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A Wake-Up Call for Our Waters

Fisheries Scientist Dr. Daniel Pauly Reveals that Poor Data Has Veiled the Urgency for Small-Scale Fisheries Reform
Suzanne Hodoas | July 17, 2017

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In a new documentary, “An Ocean Mystery: The Missing Catch,” fisheries scientist Dr. Daniel Pauly takes on a decade-long, multinational project to find the true total of the world’s fish catch. The film follows Dr. Pauly and his team at the *Sea Around Us* as they carry out “catch reconstruction,” an effort to pull data from diverse and untapped sources to fill in the gaps in official catch statistics. The project takes them around the world and into the past, as they source information from local fisheries scientists, journal literature, and “canaries in the coal mine” — local fishers, charter boat operators, and other people intimately exposed to fisheries’ changing conditions.

Dr. Pauly and co-author Dirk Zeller published a summary of their catch reconstruction findings in Nature last year, which posits that 30 percent of global fish catch has gone unreported, and the decline in fish catch is more drastic than official statistics suggest. Their estimate puts the annual global catch at roughly 109 million metric tons, compared to the 77 million officially reported in 2010 by more than 200 countries and territories. Based on those numbers, about 32 million metric tons of fish go unreported every year.

“The Missing Catch” captures revelations from Dr. Pauly’s research as he experiences them, documenting conversations with local scientists and fishers in the Bahamas, Newfoundland, Senegal, and Honduras. In these countries

and many more, Dr. Pauly discovers entire sectors going untracked, the massive scope of hidden black market fishing, and the toll of bycatch. But he also discovers bright spots, including the work that Dr. Steve Box brought to Rare this year: the OurFish app that makes real-time catch data collection and analysis available to small-scale fishing communities. We spoke with Dr. Pauly to learn more about the film, his research, and the power of a complete knowledge of the world's fish catch.

You're the first to undertake a project as big as this. When you started this, what were some of the doubts and misconceptions you came up against, and why do you think so many assumed it was impossible?

People generally assume that data is not available, and that is the default assumption. And that is a very bad assumption to start with, but that is generally the way that it works. For example, I suggested to a student of mine from Malta that she do a reconstruction for Malta fisheries, because they are very important in that country. And her reaction was, "there is no data." It was so funny, because as she discovered, there are piles of data! That is true for every country. What doesn't happen, though — this data isn't served to you on a platter. You may have to find them in what appears to be obscure sources and journals and databases. The assumption that there is no data is wrong, but that is the assumption that people make.

You have to be imaginative with the data. My breakthrough insight, which I published in 1998, is that fisheries are social activities. They're conducted more or less in the open. You can see them, and they impact society. It's impossible for them to be completely unknown. For example, subsistence fisheries are often conducted by women. Women never show up in fisheries statistics, the catch that they make. In fact, you can go to the country, you can ask all men, and they'll tell you, "Women don't fish in our country." And then you go in the countryside and you look at the reef, and you see that the reef is full of women who are collecting fish. You see this in the Philippines. There are women always gleaning on reefs. They don't show up in the statistics at all. This realization that data are generated by the fact that fishing is a social activity — they might be nontraditional data, but they are data nonetheless — this insight I had in 1998.

I also realized the catch statistics were all wrong. There were better statistics available in journal literature, that could be used to correct the official statistics. Another preconception that I had to overcome was that the department of fisheries would know best. They don't necessarily know best what's happening in the country, because they have political masters that tell

them “concentrate on this, and not on that.” There’s more data than you think. What you don’t have is people to analyze the data. What you need for this work is people sitting there and sifting through data.

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Dr. Daniel Pauly

The process for catch reconstruction seems like an exhaustive effort. Can you go into that process? How did your team comb through all that data over a decade?

So, how was the pyramid built? One stone at a time. I had a period where I had 20 research assistants here, research assistants or volunteer students working over the summer. They get a country, and they get the official statistics of that country, and then they do a literature search. So the first thing you look at is the department of fisheries, and they may have additional data. Then you look at the publications of the university in the country. You look at publications by NGOs in the country. And then, the classic snowball system of looking at the references on their sites. There might be an article by WWF about the fisheries of the country. That article will have 20 references — then these will have references. The snowball system burns itself out, because after a while, you encounter the same references you already have. Then you know you’re done.

If you can — and we have done that to an extent — you get people from the country to do that. As much as possible, you get people who speak the local language. In general, we have paired our very diverse staff — we had Korean, Chinese, African colleagues working here, and they were paired with people in the countries that they worked on. Some things were done exclusively here, some exclusively in the countries in question by people who worked with us, but generally it was done in collaboration.

At one point, the film mentions “canaries in the coal mine” — local fishers, charter boat operators, and other people closely connected to fisheries. Why was it important to engage with these people and their insights?

Imagine a country in which you ask a fisheries ministry: “What about your subsistence fisheries?” And they tell you, “We don’t have them.” And then you go to the beach or coral reef and talk to women who do that. There’s a huge disconnect. We engaged with essentially anybody who would talk with us.

Because I’ve taught in African and Asian countries in my career, I had lots of people I could tap into. That’s another aspect of this that may be bizarre. It involves no money. Maybe two or three people had specific money they needed to travel to certain places, maybe a village, but altogether maybe 10,000 dollars was spent for the whole study. We did not pay anybody, and if we had, it would have been doomed right away. The sum for consultants for 200 countries and territories would have been impossible.

Your film highlights a discrepancy in fish catch data in which we at Rare are particularly interested — a dearth of data in small-scale fisheries. How can small-scale fishers and other stakeholders who depend so heavily on fishing for their livelihood become empowered by a complete knowledge of fish catch?

I hope it is a wake up call — not for the fishers, because they know that they are important, they know what they do — it’s for the authorities and NGO community that have so far ignored them. In order to be able to focus on small-scale fisheries, you have to be able to visualize them. You must know that they exist if you are going to do any policy that is to their advantage. In fact, most policies are by default against small-scale fisheries. If you don’t know they exist, you always favor industrial fishing by default, and industrial fishing competes sharply against small-scale fisheries. They are not working in different arenas, they are competing for the same fish in most countries, and especially so in the tropics. Small-scale fisheries exist. They are not small, they are crucial to the food security of the country. This was a statement of faith by many NGOs. Now, there’s a demonstration that it is so. And you have numbers that you can start working with.

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transparency, this is everything. It's empowering. It's fantastic.

Dr. Daniel Pauly

You've met Rare's own Steve Box and his app, OurFish, which aims to make it easier for small-scale fishing communities to report their own catch data using mobile technology. How can technological efforts like this make a difference?

Steve Box and I, it was “love at first sight,” if I can say that. He has worked locally, deep in various places, and I worked in more places superficially. But our conclusions are the same. I think this app that he has done is a really wonderful thing. It's beautiful — in Honduras, what I saw is people having an identity in all kinds of definitions of the word. They got an identity card. That is their first recognition in their country as fishers, that they exist. These cards, I've seen them — they're very proud to show them. Their interactions with the traders become transparent, transparent to them also. And then the traders, their interactions with the fishers become visible for taxation purposes. And the catch that they intake from fishers, they can be registered and can go into a database, whereas transcribing handwritten books is never done. You have all these reasons to encourage this kind of data capture. This is transparency, this is everything. It's empowering. It's fantastic.

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