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## Researchers Reveal Massive Reduction In Productivity Of The North Atlantic

BOSTON, MASS. - Using innovative techniques for mapping fisheries, scientists released the results of the first ocean-wide synthesis of the status of fisheries in the North Atlantic, showing the cumulative extraction of fishes from the sea.

These pioneering techniques and results, presented here in Boston at a session of the American Association for the Advancement of Science (AAAS) Annual Meeting entitled, "Fisheries-induced Changes in Marine Ecosystems," included policy experts, marine researchers and scientists.

"You may think we are making headway with a few individual (fish) stocks, but when you look at the ocean as a whole, we are losing ground quickly," explains Dr. Daniel Pauly of the University of British Columbia Fisheries Centre. "Unless you have both long term and large spatial scales, as we have mapped, the picture is not only incomplete, but also misleading. If you look at the North Atlantic ocean-wide-the problem is huge."

Until now research examined isolated fisheries on individual fishing grounds, and even then, the reduction in fish was evident. Research documenting the total amounts of fish being extracted on an ocean-wide basis had never been conducted. While the disastrous collapses in areas like New England and Newfoundland have appeared to be local in scale, this new ocean-wide synthesis reveals that the collapse applies to the entire North Atlantic Ocean

A new portrait of the state of fisheries shows that over the last 50 years, the catch of the preferred food fish species such as cod, tuna, haddock, flounder and hake, has decreased by more than half, despite a tripling in fishing effort. These results show that there has been such large-scale extraction of fish from the North Atlantic, that its impact has undermined

the ocean's ability to sustain further catches.

Invertebrates previously thought to be unpalatable have replaced large predatory fishes at the top of all marine food webs. "In the North Atlantic we are primarily fishing for species we once considered bait," says Pauly.

Whereas large amounts of research dollars and government subsidies have been invested into the North Atlantic ocean, "local markets are continuing to import large fish from the developing regions of the world such as West Africa, South East Asia and other areas marking our own crisis," says Reg Watson of the University of British Columbia.

Andy Rosenberg of the University of New Hampshire and former deputy director of the National Marine Fishery Service discussed how this new overall picture confirms his ten years of experiences struggling for the recovery of individual stocks. Rosenberg spearheaded the partial closure of George's Bank.

"The kind of fisheries management we have at present is failing fast," says Rosenberg. "You can't fix this one fishery at a time, because the boats just move around-the effort simply shifts to somewhere else and makes their problems worse."

Pauly explained that the next steps are a substantial reduction of fishing fleets, eventual abolition of subsidies to industrial fisheries, and restoration of the oceans' depleted resources through the establishment of networks of "no-take" marine reserves. "In order to restore productivity to a fishery, the broader ecosystem with its many parts needs to be conserved," says Pauly.

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