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News

Overfishing worse than thought

Tropical fishermen catch far more species than reported officially.

Mark Schrope

Global fisheries statistics generally paint a grim picture of ocean health, revealing rampant overfishing and declining fish catches in various regions. But a new study suggests that, in the tropics at least, the statistics have been telling only half the depressing story — if that.

The work, presented Tuesday at the 11th International Coral Reef Symposium in Fort Lauderdale, Florida, suggests that for fifteen of twenty tropical island nations and territories examined, subsistence and recreational fishing has gone almost completely unreported over the past half-century. Such fishing actually collects a volume of reef fish at least as great as official statistics show, and in most cases much more.

Subsistence fishing in the tropics has a much greater impact than previously thought.

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"The whole picture of fisheries that we have is basically wrong," says lead author Daniel Pauly, of the University of British Columbia in Vancouver. "The underreporting is of such magnitude that it boggles the mind." The results, say Pauly and his colleagues, have major implications not only for how fisheries are managed in these areas, but also for how long local subsistence fishers can continue to support their families.

Fishy statistics

The United Nations' Food and Agriculture Organization (FAO) maintains the only global database of fisheries statistics, which spans the period from 1950 to 2004. Numbers used are voluntarily reported by individual countries and are generally gleaned from fish sales, rather than scientific surveys. In island nations especially, the system overlooks fish caught and consumed by those who catch them because this leaves no economic trail.

To explore the problem, Pauly, along with coauthor Dirk Zeller and others from the University of British Columbia, began by studying the basis for existing FAO statistics to identify gaps. Then, working with local collaborators whenever possible, the team searched for any fishing data they could unearth for a given location from sources not included in conventional scientific literature, such as local surveys of residents, that might fill those gaps. "The more you dig, the more you discover," says Zeller. Using the historical information they found, making various assumptions and interpolations, and combining this with the FAO statistics, the researchers estimated true catches.

The worst problem was found in American Samoa, where reported catches for the FAO period were 1,525 metric tons, but the authors' reconstruction put at 25,380 tons. Three- and fourfold underestimates were common. The authors believe further analysis will in many cases lead to even higher results. In a few cases catches were overreported, but this was due to countries such as Vanuatu allowing foreign vessels to register there, leading to foreign catches being counted in a country's official tally.

The authors recognize that their results include large uncertainties, but say that data reviews like this, although often met with initial scepticism by local managers, have ultimately been considered plausible.

Across the oceans

"I think [the study] really brings to light the fact that the current fisheries data are inadequate for making management decisions," says Alan Friedlander, a NOAA fisheries scientist based at the Oceanic Institute in Waimanalo in Hawaii, who was not involved in the research. "People have to be really careful about what they are saying and doing in response to these data knowing how deficient they are."

At the meeting, Friedlander will present results of a separate, controversial study supporting the idea that fisheries catches have been vastly underestimated in Hawaii. His work is based on field studies comparing fish populations at relatively pristine reefs in the Northwestern Hawaiian Islands to reefs near the inhabited Hawaiian Islands.

Authors of the broader study say their results have profound implications for management. For instance, some nations sell rights to foreign fishing boats from wealthy nations to fish for high-value species in their waters, partly on the basis of these severely flawed fisheries statistics. This foreign activity can reduce the amount of fish available to locals already struggling to subsist, a problem exacerbated by skyrocketing food prices.

Jennifer Jacquet, another study author, calls the situation a reverse Robin Hood story. "Instead of stealing from the rich to give to the poor, it's stealing from the poor to give to the rich." The underreporting also means that estimates of how long fish stocks can support a given country's populations may also be deeply flawed.

Based on their results, the authors are calling on the FAO to take immediate steps to begin gathering more complete statistics.

CORRECTED:*An earlier version of this story implied in the second paragraph that it was number of species, not volume of fish catch, that was studied.*

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While we have always suspected the statistics were bad, the 64 million dollar question remains unanswered by this study - overall how sustainable is coral reef fishing? Our conservative estimate of the ecological footprint of coral reef fisheries across 49 island nations suggests at least 64% more fish (plus molluscs and crustaceans) are caught than can be sustained by healthy reefs. More than half of the island nations were overfishing their reefs. To put this in a different context, we would have to add an area of coral reef the size of four more Great Barrier Reefs to make this level of fishing sustainable on a global scale. Clearly, that is not an option, but it gives an idea of the scale of management action required. Furthermore we calculated with current human population growth trajectories 9 more GBRs would have to be added to the world to sustain the demand (Newton et al. 2007. Current and future sustainability of island coral reef fisheries. Current Biology, 17: 655-658). The key challenge is not just to improve the statistics, but to save coral reefs WHILE sustaining island livelihoods and food security.

Posted by: **Nick Dulvy** | 09 Jul, 2008

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