets with acoustic alarms called "pinger," which reduced capture of harbor porpoises by 92 percent in a British Department for Food, Environment, and Rural Affairs study.

The world's largest flying bird, the wandering albatross, is in serious trouble because of longline tuna fishing in the sub-Antarctic Ocean. But an innovation by Japanese fishermen is keeping birds away from some operations. They attach metallic red streamers to nets that scare the birds away while nets are submerged.

But, Pikitch says, "we need to ban the most destructive fishing methods."

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Safe Haven

Growing scientific evidence shows that some marine species are threatened with extinction—and others will be—unless fishing practices and regulations change.

Sometimes the only answer is to limit fishing. Fisheries have been closed where populations are "economically extinct," like the North Atlantic cod fishery.

Recent Pew Oceans Commission recommendations call for a new approach to managing fisheries that preserves habitat in addition to setting catch limits. Lubchenco advocates for a network of fully protected marine reserves, linked by corridors, to protect breeding and nursery grounds.

"The bottom line is that we need to come to grips with the bycatch issue," she said. "The answers are going to have to be fishery-specific—but the answers must come from leadership at the highest levels"—requiring both national regulations and international agreements.

Regulations can save species. One conservation success is Kemp's ridley turtle (*Lepidochelys kempii*), once the most endangered marine turtle. By the 1970s, shrimpers in the Gulf of Mexico had fished them nearly to extinction. Only 300 nesting females remained.

Then in the mid-1980s, the Turtle Excluder Device, or TED, a turtle escape hatch, was introduced. Since 1990, TEDs are required in U.S. waters, though compliance varies by region. Today, nesting females have jumped to 3,000. "If they enforce it, TEDs work," Crowder says.

Given a measure of protection, sea creatures can rebound.

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