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The Last Wild Hunt: Deep-sea Fisheries Scrape Bottom Of The Sea

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Summary: An international team of leading fisheries economists, biologists, and ecologists is calling for the abolition of government fuel subsidies that keep deep-sea fishing vessels moving to deeper waters.

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This is a photo of a grenadier taken off Newfoundland at approximately 2300 meters. (Credit: Courtesy of Chevron Canada Limited and the SERPENT Project)

Credit: Courtesy of Chevron Canada Limited and the SERPENT Project

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An international team of leading fisheries economists, biologists, and ecologists is calling for the abolition of government fuel subsidies that keep deep-sea fishing vessels moving to deeper waters. The group made its call Feb. 18 at a press conference at the American Association for the Advancement of Science (AAAS) Annual Meeting (AAAS).

"Industrial fisheries are now going thousands of miles, thousands of feet deep and catching things that live hundreds of years in the process - in the least protected place on Earth," says Elliott Norse of the Marine Conservation Biology Institute.

In international waters beyond the 200 nautical mile Exclusive Economic Zones (EEZs) of coastal countries, many of the fisheries are virtually unregulated. Here fishing fleets operate like roving bandits, using state of the art technologies to plunder the depths.

Deep-water trawlers or draggers account for about 80% of the bottom fishing catch from the high seas. In a few hours, the massive nets that drag the bottom and weigh up to 15 tons, can destroy deep-sea corals and sponge beds that have taken centuries or millennia to grow. The trawlers target fish such orange roughy and grenadiers for food, and sharks for the cosmetic industry. These fish are generally long-lived, slow growing and late maturing so their populations take decades, even centuries to recover.

And because most deep-sea fishing occurs on the high seas (international waters) far from the watchful eyes of regulatory agencies -- its impacts on species and ecosystems is generally neither monitored nor controlled.

"The unregulated catches by these roving bandits are utterly unsustainable," says Robert Steneck, of the University of Maine. "With globalized markets, the economic drivers of over-fishing are physically removed and so fishermen have no stake in the natural systems they affect," says Steneck. "While it may be a good short-term business practice to fish out stocks and move on, we now see global declines of targeted species."

Ironically, this highly destructive form of fishing would be unprofitable without heavy government support. Rashid Sumaila and Daniel Pauly of the University of British Columbia Fisheries Centre recently examined subsidies paid to bottom trawl fleets around the world. They found that over \$152 million US are paid to deep-sea fisheries. Without these subsidies, global deep-sea fisheries would operate at a loss of \$50 million a year. Most of these subsidies are for fuel. The fishing vessels have to travel beyond the 200 mile limit to fish on the high seas and dragging the weighted nets consumes enormous amounts of fuel.

"There is surely a better way for governments to spend money than by paying subsidies to a fleet that burns 1.1 billion liters of fuel annually to maintain paltry catches of old growth fish from highly vulnerable stocks, while destroying their habitat in the process," says Pauly.

"Eliminating global subsidies would render these fleets economically unviable and would relieve tremendous pressure on over-fishing and vulnerable deep-sea ecosystems," says economist Sumaila.

Currently, the tendency is to fish to depletion, even when catching the dwindling stocks becomes harder and more expensive. "You get a signal from the stock -- I am old, I am rare and I am depleted," says Pauly. "Subsidies allow you to overlook that signal and keep on fishing to the end. For the gains to be gotten, it makes no sense to destroy centuries old growth fish and habitat."

Steneck calls deep-sea ecosystems and the life they support an "endowment." "Deep-sea stocks have very slow growth potential making them like investments that pay very low interest rates. If we spend the principal, we want to do so cautiously," says Steneck. "Even if you have the right species characteristics and the right habitat characteristics --you can have a trawler with a net the size of Rhode Island that can knock them out. So how we fish and where we fish, matters a lot."

Fishing the Deep

The deep-sea is the largest wilderness on the planet. It has valleys deeper than the Grand Canyon and high ranges of volcanoes called seamounts. Water flowing past these seamounts stirs up nutrients and creates oasis-like conditions where life concentrates. Many species discovered on seamounts are unique to relatively small areas.

Despite a decline in global fisheries catches since the late 1980s, a global increase of fishing effort and catching power continues. On the continental shelf, where sun, nutrients, winds and upwelling

stimulate life, coastal fisheries thrive. Here, marine fish and invertebrates are naturally abundant, but in many coastal areas fisheries have been poorly managed and largely depleted. Now, as a result of the depletion of coastal fisheries and the growing demand for fish products worldwide, industrial trawlers are dragging the seafloor deeper than a mile. Super trawlers over 600 feet long are equipped with flash freezers and giant fuel tanks that allow them to stay at sea for months going from place to place, mining rich areas of fish to depletion, then moving on.

