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At the Fish Market with Dr. Daniel Pauly

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Illegal fishing is an enormous problem and the main focus of my new book, but the truth is that fish populations would be in trouble even if the illegal operators could somehow be eliminated. The way I learned how bad it is was by spending time with Daniel Pauly, a renowned fisheries scientist and one of Oceana's board members. When I said I was skeptical about the idea that the populations of many of the best-known fish are now less than ten percent of what they were fifty years ago, he took me to Vancouver's fish market. Yes, the market was full of fish, but as we walked through the bustling market, stall by stall, Daniel pointed out that most of the fish came from faraway places, most of them in the Southern Hemisphere. Many of the fish that used to be in the market, the fish our parents used to buy, aren't there anymore, replaced by substitutes that consumers don't actually know much about. The changes are not rapid--and therefore unnoticed by most people--but by the end of our tour the enormity of what has happened had become perfectly clear.

It's difficult not to be pessimistic, and Daniel is sometimes criticized by his peers for being too negative. But I think he does not have a choice. If people fail to understand how dire the problems are, I believe he is doing exactly the right thing by speaking as loudly as he can. That's why two chapters in *Hooked* focus on him!

The open-air market on Vancouver's Granville Island is a lot like many retail fish markets. The concrete floor is usually wet, there is not much space in the aisles, and customers have to give way to sometimes fast-moving pushcarts. Daniel Pauly, a large, bearded black man who speaks with an indiscernible European accent, goes to the market at least twice a month, but he rarely buys anything. One of the world's foremost fisheries scientists, he only goes to see what's there. Actually, in recent years he has also spent a lot of his time pointing to what is not there.

Pauly believes his profession is partly to blame for what has happened to the world's fisheries, and he is determined to change things. The first step, he says, is helping people to understand the full extent of the problem. He began one of his visits to the market by pointing to a yellowish fish and said, "That's a rock fish: it's the kind of slow-growing fish that used to be found in huge numbers all along the coast of British Columbia. Now there are hardly any left. Look at what is here." Of a small, sardine-like fish, he said: "These are smelts: they always had been thought of as bait fish, but people started eating them about ten years ago. There's a tilapia--it came from Chinese Taipei. The lobster over there came

from Cuba. The tiger prawns came from Thailand. The scallops probably came from South America."

Pauly has never met Daniel Malloy or Antonio Perez, but he would recognize both as being ahead of their time in realizing that their industry's future would depend on its ability to find new species from the Southern Hemisphere to replace the dwindling populations in the north. "That's the big story," Pauly says. "The Northern Hemisphere is running out of fish--and it's become this enormous black hole that's absorbing more and more marine life from the south."

Actually, the next stall appeared to tell a different story: it contained several types of salmon along with snapper and cod, both of which were "local" according to little signs planted in the ice. Of the salmon, Pauly said, "This is what British Columbia still has, but it may not be what you think it is because most of what you see here is farmed. Half the salmon in British Columbia is farmed now. And that isn't local cod. There is no real cod near here--and there's no snapper around here either."

Overhearing this, the man behind the counter said, "The cod is local!"

"No it isn't," Pauly said. "There's no such thing as cod here--I don't know where it came from."

Pauly's directness, his unwillingness to sugarcoat, and his penchant for cutting through discussions with definitive statements sometimes lead to confrontation. Pauly says the problems are too urgent to take the time for niceties or political sensitivities. For example, when colleagues suggest that he meet with the fishermen who are responsible for harvesting too many fish, he invariably declines: "What are we going to talk about?" he asks. "When I drive too fast in my car, the policeman doesn't initiate some kind of a dialogue. He just gives me a ticket."

