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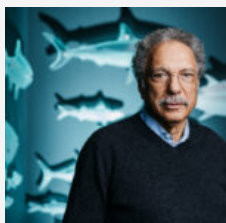
A Conversation with Daniel Pauly (Part 1)

“Overfishing is a catastrophe in slow motion”

June 2023 (*Part 1*)

We were delighted to sit down with one of our 2023 Tyler Prize Laureates – the eminent marine biologist Daniel Pauly, Professor of Fisheries at the Institute for the Ocean and Fisheries Department at the University of British Columbia in Vancouver, Canada, and the Principal Investigator of the Sea Around Us research project – to discuss his life, career, and impact on marine conservation.

(This interview is part one of a two-part series. You can read part two [here](#)).



Daniel Pauly (Photo Credit: Kim Bellavance)

How does it feel to have won the 2023 Tyler Prize for Environmental Achievement?

Well, it came as a surprise because I had purposefully forgotten that I'd been nominated so I wouldn't feel disappointed when I didn't win. When I got the phone call, I was totally surprised! I did question whether I was worthy of the award and was delighted to share it with Rashid. Anybody else, I would've been annoyed, but he and I work very closely and it's a pleasure that we are going to figure this out together.

How did you come to be interested in marine science?

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The John and Alice Tyler Prize for Environmental Achievement is awarded for scientific work on the environment, energy, and health, resulting in important benefits for humanity. The Prize is endowed by gifts from the John and Alice Tyler Charitable Trusts, and awardees are chosen annually by the Executive Committee. Annual cash award \$250,000. Joint winners share the cash prize.

Nomination information: tylerprize.org/nominate

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Please direct all questions to:
Amber Brown, Administrator, amber@tylerprize.org

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I grew up in Switzerland, and at the time, there was no marine science there. I moved to Germany and studied agronomy for a semester, but the department was full of Nazis – real Nazis: this was 1969 and there were still old folks there practicing Nazi ideology. It was so awful that I moved to the Institute of Marine Science.

I got a job sorting pots of mud and worms for the work of the department. It was fairly disgusting work and really smelled bad. I ended up inventing a little machine for washing mud samples. One of the professors invited me to write a paper describing it, and from then on he really supported my work: he invited me to work in Ghana with some of his contacts there, and I was able to complete my masters thesis in Ghana at the same time as finishing my undergraduate studies.

After I finished my masters, my professor supported me to become a staff member of the German Society for Development, the German bilateral development agency. They hired me to work on a project in Tanzania, so I studied tropical fish in great detail and also studied Swahili for about 5 months until I was fluent. But then they decided that the project wouldn't go ahead and I would be sent to Indonesia instead!

Whilst I was working in Indonesia I realized that what I needed was a Ph.D., so that I could help people by using new methods or adapting methods that already existed in the Global North. So, my Ph.D. was on why tropical fish grow the way they do. Fish in colder climes have annual rings like trees but in warmer waters, the fish don't grow this way. So what are you going to do? I developed a method that could use the size distribution of fish to infer their growth and this method was quite successful.

So with the experience I had in Africa and Asia, I had a great deal of success – I worked hard and produced a large number of papers which were greatly appreciated by the international community. The method I had devised, I started to teach across the world: in lots of countries, across five continents, and in four languages.

I got an idea of what fisheries were doing internationally because at the time fisheries were seen often as a local matter. I had traveled so much and I started to see how different fisheries were connected as part of a global system. This idea was forming for me and I started to write papers on the systemic nature of fisheries. I was one of the first to write about fisheries as a global system.

You are the world's most cited fisheries scientist. Which of your publications really stands out for you?

In 1998, we published a big paper that demonstrated that we were fishing down the marine food web, meaning that we have caught a lot of the big fish, those high in the food chain, and at the end, we catch very small fish.

I have become the most cited fishery scientist in the world, and that's worrying because quantity and quality are different things! There are lots of scientists that work at a much deeper level because they're better at math. But I have covered lots of subjects and I've tried to empower people working in the Global South – that has been my area of emphasis.

You've described global overfishing as a giant Ponzi scheme. Can you tell us about that?

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Click below to read the Time Magazine conversation between Dr. Ayana Elizabeth Johnson and our 2023 Laureates!