"All fisheries are turning gradually into deep-sea fisheries because they have fished them out of the shallow waters," he adds. "The solution is not going into the deep-sea, but better managing the shallow waters where fish live fast and die young but ecosystems have a greater potential for resilience."

Old Growth Fish

Orange roughy are the classic example of boom and bust deep-sea fisheries. Previously known as slime heads, and discarded by fishing vessels as trash fish, they were renamed for marketing purposes. Fisheries often target them on continental slopes, mid-ocean ridges and seamounts, but their habit of aggregating on peaks to feed and spawn make them particularly vulnerable. Satellite navigation (GPS) and military surveillance technology can visualize seamounts where schools of orange roughy, in times of former abundance, resembled lava spilling down the sides of a volcano.

Orange roughy fishing began in New Zealand in the late 1970s. In the past 20 years, orange roughy fisheries have expanded to the Northeast and Southeast Atlantic, South Pacific and Indian Oceans. During the same period the catch has declined by approximately 75% as a result of the highly unsustainable "serial depletion" nature of this deep-water fishery. They are now far less common in restaurants and grocery stores. Australia recently classified roughy as a threatened species while in November 2006, the North East Atlantic Fisheries Commission agreed to establish a moratorium on fishing for orange roughy.

"When you buy orange roughy you are likely eating a fish that is at least 50 years old. Some can be as old as 150, which means you could be eating a fish that was born when Lincoln was president," says Krista Baker of Memorial University. "Perhaps we need a consumer guideline that says we shouldn't eat fish that are older than our grandmothers," adds Selina Heppell, a fisheries ecologist from Oregon State University. "These fishes have evolved to live a very long time so they can get the chance to reproduce many times. Anything that shortens their lifespan defeats their primary way of surviving."

Ecosystem Impacts

Ancient deep-sea corals suffer collateral damage from bottom trawlers. "In some places skippers have replaced their nets with chains, to take out the corals so they don't tear the nets. Then they go back and scoop up the fish," says Murray Roberts of the Scottish Association for Marine Science. Some living corals may date back 1800 years and reefs may be older than the Egyptian pyramids. Scientists are losing climate records, contained in corals, of the past centuries. "If we lose them, we are erasing invaluable historical records," says Roberts. "And we are not only losing our past -- on one coral mound off Ireland we found 8 species new to science in just a few samples. These are real biodiversity hotspots."

"The bottom line is that mistakes made now could take over a century to recover, if they are at all reversible," says Baker. Baker and Richard Haedrich of Memorial University in Newfoundland looked at the complete deep-sea fish fauna of the North West Atlantic -- one of the first attempts to do so. They found that 40% of the deep-sea species for which data are available, are in decline. "This is a steady decline, just down and down until the cupboard is almost bare," says Baker. "Given the documented declines and the lack of life history data to know what recovery times would even be, conservation measures in the deep-sea are urgent now."

On December 8, 2006 the UN General Assembly reached an agreement for a new regime for the regulation of fisheries on the high seas. Many countries including Australia, Belgium, Brazil, Chile, Costa Rica, Netherlands, Norway, and the United States called for a moratorium on unregulated bottom trawl fishing on the high seas. Canada, Iceland, Japan and Russia resisted the call. In the end, a compromise was reached that calls on high seas fishing nations to conduct environmental impact assessments of deep-sea bottom fishing and to declare high seas areas where deep-sea corals, sponges and other vulnerable species are likely to occur closed to bottom fishing unless fishing nations can prove that their activities will cause no harm.

On February 2, 2007, Japan, Korea, and Russia, together with the US agreed to phase in a provisional management regime by 2008 for the deep-sea fisheries on seamounts north of Hawaii in the international waters of the Northwest Pacific. "This is encouraging," says Matthew Gianni of the Deep-sea Conservation Coalition and a former fisherman and trawler. "Full implementation of this new United Nations General Assembly agreement plus an end to subsidies for deep-sea fisheries on the high seas is essential to conserving and protecting deep-sea ecosystems from unregulated high seas exploitation. But it will take international cooperation and a real commitment on the part of the high seas fishing nations to make it happen."

"From an ecological perspective we cannot afford to destroy the deep-sea. From an economic perspective, deep-sea fisheries cannot occur without government subsidies. And the bottom line is that current deep fisheries are not sustainable," says Sumaila.

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