

BOOK REVIEW



WILEY

The Ocean's whistleblower: The remarkable life and work of Daniel Pauly by

Grémillet David

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All of us engaged in fisheries science will sooner or later come across the work of Professor Dr. Daniel Pauly. Fishing down the food web, shifting baselines, the Pauly mortality equation, methods for assessing tropical fisheries with length-based approaches, Ecopath and global catch reconstruction are classics, making Daniel Pauly the most cited fisheries scientist of all time and a hero and important role model to many. More than 1000 scientific and general-interest publications, including 30 books and other monographs, are evidence of the voluminous scientific legacy of Pauly. Nobody can deny that this is evidence of spectacular productivity, and Pauly is still publishing.

At 349 pages, including a detailed appendix and a collection of historical pictures, the biography of Daniel Pauly by the French oceanographer David Grémillet is a page-turner. I read the English translation. To say that I enjoyed this biography is an understatement. Learning about the background involved in the many accomplishments by Pauly was both entertaining and educational. I also had several eye-opening moments, realizing four important things.

First, creating a productive and influential scientific career has major chance elements in addition to the pre-condition of being creative and passionate about what you want to do in science; it also involves having the right mentors to help put a career on track. Second, there is a strong dynamic in scientific institutions that creates rises and falls on quite short cycles and that has little to do with scientific productivity per se. Third, every scientist carries his or her values that affect the choice of topics and the way to see the world. And finally, successful scientists will almost always attract some level of controversy that is productive to the field as whole.

The biography is based on the author's personal experience and many interviews with family and colleagues scattered across the world. The book has a logical structure. It starts with three chapters outlining the intense and challenging childhood and youth of Daniel Pauly ('Origins'). The middle part of the book, entitled 'Constructions', presents eleven chapters detailing Pauly's work on fisheries starting in Western Africa and Indonesia, which culminated in the longer work phase at the International Center for Living Aquatic Resources Management (ICLARM) in the Philippines. Many of the key accomplishments by Pauly relate to this time where he developed data-poor assessment methods to deal with tropical

fisheries, including meta-analyses to infer natural mortality from fish growth and water temperature, the initiation of the FishBase project as well as the start of Ecopath.

The last part of the book outlines the global fisheries phase of Daniel's work, after transitioning as a full professor to the Fisheries Centre at the University of British Columbia (UBC) Vancouver. Nine chapters under the heading 'On the World Stage' detail what has made Pauly the 'Ocean's Whistleblower'. During this period, Pauly and colleagues published the highly cited global analysis of fishing down the food web and started the Sea Around Us project. The aim was to reconstruct global catch records for all major fisheries, a task completed in 2016.

Each of the 23 chapters and the Epilogue are eloquently crafted and entertainingly narrated. Each chapter builds nicely on the preceding ones, but many can be read and understood without necessarily reading them in sequence. Throughout the book, one can also vividly smell the special energy of Pauly, who not only is an exceptionally driven and productive writer but also fearless when entering into debate—something that the author already identifies as a character trait during his study phase at Kiel University in Germany.

Grémillet writes that 'superheroes are solitary, and Daniel is no exception'. This is not to suggest that Pauly has achieved all his accomplishments on his own. There is clear evidence that over the course of his career, Pauly has managed to either meet or build teams of like-minded people who have complementary expertise, all united in their efforts to build either software (e.g. Ecopath-Ecosim) or databases (e.g. FishBase) that are of use to us all or to publish groundbreaking analyses and narratives. Even the most vocal critic of some of Pauly's studies will agree that he has been, and is, a leading figure in fisheries science and that he has deeply shaped our profession. This book is evidence of this legacy and shows that exceptional developments are typically the result of productive teams formed and led by forward-looking personalities.

Scientific careers tend to have many chance elements. Daniel Pauly's life is evidence of it. It is largely coincidence that Pauly ended up at Kiel University in Germany and encountered a not-so-welcoming bunch of agriculture professors in his diploma study of agronomy, which then motivated him to start studying marine science and fisheries. It is also largely coincidence that Daniel Pauly

met Professor Gotthilf Hempel—at that time, a politically very influential professor of fisheries at Kiel University who managed to send the young Pauly on his first professional jobs as a fisheries consultant to Ghana and later Indonesia. Both research visits would deeply affect Daniel Pauly and shape how he sees the fisheries world. Coincidence was also involved in the crossing of the path of Daniel Pauly and many others who later co-developed aspects of his scientific production including, for example, Rainer Froese at Kiel University, leading to FishBase, or Villy Christensen at ICLARM and later UBC and Carl Walters at UBC, shaping the development of Ecopath with Ecosim.

