

Science paper says it's not too late for troubled fisheries

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A study published in *Science* magazine and co-authored by Bren School Sustainable Fisheries Group (SFG) researchers and their colleagues confirms suspicions that thousands of "data-poor" fisheries, representing some 80 percent of the world's fisheries, are in decline but could recover with proper management.

The authors of "Status and Solutions for the World's Unassessed [Fisheries](#)" also found that taking quick action to allow depleted stocks to recover to sustainable levels could result in future catches that are 8 to 40 percent larger than are predicted if current unsustainable fishing practices continue.

The findings were made possible by a new assessment technique developed by the researchers, which allowed them to determine fish population status using far less data than are required by a traditional stock assessment, which is both expensive and time-consuming and impractical for a high percentage of the world's fisheries. Substantial [population data](#) are available for only about 20 percent of the world's 10,000 [fish stocks](#), and those well-studied fisheries tend to be in better shape than fisheries for which little data exist.

"For most fisheries, we simply didn't know how many fish were out there and whether their populations were trending up or down," says lead author and Bren School professor of economics Christopher Costello. "Without good information on [fish populations](#), it can be hard to manage sustainably. It's like trying to decide how far you can drive your car

without knowing how much gas is in the tank."

Further, Costello explains, lacking sound estimates for a stock's population, "Political pressure tends to dominate decision making, and we end up catching too much. Over time, this can lead a fishery to collapse."

Co-author and Bren School dean, Steve Gaines, describes the data-rich 20 percent of fisheries as "a tiny slice that can give us a skewed view" of the health of [global fisheries](#).

The authors caution that the new assessment method cannot take the place of formal assessment programs for individual fisheries, but they do provide accurate global and regional information that can be used to inform fisheries management decisions. "Using these tools at a regional scale, we can gain up to 80 percent of the insights of traditional assessment approaches at just 1 percent of the cost," says Gaines.

The tool enabled the researchers to provide a new global status report that includes these previously unmeasured fisheries, bringing thousands of what managers call "unassessed" fisheries into focus. The results show that more than half of the world's fisheries are in decline and that, across the globe, stocks for which robust data exist are doing better than those that are less-studied, regardless of which country manages them.

"If we look at assessed stocks, we can be pretty satisfied that fishery management systems are generally working to ensure long-term sustainability," says University of Washington scientist and co-author Ray Hilborn. "For previously unassessed stocks, this doesn't appear to be true."

An interesting finding – again, made possible by employing this new assessment tool for data-poor fisheries – is that in large-scale fisheries,

stocks that are measured and tracked are at similar levels as those that have not been formally measured. But under current fishing pressure, their futures look very different: the assessed stocks are starting to show signs of recovery, while fisheries for which little data exists continue to decline. Further, in small-scale fisheries, data-poor stocks are in far worse shape than their well-studied counterparts, and many are plummeting at alarming rates. These small-scale, data-poor fisheries are critical to local food security in many parts of the world.

While the impact on food security is most significant for local-level (small-scale) fisheries in poorer countries, explains co-author, UCSB ecologist, and SFG scientist Sarah Lester, "This isn't just a developing-world problem. Small, unassessed fisheries in the U.S. and Europe are often in as bad a shape as those in the developing world."

While many of the world's fisheries are in trouble, the authors suggest that the majority of them can still rebound with better management.

"Strong management could increase the number of fish in the ocean by more than 50 percent," says Gaines. "When fish populations are healthy they produce more young. It may seem paradoxical, but we can get more fish on our plates by leaving more in the water."

Time is of the essence. "These fisheries can rebound," Costello says, "but the longer we wait, the harder and more costly it will be to bring them back. In another ten years, the window of opportunity may have closed."

The study in *Science* is part of a larger study titled "Charting a Course to Sustainable Fisheries," released this week by the consulting firm California Environmental Associates. It evaluates successes and gaps in fishery management and conservation programs around the world, highlighting the fact that while methods for returning dwindling fisheries

to health are understood, political battles often prevent them from being put into action.

The report shows that where gains are being made, such as in the U.S., where many large fisheries are starting to recover, they result from a combination of efforts: relying on strong science to set total allowable fishing levels, closing some areas to allow for stock rebuilding, and using sustainable seafood markets and rights-based management strategies that give fishermen secure access to a proportion of catch. The report shows that, while there is no one-size-fits-all solution to eliminate overfishing, success can come from employing proven principles and practices while fine-tuning them to suit the specific circumstances and characteristics of individual locations around the world.

"The key is to use and share these practices more broadly," says Matthew Elliott, principal of CEA and author of "[Charting a Course to Sustainable Fisheries](#)." "In many areas of the world, particularly in the tropics and sub-tropics, we see fisheries expanding quickly with little in the way of management. This research fills an important information gap for those fisheries. We hope it will draw more international attention to fisheries management in the many parts of the world that we have historically ignored."

"This isn't something where we need another twenty years of science," says Gaines. "We know what it takes."

"Healthy ocean fisheries hold the potential to feed a growing population without destroying the supporting ecosystems to the point where they no longer produce seafood," adds Elliott. "Within our lifetime, we can make sustainable global fisheries the norm rather than the exception."

More information: "Status and Solutions for the World's Unassessed Fisheries," by C. Costello et al, *Science*, 2012.

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