Just around the corner from the supposedly local cod, Pauly spotted an almost luminous orange fish. "Ah, Orange Roughy," he said, sounding like he were greeting an old friend. "They used to be called slime heads. It's a fish that grows even slower than Patagonian toothfish and it can live for 150 years. In another couple of decades, they'll be gone." Saving long-lived fish such as Orange Roughy or toothfish from extinction, Pauly believes, is no different from preserving a stand of old trees, like the majestic cedars and hemlocks in Stanley Park, a preserve near the center of Vancouver. "Would Stanley Park still be a wonderful place," he asked, "if we set a quota that says you may take down four percent of the trees every year? Or if we let people cut down trees but only on the second Sunday of every month? Or if we told people not to buy wood that comes from trees there? Of course not! Whatever way you do it, we'd still end up with a lot fewer trees. The reason we like Stanley Park is because it is forbidden to touch the damn things. We need to do the same thing in the oceans--create some zones that are for nature and others for us. But no,

we think we can fish everywhere and make adjustments as we go along. It can't be done. As a result, we lose everything."

When Pauly began his career in the 1970s, fisheries scientists spent most of their time devising ways to catch more fish rather than protecting them. Like the fishermen of Riveira, they simply could not imagine that the world would ever run out of fish. Over the next twenty years, as Pauly studied fisheries around the world, he found, over and over, that mankind had had a profound effect on fish populations. The only solution, he decided, was to reverse his profession's priorities. He had become an environmentalist. His is not the idealistic kind of environmentalism that looks at the world from the point of view of animals. His concerns are motivated by waste, the opportunities that have been lost now that the populations of many of the most desirable eating fish have been reduced by more than ninety percent from what they were fifty years ago. If fish stocks were allowed to recover and were managed more effectively, he says, fish could become a reliable--and ultimately larger--source of food and jobs. He is also motivated by social inequities, particularly those that affect people in developing nations who can no longer afford to eat fish. "Take Angola," Pauly said as he walked away from the fish market. "It was exporting massive quantities of fish even when it was in the midst of a major famine."

Spending time with Pauly can be exhausting. He is charming, frequently funny, and his thoughts and words are invariably interesting, but he speaks in staccato bursts and fire-hose torrents. And his conclusions are depressing, so consistently dire that he is sometimes accused of crying wolf, an accusation that infuriates him. "People have to deal with the data," he demands. "Is it true that there are one-tenth as many big fish in the oceans now as there were a few decades ago? The answer is yes--and that's the only thing that matters. If people just say they don't believe the basic conclusion--if they refuse to do the science--then screw them! They don't belong. This is not a theological debate!"

Sitting down to lunch at a restaurant near the market, Pauly found a glimmer of hope halfway down the menu: halibut in a broth of coconut ginger and sweet chiles. While halibut was over-fished back when Young's Market could not secure enough for its frozen fish fingers, its population has recovered since then to provide a rare example of what proper fishery management can do. "Halibut is a beautiful fish," Pauly said, "and the halibut fishery in the Pacific Northwest is one of the best-run fisheries there is."

Pauly recognizes that most people know very little about the fish they buy and eat. He says that is part of the problem. "Everyone sees that there are plenty of fish in the market and they don't remember what used to be there," he said not long after his halibut arrived, "so they say things can't be all that bad. But they're wrong: we are in a crisis! It's not coming--it's already here." As he said this, something lodged in his throat and Pauly's normally powerful voice slipped out of gear. He raised his arms, one of them holding an empty water glass, and waved to get the waiter's attention, but he would not stop talking. "Actually the ninety-percent population decrease understates the problem," he said in a raspy, barely audible whisper, "because fish populations are not just declining--they're

disappearing. The Hudson River used to have shad. It used to have huge sturgeon. They're not there anymore. But when the government counts the number of fisheries that are in trouble, does it include the Hudson River shad and sturgeon fisheries? No! It only counts what there is to count and forgets about what's already gone."

After gulping down some water, Pauly's voice returned and his pace accelerated, as if he were making up for lost time: "The North Sea is a total disaster area--it contains two or three percent of the big fish it used to have. New England is just as bad. We were catching sixty percent of the Atlantic cod population every year before the fishery completely collapsed. It's as if you withdrew sixty percent of your capital from the bank every year. You can live large for a while--right up until close to the end, your consumption is going to be fine."

