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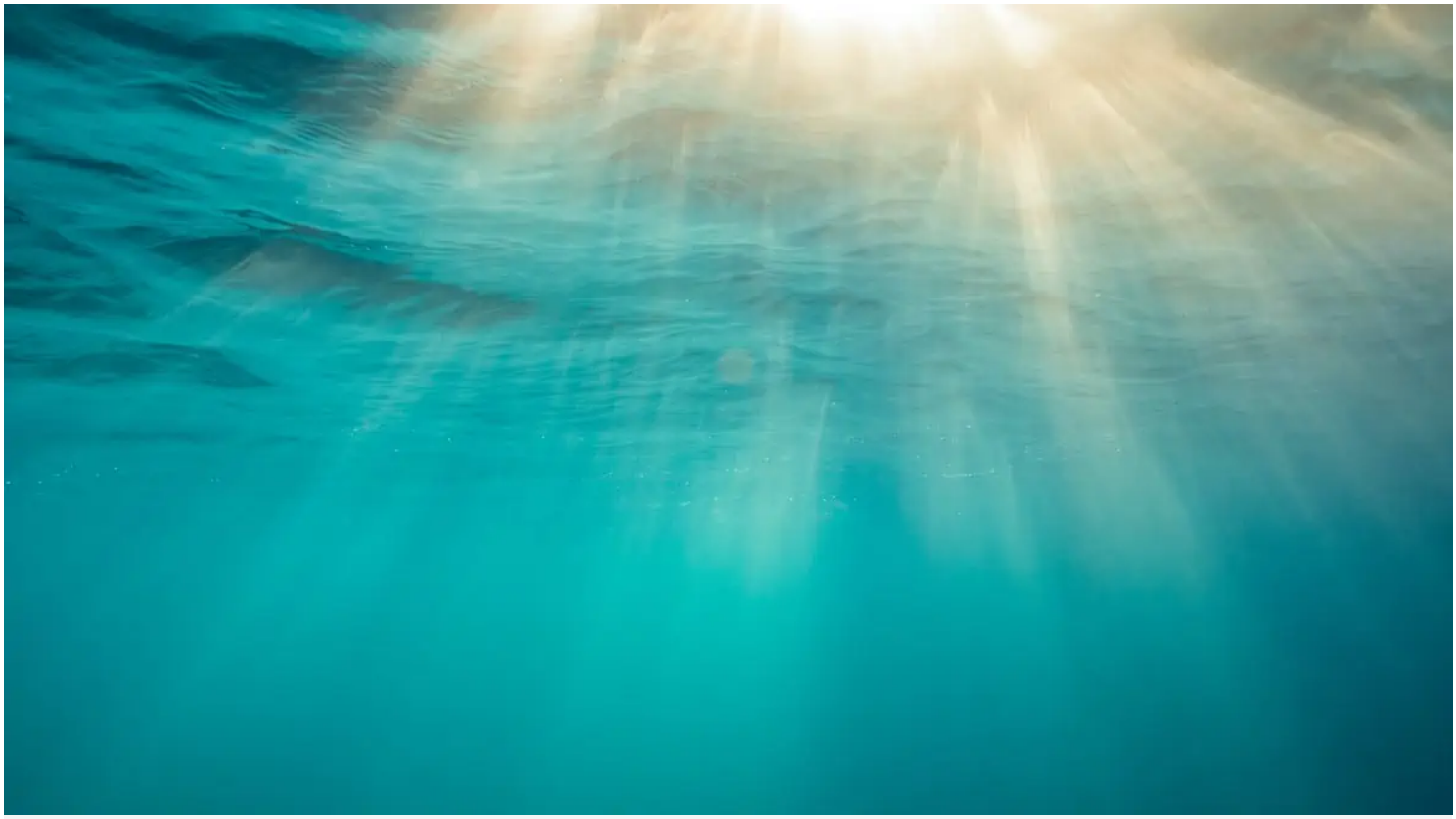
How much protein has been removed from the oceans in the last 50 years?

