

5 Easy Pieces – The Impact of Fisheries on Marine Ecosystems

By D. Pauly. 2010. Island press, 1718 Connecticut Avenue, N.W., Suite 300, Washington, D.C. 20009-1148 USA. 236 pages. 25.00 USD. Paper.

Fisheries is making an annual global loss of 54 billion dollars; it is therefore no wonder that we have an ongoing global crisis (in terms of ecology, food, in our society, financially and even in the sciences who widely promote such an approach still). Thus, and as expected, this book by the infamous Prof Dan Pauly from the University of British Columbia (UBC), Vancouver, and with the Sea Around Us project (www.seaaroundus.org) makes for fireworks. It is presenting in a remarkable but simple and convincing style the scientific evidence and arguments for the decline of the oceans (c. ⅔ of the living world) and which is fuelled by the global management and institutions of western dominance, e.g., the Food and Agriculture Organisation (FAO).

This book is done by THE GRAND MASTER of sustainable world fishery analysis. It re-tells and explains the exciting story of five of his high impact studies published with the prestigious journals of SCIENCE and NATURE (and as discussed in newspapers worldwide and even in *The Economist*). Besides a general background reading and an introduction to his life's work, naturalists might also be interested in learning about the intimate backstage stories and various rebuttals to colleagues and editors about those high impact papers. The preface of this book states all key features, and thus the subsequent text sections make for an easy but very informative read.

Like many others did before, Pauly exposes B. Lomborg once more for his nonsensical pro-industry statements, e.g., that 90 million tonnes of fish harvest would just be a small price (!?) to pay for global overfishing. An entire chapter is devoted to the widely cited 100 million tonnes myth of a sustainable global fish harvest. It gets assessed in this book and basically declared as a poorly founded fairy tale and that it is unsustainably high resulting into a global suicide. The underlying quota-setting formulas, and often developed in the 1960s and when computers, good data and modern (non-linear) statistics hardly existed, such as Beverton

& Holt, Schaefer Model, Gulland equation and Ricker Curve are discussed. Their flaws are exposed in concept and detail. The science of the Total Allowable Catch (TAC) is elaborated, and so is the Maximum Sustainable Yield (MSY) concept and that the potential yield would consist of 50% of natural mortality of the stock and its unexploited biomass. Naturalists learn in an easy to comprehend language about the various problems in the fisheries sciences, with their underlying assumptions and quota computations (referred by the author as “*dead bones get transferred from one grave to another*”). And so, throughout the book Pauly elaborates convincingly that fish harvest is limited by nature (a fact that many leading officials with The World Bank, International Monetary Fund, World Trade Organization, Asian Development Bank etc. still proudly ignore to this very day). It was Dan Pauly who showed that basically 30% of ocean algae guarantee the world's fish production. Of course, ‘*Harvesting Down the Food chain*’ makes for the major scheme of this publication, and as it relates to the infamous Ecopath & Ecoism model work, and Froese's online database ‘Fishbase’ (www.fishbase.org). Indeed, we are at ‘peak fish’ (a situation which will get worse for society now after ‘peak oil’ to fuel fisheries, and after ‘peak soil’ and ‘peak farming’) and while the human population and consumption rises. It becomes clear that no reasons exist why ‘*the rise of slime*’ will not occur (another scheme promoted by Pauly and where eventually only small critters can survive the human pressures and nets).

Naturalists will further appreciate the deep concepts of ‘embodied energy’ (Odum 1988) and of ‘Farming up the Foodweb’ (a hot issue for Canadians on both coasts. Facts are presented that aqua farming cannot really sustain our world hunger; nor does it provide many jobs. It's a sink).