Pauly's global perspective--and probably his zealousness--are the products of an extraordinary personal history. He was born in Paris in 1946 to a white Frenchwoman and a black American serviceman Pauly did not meet until many years later. At age two, he was taken to Switzerland by a couple who befriended his mother, a factory worker who was having difficulty providing for him on her own. The Swiss couple offered to take care of Pauly for a few months, an arrangement that became a nightmare when they refused to give him back. They told Pauly's mother she had no rights because her son was born out of wedlock. They told Pauly that his mother, like his father, had abandoned him. And although they promised to treat Pauly as if he were their own son, they eventually turned him into something closer to a servant, forcing him to clean the house and to work as a delivery boy for a local bakery that turned over his wages to the couple. He was allowed to go to school, but as the only black child in the area, he never had the sense that he belonged there, either.

When he was seventeen, Pauly left his "home," taking a train to a small town in Germany where a Lutheran minister had arranged for him to work in a hospital as a nurse's aid. One year later, his life was interrupted again, this time by the French Army, which tracked him down to demand that he return to France to perform his compulsory military service. Perhaps because of his German-accented French, he ultimately was not forced to serve, and the bureaucratic tussle ended with him being turned over to his mother. Until then, Pauly had not known how to reach her. She had married a Frenchman who had, also unbeknownst to Pauly, adopted him several years earlier. Pauly also learned that he had seven half-siblings, who had all been told that they had an older brother who lived with another family. Prior to his reunion, Pauly had no specific memory of his mother--he did not even have a photograph of her--but he never believed the Swiss couple's claims that she had abandoned him. Now his conviction was confirmed as she described the threatening letters they had sent and how she set an extra place at the table on each of his birthdays.

After spending almost a year in France, Pauly went back to Germany because he was eager to see his girlfriend and return to a night school he had been attending. Once he was

back at school, he thought about going on to study literature or history, but it was 1964 and he was inspired by the idealism of the day. He eventually made two tentative but potentially connected decisions: he wanted to do something that would help people in developing countries and he wanted to go to Africa. He had, after all, never experienced anything that might be considered black culture. He had never even met a black person until he left Switzerland; his night school was all-white, and even his mother and his seven half-siblings were white.

By the time he enrolled in the University of Kiel at age twenty-three, Pauly thought he had arrived at a more specific plan: he would study agronomy. But he took several part-time jobs in order to pay his expenses, and one of them happened to be in the university's Institute for Marine Science. It was one of the scientific world's ultimate low-level positions--examining seabed samples and counting the tiny animals that lived there--mostly worms, mussels, and shrimp. It was a painstaking process, accomplished with spoons and tweezers. After working through several pounds of the material, Pauly came up with a better idea, a mechanical device that mixed the samples with water and pumped them through a filter. It could separate creatures from a gallon of the muck in fifteen minutes, a volume that took several hours before his innovation. Pauly was introduced to the Institute's senior professor, an unusual honor for an undergraduate in Germany's rigidly hierarchical university system. The professor urged Pauly to write an article about his invention, which he did. Pauly subsequently decided that he had, at least professionally, found a home.

The geography of his future, however, was still unclear. By the time he finished his undergraduate and masters degrees at Kiel, he had spent half a year in Ghana studying lagoons to determine whether they might be used for aquaculture, but he found that they were too polluted for raising fish. During the same trip, he also discovered that he had spent too much time in Europe to ever really feel at home in Africa. By that time he had also visited the United States, where he met his father, who was working in California as a power plant technician, and an aunt who lived in Arkansas. He could not imagine living in their country either, particularly after his aunt warned him not to run on the downtown streets of Little Rock. "She told me, 'Black kids can't run here--the police will shoot you!'" Pauly recalls. So he ended up moving to Indonesia to take a job with a German government agency that was helping develop local fisheries.

