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Stock Options: Fishing for the Catch of the Day--And the Future Running fisheries like a stock market may help halt species collapse from overfishing

By Susannah F. Locke

A program that gives commercial fishers both a short- and long-term financial stake in the health of the industry offers the promise of preserving fish populations, according to new research.

Fish stocks around the world have been decreasing for decades, primarily due to overfishing, and some scientists estimate that our seafood sources will dry up within three decades. In an effort to prevent that, researchers from the University of California, Santa Barbara, analyzed a global database of fisheries and fish catches to determine whether an incentive program known as "catch shares" could help marine ecosystems. Their findings, published today in *Science*, found that catch shares can stop the decline of fish populations.

"I'll be honest, I was really surprised" by the size of the effect, says lead study author Christopher Costello, a resource economist at the University of California, Santa Barbara's School of Environmental Science & Management. "This could be a very powerful tool towards overcoming the crisis in fisheries."

The catch-share system works somewhat like the stock market: individual fishers are each allowed to net a designated percentage of the total amount of a fish species set aside for fishing annually. The total cap on each fish type is adjusted yearly by the government according to how the well the species is doing. If the fish population increases, the shares increase in value, too. Fishermen can also buy and sell their shares.

For example, if the total limit on a certain population of, say, cod is 100 tons for the year and an angler has been allotted a 2 percent share, then he or she can catch as many as two tons (1.8 metric tons) of cod. Let's say that the cod population increases the next year and the government raises the cap on them to 200 tons (180 metric tons). Now the 2 percent share entitles the same cod haul to be four tons. The bottom line: catch shares give fishermen a financial motive to treat the ocean with care, because they are literally invested in the future of their quarry.

Costello compares the differences between traditional fishing licenses (which expire yearly) and catch shares with the difference between renting and buying a house. "When you own a house you have a strong incentive to invest in it," he says. "The fishermen have an incentive to grow the fish stock" by fishing responsibly.

Costello and his colleagues based their conclusions on an analysis of more than 11,000 fisheries and catch statistics over a 50-year period. They found that fisheries that used catch shares were about half as likely as those that did not to collapse. They also discovered that when fisheries switched to catch shares, fish populations stopped declining and, according to some analyses, may have reversed course.

"We need to use the methods that are working, and catch shares is one of them," says Ray Hilborn, a fisheries scientist at the University of Washington School of Aquatic & Fishery Sciences in Seattle.

Boris Worm, a marine biologist at Dalhousie University in Halifax, Nova Scotia, whose Science paper two years

ago predicted the collapse of seafood by 2048, praised the study but says that catch shares will work better when combined with other tools, such as banning fishing in sensitive areas.

"What I'm afraid of is there's going to be a giant power struggle when it first happens," says Geoff Bettencourt, a fourth-generation commercial fisherman from Half Moon Bay, Calif. The Pacific Fishery Management Council in Portland, Ore., is considering switching the west coast's groundfish (bottom fish) fishery, which includes more than 80 species, to a catch-share system. "All of a sudden, you could get a big company buying up all the fish and running the whole show—that's scary." But he also says that it could be "a really good thing" if implemented properly. "To have something that we know is sustainable is the best way to invest in our future and making a living," he says.

Even Worm thinks that there is hope for the oceans. Despite worldwide problems with enforcing regulations and the relative lawlessness of the high seas, he says that he is encouraged by the new findings. "I do think we can turn this is around. We have some of the tools. We have the knowledge," he says, "It's a difficult, difficult road ahead, and I think we absolutely can do it."

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article questions

1. Some estimate that seafood sources will dry up within what time frame?
2. How does the catch-share system work?
3. What is the benefit of the catch-share system?
4. What evidence did Costello uncover about the success of various fisheries?
5. What is a potential downfall expressed by Geoff Bettencourt?