How can we go about quantifying the amount of protein removed from our oceans? And what does it tell us about our reliance on seafood, and the possibility of sustainable fishing into the future?



How much protein has been fished from our oceans in the last fifty years? The answer isn't easy to grasp. Image credit: Diane Keough/Getty Images

> ***How much protein has been removed from the oceans by humans in the last 50 years?***
>
> ***Paul***

This question is a real stumper. First, it's important to note that an exact number is impossible to calculate because we don't know the exact composition of the global seafood catch. While the UN's Food and Agriculture Organisation makes official attempts to log all the fish caught in a given year, those numbers don't account for unreported fishing and bycatch that is discarded back to sea.

Alternatively, the Sea Around Us initiative provides an estimate of all the fish caught yearly, *including* the reported catch *plus* an estimate of illegal fishing and bycatch, among others. That makes it a better resource to help us calculate this kind of number, providing global catch estimates for the years 1950 to 2018.

For the purpose of answering this question (and to keep it simple), we'll focus only on wild-caught fish, and not include aquaculture (fish farming). On fish farms, producers are artificially rearing their stocks, so it can confuse the picture of actual ocean ecosystem turnover.

So, using the yearly catch estimate by the Sea Around Us, we find that *on average* between 1950 and 2018, 90 million tonnes of fish have been caught per year.

But that doesn't answer the question, because we need to know *how much* of our seafood is protein, versus other nutrients and substances.

Julia Santana-Garcon is a marine ecologist with the Flourishing Oceans team at the Minderoo Foundation, working on developing the Global Fishing Index.

Santana-Garcon says that there unfortunately isn't enough reliable data to establish exactly all the species that are caught, and the ratios of different species within a yearly catch, so any estimate of the protein content in all the world's catches will be an extremely rough number.

"Often, that lack of data in some regions also makes it difficult to manage fisheries sustainably," Santana-Garcon adds. But for the purposes of the question, we can make the assumption that, on average, seafood has roughly a 20% protein content.

So, 20% of 90 million tonnes is 18 million tonnes. That's 18 million tonnes of protein being removed from the oceans per year *on average,* between the years 1950 and 2018.

If we sum the catch, as recorded by the Sea Around Us, from 1969 to 2018, that amounts to 5,290 million tonnes of fish caught in the last 50 years. Twenty per cent of that amounts to 1,058 million tonnes of protein (or 1.05 billion tonnes) in 50 years. So, we can say, *roughly*, that there might have been around a billion tonnes of protein removed from our oceans by humans over the last 50 years. Again, that's *roughly.* We'd love science to have easy numbers but a lot of this data is hard won and unclear.

"The key is it's a very large number, because seafood is really important for human nutrition worldwide," says Santana-Garcon. "Therefore, what is truly important is that it is caught in a sustainable way, at a level that it will provide food into the future."

And therein lies the heart of the problem. Seafood is an important source of nutrition for a lot of people globally.

According to Asha McNeill, a marine social scientist also working on sustainable fisheries at the Minderoo Foundation, three billion people globally rely on seafood as a major source of protein. But McNeill adds that protein is just part of the story.

"Protein is important," McNeill says, "but what's really different about seafood as a food source is that it's full of these critical micronutrients that cannot easily be replaced.

"The volume of fish you have to eat to receive your daily requirements of these micronutrients is very small in comparison to alternative sources, including other animals."

That makes fish a critical food resource not just as a source of protein. That also increases the imperative to protect our fish stocks beyond the conservation importance of sustaining species; fish can be a critical source of nutrition, especially for poorer coastal communities.

Given the massive volume of seafood being taken from the oceans year on year, and the critical importance of seafood as a source of nutrition for billions of people, both Santana-Garcon and McNeill emphasise that sustainable fishing is vitally important if we're to preserve marine diversity *and* preserve human life into the future.

"The High Level Panel for a Sustainable Ocean Economy has actually approached this," McNeill says. "What they found is that if we improve fishery sustainability, we can actually take more protein, more food from the ocean, not less – because what we're doing is we're keeping a healthy balance of fish stocks to draw from in the future."

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