



**NOAA** NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION  
UNITED STATES DEPARTMENT OF COMMERCE



Contact: Shelley Dawicki  
508-495-2378  
[Shelley.Dawicki@noaa.gov](mailto:Shelley.Dawicki@noaa.gov)

FOR IMMEDIATE RELEASE  
July 30, 2009

## **New Analysis of Global Fisheries Data Suggests Many Marine Ecosystems Can Recover Under Appropriate Management**

*Positive Signs Evident That Steps to Curb Overfishing are Beginning to Succeed*

An international team of scientists with divergent views on ocean ecosystems has found that efforts to rebuild many of the world's fisheries are worthwhile and starting to pay off in many places around the world. Their study puts into perspective recent reports predicting a total collapse of global fisheries within 40 years.

In a paper to be published in the July 31 issue of *Science*, study co-author Mike Fogarty of the Northeast Fisheries Science Center (NEFSC) of NOAA's Fisheries Service in Woods Hole, Mass. and 20 co-authors say that efforts made to reduce overfishing are succeeding in five of ten large marine ecosystems studied. Some of the successes noted are in U.S. fisheries.

Despite some good news, the researchers found that 68 percent of the worldwide fisheries examined by the team need rebuilding and that even lower rates of fish removals are needed to reverse the collapse of vulnerable species. Based on the available data, the team estimated that lightly fished and rebuilding ecosystems account for less than 10 percent of world fisheries area and catch, but represent examples of opportunities for successfully rebuilding marine resources elsewhere.

Fogarty, head of the NEFSC's Ecosystems Assessment Program and a specialist in ecosystem based management, says finding a balance between fishing and conservation, while difficult, is possible and has been accomplished in a number of fisheries.

"Sometimes small changes have a big affect. It is not a 'one size fits all' management approach since each fishery has its own unique circumstances," said Fogarty, who helped provide data from the U.S. and worked on the analyses that helped shape the report. "Many of the world's fisheries have a long history of overexploitation. Different management tools are needed, depending on the situation, to restore marine ecosystems and rebuild fisheries. It takes time. There have been successes in New Zealand and on the U.S. West Coast, and there are promising solutions in other areas, but rebuilding efforts have to be done on an ecosystem basis and from a global perspective."

The new study follows a controversial prediction that wild caught fish will disappear from the oceans by 2048. That statement, contained in a 2006 *Science* article that focused on the relationship between biodiversity and ecosystem services in the oceans, was made by marine ecologist Boris Worm of Dalhousie University in Halifax, Nova Scotia.

Fisheries scientist Ray Hilborn of the University of Washington in Seattle and others disagreed with the prediction, and a debate ensued between fisheries scientists and marine ecologists about the status of the world's ocean ecosystems. But the two researchers soon met to discuss the issue through the National Center for Ecological Analysis and Synthesis (NCEAS) in Santa Barbara, Calif. Fogarty and scientists from various disciplines around the world were

asked to work with Worm and Hilborn to find common ground on which to assess the prospects for restoring depleted fish populations and their ecosystems.

The team compiled and analyzed global catch data, and evaluated scientific stock assessments, research trawl surveys, and small-scale fishery information using dozens of models. They considered historical fisheries and current illegal or unreported fishery catches.

The scientific team addressed two basic questions: How do changes in exploitation rates (the amount of fish taken from the ocean each year) affect fish populations, fishing communities and yields, and which management approaches have proved successful in rebuilding marine ecosystems.

The authors caution that their analyses were based largely on managed fisheries in developed countries, where scientific data on fisheries have been collected for decades. There was far less data from other parts of the world, but nonetheless, there are positive signs in developing countries. As one example, scientists, fishery managers and local communities in Kenya worked together to close some fisheries and restrict certain fishing gear, management efforts that have led to increased fish size and abundance and more income for fishers.

Although optimistic, the authors acknowledge that many problems face rebuilding efforts, which often take years or decades and have short term economic costs. On a worldwide scale, the redistribution of fishing effort from industrialized countries to the developing world, as is evident in Africa, has meant competition between local fishing boats and foreign fleets. The authors also note that effective controls on exploitation rates are still lacking in vast areas of the ocean, including those beyond national jurisdictions.

Steve Murawski, chief scientist for NOAA's Fisheries Service, says the team's two-year effort has resulted in more comprehensive databases and a broader view of the issue.

"This study clearly demonstrates that in both developing and developed parts of the world, if fishery exploitation rates are reduced sufficiently, species and their ecosystems have the capacity to recover," Murawski said. "The study drew together two scientific approaches, one focused on conservation of marine communities and the other focused on the science of fishery population dynamics. The result is a product that has profound importance in the design of management systems to achieve diverse goals for conserving and using marine ecosystems."

The 21 study authors, led by Worm and Hilborn, found that management tools can pay off in the long run. A combination of traditional approaches, such as catch quotas and community management, coupled with strategically placed fishing closures, more selective fishing gear, ocean zoning, and economic incentives hold promise for restoring marine fisheries and ecosystems. Laws that explicitly forbid overfishing and specify clear rules and targets for rebuilding were seen as important prerequisites.

"When you reduce fishing rates, the sacrifice begins to pay off," Fogarty said. "Now it is a matter of getting the recovery underway. We are seeing this in the northeast United States in haddock, sea scallops, and other fishery resources. Sometimes the steps to get to recovery are painful, but the dividends at the end make it worthwhile."

###

Related links:

Current *Science* article: <http://www.sciencemag.org/current.dtl>

2009 background *Science* article:

<http://www.sciencemag.org/cgi/content/full/324/5924/170>

2006 *Science* article: <http://www.sciencemag.org/cgi/content/full/314/5800/787>