In 1979, Pauly moved to the Philippines to take a job with the International Centre for Living Aquatic Resource Management, which was founded with money from the Rockefeller Foundation. The foundation hoped the center would help Southeast Asian countries to increase seafood harvests. In fact, during the previous twenty years, catch rates had already soared throughout the region, but Pauly did not believe they were sustainable because he was sure that many fish stocks had already been demolished. It was obvious from the poverty of the fishermen: in the Philippines many worked all day to bring home just two or three pounds of fish, less than half of what they had harvested a decade earlier.

Like in other parts of the world, the introduction of trawling was the main culprit. Fishermen started dragging nets behind sail-driven boats in the Middle Ages, but the technique did not really come into its own until the Industrial Revolution. English fishing vessels were fitted with steam engines in the 1860s and steel trawl lines in the 1880s. Even then, no one understood the potential impact of mechanization. When Thomas Huxley, the famous naturalist who once served as England's fishing commissioner, addressed a gathering of fishing industry executives and scientists in 1883, he acknowledged the possibility that some fisheries might become "exhausted," and he mentioned the risk that pollution might eliminate salmon from some of England's rivers. But he saw no risk for ocean fisheries. "Probably all of the great sea fisheries," he said, "are inexhaustible; that is to say, that nothing we do seriously affects the number of fish."

Technology proved Huxley wrong. Following World War I, diesel engines and onboard ice-making machinery became widely available, enabling fishermen to get to distant fisheries more quickly and also to extend their voyages. Another wave of enhancements followed World War II--radar, acoustic fish finders, onboard fish processing "factories," nets made of synthetic fibers, and mechanically refrigerated fish holds.

The new technologies found ready acceptance in Southeast Asia, where the demand for fish had skyrocketed along with exploding populations and rising standards of living. The Philippines led the way: Using boats and engines left behind by the American military after World War II, fishermen created fleets of trawlers that accessed heretofore untapped fisheries. Thailand was not far behind: the number of trawlers there went from about one hundred in 1960 to almost three thousand in 1966. The nation's total catch soared from 146,000 tons in 1960 to 1,343,000 tons in 1970. During the same period, catches roughly doubled in Indonesia, Malaysia, the Philippines, and Vietnam (although Vietnam's total catch plummeted in the 1970s after half of its trawlers were put to use evacuating refugees).

The enhanced fish-catching technologies obscured the truth of what was happening, but a closer look at the numbers made it clear that fishermen had commenced a one-sided arms race that was nowhere near sustainable. While Thai trawlers caught about five hundred pounds of fish per hour in 1963, their hourly yield was only half as much four years later. This meant that fish populations had been halved and that they were being taken from the sea much more rapidly than they replaced themselves, but it did not lead to a reduction in fishing. On the contrary, more trawlers were launched every year. By the late 1970s, Thailand had more than six thousand of them. And they were working much harder than before: vessels that initially left port only during the day were operating around the clock.

Habitats were being destroyed along with their populations. Many fishermen in the Philippines used explosives, another legacy of World War II. An inexpensive device could kill every fish within one hundred feet, leaving fishermen with the simple task of scooping up corpses with hand-held nets. But the explosions also destroyed coral reefs and juvenile fish. Trawlers were at least as wasteful and probably even more destructive. In some

places, close to half of what they captured were "trash fish" that were either discarded or fed to animals. And while some claimed that trawlers would benefit the ocean by "plowing" the seabed, nothing could be further from the truth. The coral reefs that are felled by trawler cables are crucial to many species both because they are surrounded by nutrient-rich water and because they provide protection from predators.

"Can you imagine," Pauly asks, "someone telling you that he's come up with this great way to catch fish that involves dragging a big net across the seabed that will not only catch every fish but also removes entire habitats? It would be as if someone told you they were going to hunt for deer by cutting down the forest in which they live."

Link: <https://usa.oceana.org/blog/fish-market-dr-daniel-pauly>