Over the 193 pages of this exciting book Pauly shares with us the world view of a widely miss-managed fisheries, and specifically from the tropical view point. The

author started his career with the International Center for Living Aquatic Resources Management (ICLARM) in Manila/Philippines, e.g., showing us that single species concepts are widely failing for most of the global fisheries. Unfortunately, Pauly does not share with the audience his German training experience and how the university in Kiel treated him and his views, and why he was not employed there (or in the EU, in U.S. and with NMFS and NOAA, all of which are in need of a massive overhaul). Canada and UBC got a bargain instead and now host the leading sustainable fisheries scientist with Dan Pauly (a fact the Department of Fisheries and Oceans DFO and many government representatives are probably all but happy about).

This great book takes on the '*bureaucratic mummifications*' of our institutions, and how harmful a reductionism view really is (although the work by Pauly and his team unfortunately is still heavily vested in frequency statistics, linear hypothesis testing and parsimony even). It gets shown that fisheries science is still a relatively young discipline, and was initially set up in full support of industry; a feat that it still has not recovered from well and which is at the core of the global fisheries management crisis: an aggressive neo-colonial western economic growth culture rules, still assuming we are the gods of the universe running 'objective' science'.

And so, here we learn the many facets how in FAO and other fisheries agencies, politics trumps science, supporting industrial and monetary interests. Pauly phrases this for Canada in the following way: "...the capture by the fishing industry of the very agencies that are supposed to regulate them (well documented in Canada, Rose 2008)". The integrity of the system becomes widely compromised and resulting into situations like the "*Systematic Distortion in World Fisheries Catch Trends*".

Pauly also shows us clearly that FAO is the only agency that maintains global fisheries statistics, and thus having a monopoly and which should come with a thorough ethic. By now, it just must make everybody cynical that the FAO staff even themselves confirm that their own catch statistics are not detailed and reliable enough for many valid interpretations (or for an urgently needed conservation management). Pauly refers to such cases as a '*judo argument*' (supposed to be a defensive fact but that actually is in favour of the presented argument of a poor management and overfishing). And with that, what should one really think about FAO's own '*Code of Conduct*' (designed to provide trust in the agency)? Sounds cosy though. And how much trust is really to be placed in such an assigned world leadership (or can it just be called what it really is: overfishing terror favouring environmental destruction on a global scale fuelled by many western nations)?

Many industry lobbies argue against Pauly's facts, trying to extend their 'business as usual' scheme as long as possible, and trying to make a living from the fact that the ocean is known for its ongoing and new

taxonomic species descriptions documented every year. But this book shows the true role of taxonomic fiddling and species resolution, and where depending on the assigned taxonomic system, findings can greatly differ showing the magnitude impacts. In the FAO case this results into FAO masking relevant trends in their own statistics, presenting figures of 'no impact' (but which are in reality underestimates) and which really must be fixed to avoid the global bankruptcy (overall, that's where we are all heading at). Pauly and his colleagues also show the role of cycling fish species populations (e.g., Anchoveta, Chilean horse mackerel, Japanese and American pilchards, Alaska Pollock) for accurate global fisheries statistics, quotas and interpretations. By now it comes to no big surprise that even the FAO fisheries management zones (an essential unit for quota assessment) basically come from the 1950s and are based on no, or outdated, science.

Another bigger section of this book covers the fraudulent statistics (here: over reporting of fish harvest) submitted by China to FAO and to the world. That can be equalled to a crime because it results not only in wrong quotas, but also in wrong investments and fisheries protection measures. It easily makes for a global food and ecosystem betrayal scheme. We must thank Pauly for this (dangerous) detective work. In FAO, apparently nobody really noticed the Chinese reporting scam for decades (which becomes quickly obvious to experts just by looking at numbers and local marine realities).

