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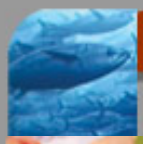

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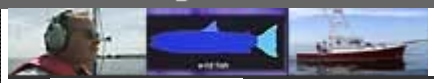
Deep Crisis



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Web Feature

Fishy Figures

In "Rocking the Bluefin Boat," conservation biologist Molly Lutcavage teams up with commercial tuna fisherman to gather data about the giant bluefin tuna. As unlikely as this collaboration seems, the fisherman who work with Lutcavage know that good scientific data is crucial to their livelihoods. Reliable data means effective management, without which the vast majority of wild fish are rapidly disappearing from the world's oceans.

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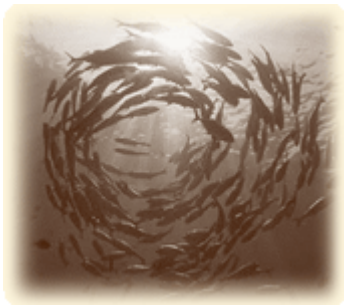

People have been fishing for food since the dawn of human history. After World War II, however, the increasing industrialization and globalization of commercial fishing has led to the depletion of several important fisheries.

The out-of-whack numbers indicated that the Chinese could only have been catching about half of what they were reporting. Why the dramatic inflation?

"We've seen fisheries fail on the East Coast of America, we've seen them fail in the North Sea, we've seen them fail off the Grand Banks," says Dr. Reg Watson, senior research fellow at the Fisheries Centre at the University of British Columbia. "So, our expectation is that things are not right in the world of global fisheries."

Data bears out this expectation. The Food and Agriculture Organization (FAO) of the United Nations began collecting global fish-catch statistics in 1950. Ever-larger fishing fleets and increasing technological sophistication allowed the total global catch to increase as much as 6% each year until 1969, tripling from 18 million tons caught to 56 million.

But despite bigger and faster boats, better fish-finding technology and better refrigeration, total global catch rates increased by just 2% each year throughout the 1970s and '80s. Global fish catch leveled off in the 1990s, as regional fisheries like the cod stocks off New England crashed. But one region

About one-third of all fish caught ends up as feed for cattle or fertilizer for crops.

seemed impervious to overfishing. In 2000, the FAO noted that "China has reported increases of fish production and shows little sign of slowing down."

What's different about China?

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3 pages: | 1 | 2 | 3 |

Photos: NOAA ;EPA

return to show page

Web Feature

Fishy Figures

Conflicting Data

Dependent on voluntary reports by individual nations, the FAO global fisheries data are subject to inaccuracies and vagaries. So Reg Watson - an expert in ecological modeling - and his colleague Daniel Pauly at the Fisheries Centre at the University of British Columbia used ecological modeling to double-check the numbers.

Pauly and Watson's data reveal there are a lot fewer fish than once thought.

Watson and Pauly divided the planet into about 260,000 sections - or cells -each one measuring 30 minutes of latitude by 30 minutes longitude. Then, using a variety of biological, ecological and historical data, the researchers determined how much and what kinds of fish each cell could produce. Pauly and Watson distilled information from sources ranging from satellite images to natural history museums to compile a model of the oceans' productivity.

"You can work out what factors explain why some areas have higher catches than others - the depths of the world's oceans, the primary productivity [of plankton], the temperature of the water," says Watson. "When you're finished you have a pretty good model explaining why you, for example, get better catches off the coast of Chile and Peru than other places."

Then the researchers superimposed the FAO's figures over their own data, comparing the ecological capacity of 176,000 cells to the reported catches in each one.

"When we finished creating such a model, we were left with places that just don't fit. And one of those places was an area of the South China Sea where China has sole access."

The ever-declining numbers of fish, combined with the well-documented decrease in average size and age of fish caught leave little scientific doubt that "we've had the best

of the world's oceans,"

The out-of-whack numbers indicated that the Chinese could only have been catching about half of what they were reporting. Why the dramatic inflation? In their letter to the scientific journal Nature, Pauly and Watson posit that China's socialist economy encouraged the inflated reports. The scientists note that "Chinese officials, at all levels, have tended to be promoted on the basis of production increases from their areas."

The US, Japan, India and China are the worlds biggest fish producers.

China also wanted to appear conservation-minded internationally, and so declared a "zero-growth policy" in 1998. The result - catch reports for 1999, 2000 and 2001 have been precisely the same as for 1998. "There's two ways of looking at it," says Watson. "One is to stop people from fishing and the other is to just change the numbers. We believe it's the second."

Officially, China denies Pauly and Watson's conclusions, claiming that there is no incentive to over-report and that the nation's catch is larger because the count includes species left out by other countries - such as crab and jellyfish. But, according to Watson, other studies and anecdotal evidence from within China support his own findings. While China may never officially acknowledge any catch inflation or data fixing, the international attention given to Pauly and Watson's work may nonetheless inspire the Chinese to report more accurately. Why does it matter?

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3 pages: | 1 | 2 | 3 |

Photos: Reg Watson

return to show page

Web Feature

Fishy Figures

World Wide Web

While China was not the only nation to over-report its catch, because its numbers accounted for almost a fifth of the world total, the inflation obscured the reality of what was happening to global fish.

"On the global level, what the statistics were telling us is that the fisheries were stable and in fact possibly even increasing," says Watson. "When you take away this inflation from the global total, you're left with a figure that has been dropping since 1988."

Millions of dolphins, turtles, and other non-edible fish are caught and killed by commercial fisherman each year.

Watson hopes that this more accurate - if bleaker - picture of the world's oceans will jolt governments and commercial fishermen out of their complacency and bring about stricter fisheries policies. The ever-declining numbers of fish, combined with the well-documented decrease in average size and age of fish caught leave little scientific doubt that "we've had the best of the world's oceans," says Watson. "Perhaps we should be a little more conservative when we're building big fleets to try to exploit what look like limited resources."

"The sea has become the place you go when you have no other income...It's going to be a painful process... there isn't an unlimited resource to be taken."

Many people believe that fish farming is the obvious answer; however, many fish farms still depend on wild fish as feed. (Additionally, the mere existence of domesticated fish can have a negative impact on wild populations.) Even if you never eat fish, about a third of the total global catch is ground up and used as feed for cattle, poultry and farmed fish or as fertilizer for crops. So much of the current global food supply depends heavily

on rapidly disappearing wild fish.

"It's very interconnected and we've been coming at it from both ends, as it were," says Watson. "It's nothing like we've over-fished one type of fish. We've actually altered whole marine systems."

No longer a solitary endeavor, international trade in fishery commodities totaled 54 billion dollars in 1997.

Like most environmental issues, this one can't be solved with science alone, but requires international cooperation among nations and industry. To this end, Pauly, Watson and the journal Nature are publishing a translation of their work in a Chinese oceanographic journal in the hopes that Chinese scientists will be able to nudge their nation's policies in the right direction.

But Watson recognizes change will not come easily.

"The sea has become the place you go when you have no other income," he says. "It's going to be a painful process. Anybody who talks about reduction of catches around the world is not heartless, but - as we and other people have shown - there isn't an unlimited resource to be taken."

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3 pages: | 1 | 2 | 3 |

Photos: NOAA ;US Fish and Wildlife Service

return to show page