Daniel Pauly and Rashid Sumaila (Photo Credit: Kim Bellavance)

I think the phrase is justified – not because something is going to collapse all of a sudden, but because what happens is you lose one thing at a time, and it becomes an erosion of marine life. People think it's an exaggeration to call it a Ponzi scheme because the rate of decline is tolerable. Journalists often ask me, when is the catastrophe gonna happen? Well, it's happening right now. It's happening under our noses. It's a catastrophe in slow motion.

With fisheries, the exploitation that takes place with bottom trawling and other industrial fishing methods damages the ecosystem. When you have done it in your home waters as an industrial country, you have to go somewhere else, and then you go somewhere else and you do it again, and then you have to go somewhere else and do it again. That means that the world fishery catch has now started to decline.

What are the issues around the funding of overfishing?

Because global fishing is in decline, most companies don't make enough money fishing. They have to access government subsidies to keep going. Another way to make it profitable is to reduce costs in an extreme way, for example through modern slavery and not paying their crews.

How do you think the impact of overfishing will be felt by individuals in the Global North who may otherwise be quite disconnected from ocean life and food production?

The effects are subtle: at first, you won't be able to get fish from your waters, you'll have to get fish that are imported from somewhere else. The second point is that you won't be able to eat the same fish that you are used to because they come from outside. Fish will become excessively expensive and so instead of eating healthy food like fish, people will turn to eating more junk food.

Can you tell us about your *Fish Base* database?

I created a project called Fish Base, a huge database of fish of all the fish in the world with all their biological information. The database became extremely successful. Now it has about 80 million hits a month and nearly a million single users every month. It's used by everybody. It's available in every university in the world. It is a big success.

How did you come to establish the *Sea Around Us*?

In 2000, I started working with the Pew Charitable Trust. They convened a little group of people and asked, 'If you had lots of money, what would you do to document the state of the ocean?' I proposed that we should analyze the fisheries data of the world, because you can perceive fishing as a sampling of the ocean. I knew this data was produced by the countries and sent to the FAO in Rome, who in turn standardized them and reissued them as their data of the world.

But this data was incomplete: they don't include recreational fisheries or discarded fish that you throw overboard for example. So basically, I developed a program where we compensated for this slack and added this catch data. This gives us a proper estimate of the catch, from which we can infer lots of things about the state of the ocean.

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It's very important to have correct data so that if you intervene, your interventions will be based on correct data and will be beneficial. The database is a success: everyone wants our data for their studies into food security, illegal fishing, the Paris conflict, and so on.

If a genie in a bottle granted you three wishes for the ocean, what would they be?

First, I would not allow fisheries to be subsidized, because subsidies prevent you from listening to the message that nature gives you, which is: "I'm exhausted. Give me a break".

The second thing is, I would propose we stop fishing on the High Seas. The high seas do not contribute to food security, and they burn up lots of fuel because it's far, right? And moreover, they could be caught in coastal waters because they always move between coastal waters and the high seas. So if you had no fishing on the high seas, you would have what my friend Rashid calls "a fish bank". This fish bank could yield more fish overall because the stock would rebuild. We would catch more, we would have lower emissions, and we would have less criminality on the high seas.

My third wish would be to reduce global emissions of greenhouse gases. This is not a specific ocean thing but there is no way we, our civilization, industrial civilization will survive if we maintain high emissions.

For people who do want to try and eat more sustainable fish, do you have any advice?

My advice is you are more than just a consumer. You are a citizen, and those of us who are lucky enough to live in democracies should act as citizens, not just as consumers. We should try and use our influence to engage those around us on these issues – don't be afraid to express your opinion, use the media and distribute flyers, etc. It's the choice between being a consumer and only a consumer, or a citizen.

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In part two of this interview, Tyler Prize Laureate Daniel Pauly discusses the career cost of speaking up as an active citizen, his challenges as a biracial scientist, and his thoughts on the Black Lives Matter movement.

You can read part 2 of the interview [here](#).

To read more on Dr. Pauly's incredible work:

[YouTube – Dr. Daniel Pauly](#)

[Faculty Website: Dr. Daniel Pauly, University of British Columbia](#)

[Biodiversity Research Centre](#)

[TED – Daniel Pauly](#)

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