To be used in a public discussion, the naturalist will finally enjoy the great examples and documentation about overfishing, e.g., for the Bay of Fundy, the Black Sea, Namibian fisheries, parts of India and China. Notably Large Skates disappeared in the Irish Sea (unfortunately the many overfishing examples of British Columbia or the nearby Puget Sound crisis are ignored in this text, so are the Alaskan ones). I am also deeply disappointed that the Canadian Department of Fisheries (DFO) and all its wrong doings are virtually unmentioned in this book, nor the internal FAO, Science and UBC University politics and lead ups, including how China, India, Russia act in FAO (needless to say that Canada is a big international player, and its role and representatives are not mentioned here even). Naturalists with an open mind and reading between the lines will find out that FAO basically presents a politically fabricated image to the global public, and which results into crimes against nature, but while some companies are happily make big bucks. It is too bad that Pauly himself does not elaborate more on this (unethical) issue and which likely is rife with sophisticated crime and corruption schemes potentially involving many key players, governments and NGOs in Canada and beyond.

But Pauly clearly shows that governmental scientists (providing for the largest number of fisheries scientists) are silent when a conflict of interest occurs. Thus, scientists in universities must provide all details

and make the case public and for a resolution instead. This burden is on them.

Pauly and colleagues suggest that for the next decades effort is to be spent to re-building fish populations embedded within functional food webs, within large “no take” marine protected areas. With that, it’s almost funny to learn that R. Gutting Jr stated “*vast ocean areas have already been set aside as no-fishing zones*” (in reality just less than 1% of the oceans are protected, and this number will not change much in the coming decade for ecologically relevant areas).

I find that despite the great facts and writing, the last chapter on ‘*Future of fisheries*’ widely underachieves. It’s almost inappropriate that Pauly does not mention in this book climate change and population growth impacts (or the related notions of religion, birth control and development aid). Further, he does not elaborate much on the fact that most large fisheries now are owned by international corporations and supported by big NGOs (e.g., as done indirectly by WWF), seen by all for all as sound investment projects, and thus with decisions widely driven by banks (and who then get bailed out on the public dime; The Iron Triangle rules). We do disagree beyond an oversight by Dan Pauly that he still does not put Economic Growth and its promotion as a major culprit of the global fisheries crises and created by the west and its institutions (a fact that the American Fisheries Society AFS has widely acknowledged; see steadystate.org for position statements on Economic Growth by AFS etc.).

This text overall is asking whether Fisheries and Ecology are a contradiction? Many other bits and pieces are also of interest and are a joy to read, e.g., the section titled “The world according to Stuart Pimm” or about finding the Fermi solution (how to get at the complete, or reasonable, estimate when only a fraction of the data are known) and the scandalous fact that “*The markets display vast arrays of seafood of uncertain origin and identity...*”. I really enjoyed the historical overview for world fisheries and for sustain-

ability (Naturalists knowledgeable about native societies though will take issue with Pauly’s views that once people get technology in their hands, resources just tend to get overused).

The overwhelming majority of fisheries is said to collapse by 2050s (this also happens to be the predicted date when summer sea ice in the Arctic is to disappear and when polar bears and other ice-related species are predicted to be largely gone). We learn that the only gains in fisheries are just brought by spatial expansion and increases of fishing depth effort. And so it remains not clear why Jane Lubchenco, fishery ecologist par excellence and now head of NOAA (arguably one of the world’s most powerful national fisheries services) still does not implement Pauly’s views (and which have been around for over two decades)? It’s the American carbon reduction failure re-visited, this time just with fish.

It should be mentioned that the text also consists of great figures and graphs, including a very readable endnote sections and three appendices. It is completed with nice (global) fisheries statistics for the naturalist to use for his/her enjoyment and public argument.

Although this books is about relatively easy and logic subjects that most people know and see daily anyway (e.g., that “...*the concept of “sustainable growth” is nonsensical*”), it must rank as one of the top 10 books on global fisheries and food provisioning (similar books about the global rice, grain, corn etc. crisis still have to be written). So yes, Island Press, Dan Pauly and his world-wide team of students, scientists and journalists did it again.

Rose A. (2008). *Who killed the Grand Banks: the untold story behind the decimation of one of the world’s greatest natural resources*. John Wiley & Sons, Mississauga, 320 pages.

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