The biography of Daniel Pauly also showcases the vulnerability and boom-bust dynamics inherent in scientific organizations and institutes dealing with fisheries. Pauly's career has been supported by three institutions: the Institute for Marine Science in Kiel (now called Geomar Institute, a centre within the Helmholtz-Community in Germany) where he studied and did his PhD and habilitation, the ICLARM in Manila (renamed the WorldFish Center in 2000) during his intermediate career stage, and in the last phase since 1994, the Fisheries Centre at the University of British Columbia in Vancouver, Canada (which has now morphed into the broader Institute for the Oceans and Fisheries). Pauly moved on from Manila to Vancouver because the governance of ICLARM became dysfunctional in the early 1990s (described in the Chapter 'In the Big Leagues'), motivating the leading figure Pauly to seek out new opportunities across the Pacific Ocean in Canada in 1994. And while the Fisheries Centre was the powerhouse of fisheries science for much of the 1990s and 2000s, it came at a cost of the key faculty and their laboratories becoming rather isolated from each other, as explained in the Epilogue to Pauly's biography. The message is brilliant minds, especially if personalities do not match, do not necessarily work well together, which may create challenges to the long-term functioning of scientific centres or even entire institutes, especially if organizational leaders have new ideas.

What the biography shows is that political developments and changes in organizational and institutional structures can easily overshadow even the brightest of scientific figures and their research programmes. I only learned through the book that much of Pauly's work at UBC has been based on soft money, and key scholars of the Pauly team, as well as several long-term projects, have struggled to acquire permanent positions and financial security.

How would you like to be remembered, Pauly was asked in an interview in *Nature* in 2003. He answered, 'As the one who showed that the effect of fisheries on marine life is equivalent to that of a large meteor strike in terrestrial life'. This sentence characterizes very well the work and approach of Pauly—something that shines through many chapters in the book. There is doubtless scientific substance to the sentence, it is written elegantly as a metaphor, but it is arguably controversial and will stir debate if not overt disagreement. For example, while meteors easily lead to extinction of species, such outcomes are unlikely even in highly intensive marine capture fisheries. I am sure Daniel Pauly knows this, but he chooses

to express the facts the way he does, likely to initiate debate, with a desire to stimulate change.

His quote in the *Nature*-interview and other actions described in detail in the book show that Pauly's work is affected by personal values that can be associated with a certain way of seeing the world and a strong conviction that sustainable fisheries will not emerge spontaneously based on dispassionate science alone. Pauly wants his research to be used in real life, exemplified by his very open decision to associate himself with environmental NGOs and to make sure his work can be used in political campaigns to stop overfishing. Here, Pauly walks the fine line between science and advocacy, an action he shares with other conservation scientists in fisheries.

We are what we eat. But similarly, we also are what we have witnessed. The idea that the scientist remains the value-neutral and always objective and dispassionate honest knowledge broker is one that reads well on paper. Pauly's biography, the choice of the topics he studied and the way he approached controversy clearly showcases that one cannot escape the legacy of one's own past. Here is where the book particularly excels by outlining connections among Pauly's harsh upbringings, his constant battle against marginalization, his experience of overt racism and corruption both within his own institutes but also in the countries where he has worked in the developing and developed world and the choice of topics and way of responding to criticism. The book reads like a crime novel in places, where the personal flavour is intertwined with how Pauly and his fellow colleagues managed to develop the many highly cited products, databases and papers that have changed the perception of the impact of fisheries on the ocean.

The book by Grémillet is an exciting, entertaining expose of a remarkable life which displays highly unusual scientific creativity and output. The book is written in an engaging style, the story is compelling, and importantly—it is true. The book is a must-read for all interested in the history of fisheries science and marine fisheries more generally. Grémillet is to be congratulated on having put together a complete picture of a truly amazing personality and leading marine conservation scientist, whose legacy will be long-lasting.

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