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INTERVIEW / DANIEL PAULY

British Columbia News

China's numbers don't add up; Marine biologist's research shows the full extent of over-fishing and under-reporting

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VANCOUVER -- With a fleet of more than 3,000 vessels roaming the world's oceans, China has long played a significant role in global fisheries.

But the impact of that wasn't known until Daniel Pauly at the University of British Columbia's Fisheries Centre used a statistical technique known as the Monte Carlo method to determine unreported catch data.

In a recently published paper, Dr. Pauly says China's annual catch in the waters of other countries is 4.6 million metric tonnes a year – not the 368,000 tonnes officially reported to the UN's Food and Agriculture Organization (FAO).

The size of the unreported catch is massive, especially off the coast of West Africa, he said, and it shows the world's oceans are being depleted of stocks much faster than was thought.

A spokesman for the UN's Food and Agriculture Organization (FAO), which gathers and reports international fishing catch statistics, has criticized the study, saying the numbers for China's catch in West Africa are far too high, nearly equal to what local African fleets take. But Dr. Pauly says the numbers reflect a grim reality: that China is out-competing local fishermen in their own waters, driving many of them into poverty.

Dr. Pauly said China's distant-waters fleet is fishing everywhere in the world's oceans, except the Caribbean and North Atlantic. (The fleet's impact in the western North Pacific wasn't included in the study's final analysis because that area overlaps with China's domestic fishery and regulated fisheries off the coasts of Korea and Japan.)

You couldn't rely on going to official catch reports to determine China's take, so you had to do some detective work here.

That's precisely the problem. China has no statistics that make any kind of sense.

If you cannot rely on Chinese statistics, then what do you have to do? The [first question you have to answer] is: does China show up in a certain country? So we assembled [information] from websites, from newspapers, from about 500 sources and we documented the presence of China in over 80 countries.

The second step is more tricky. We assembled a group of experts; for each country a panel of at least 10 people, and each person estimated how many boats were involved, and these estimates by the experts were all kept and averaged.

Then for step three, for each of these boats, trollers, purse seiners and so on, we estimated catch by vessel type. We do that for every country and we add it up. Then we repeat the operation 10,000 times, picking at random from the distribution around the number, the estimated number of boats by country, and the estimated catch by boat type. And we get 10,000 solutions and we distribute the solutions, we group them in classes and we see that

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we get a more or less normal distribution. That is the Monte Carlo method, which tells us over all countries, [China caught] 4.6 million tonnes.

How reliable is that approach?

The first that used this method is [Sir Francis] Galton, the cousin of Charles Darwin, who asked 20 people to guess the weight of a side of beef. One person couldn't do it, but the average of 20 was dead on. This was published in Nature. It was called Vox Populi, the voice of the people, and since then, this has been repeated in many cases and has become a formal method that is used when you have very uncertain underlying data.

And because of this approach, for the first time, we have reliable data on the Chinese catch?

That's right. We know that the data from China are very precise but they are hopelessly inaccurate. Our method is very imprecise – but it probably is more accurate.

Why is it important to have this kind of information?

The basic way we interact with the sea is by taking fish out. So the impact of fishing cannot be assessed anywhere if we don't know the catch, and if you cannot assess it, you can't manage the fishery.

In West Africa, it's basically a free-for-all ... and the local fishery operates without control, because, psychologically, the countries cannot regulate their own local fishery with a foreigner rampaging in the coast lines.

We know now because of your research that there is massive under-reporting by China. Is there also massive overfishing?

We think there is. All people who do stock assessment in West Africa suggest that West Africa is massively over-fished as a whole. Massively over-fished. So there is little doubt that there is a problem. And in fact, the local fisheries ... are the ones who don't catch anything any more. Some people say there is a direct relationship between that and the impoverishment of West African fishermen, and the stream of migrants to Europe. And that's the real cost of this over-fishing in West Africa. And China adds to this.

Does it also explain why the world's oceans are being depleted?

Yes, because we have fishing everywhere, and all countries with distant-water fleets under-report their impact.

What can be done about it?

China must be made to play by the rules, and that implies transparency, it implies reporting decent catch figures and it means not forcing the FAO, of which they are a very influential member, to publish ludicrous statistics, which is what they do. They send them rubbish and the FAO has no choice but to publish them ... You know, this is absurd stuff.

This interview has been edited and condensed.

WHERE CHINESE VESSELS FISH

Estimated average annual catch by region, in metric tonnes, 2001-'11

CENTRAL AND SOUTH AMERICA, 182,000 tonnes, \$44-million

WEST AFRICA, 2.9-million tonnes, \$7.15-billion

ANTARCTICA, 48,000 tonnes, \$7.8-million

EAST AFRICA, 181,000 tonnes, \$50.5-million

ASIA*, 940,000 tonnes, \$2.45-billion

SOUTH KOREA AND JAPAN, 108,000 tonnes, \$22-million

OCEANIA, 198,000 tonnes, \$71.2-million

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