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BOOK | FISHERIES SCIENCE

## Declining fish populations and policies that favor large operations threaten small fisheries

By Daniel Pauly | 9 April, 2018

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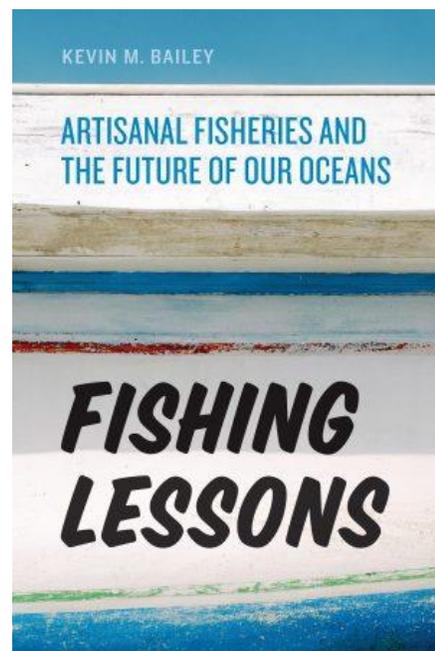
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Written by Kevin Bailey, a marine fisheries biologist, *Fishing Lessons* is a small book with an urgent plea for readers, seafood consumers, and society in general to pay more attention to the challenges faced by artisanal fisheries, where much of the fish used for human consumption is caught. Although definitions vary among countries, artisanal fishers usually rely on small, owner-operated boats of less than 12 meters and deploy in coastal waters a variety of gears to catch fish for local sale rather than for their own consumption.

Bailey faces a daunting task from the start, as the premise that artisanal fisheries contribute substantially to food security, particularly in developing countries, is difficult to prove with the most commonly used data set. The global fisheries catch statistics that the Food and Agriculture Organization (FAO) compiles, harmonizes, and disseminates do not distinguish between fisheries sectors, meaning that data from large-scale commercial operations can obscure the role played by smaller operations.

Yet artisanal and subsistence fisheries generate about one-third to one-half of the total global catch that is used for direct human consumption, as assessed by catch reconstructions for all maritime countries of the world (1). (Industrial fisheries discard 10% of their catch and send another 30% to be processed as animal feed.)



*Fishing Lessons: Artisanal Fisheries and the Future of Our Oceans*

Using case studies from Italy, Chile, eastern Canada, the west coast of the United States, and the Brazilian Amazon, Bailey introduces us to the challenges faced by artisanal fisheries. These include dwindling fish populations as large-scale industrial vessels move in and take “all the fish” and a lack of governance systems that would provide small fisheries a measure of control over the coastal resources that are accessible to them.

In the Amazon, where Bailey examines the harvesting practices surrounding the “arapaima”—a giant air-breathing fish—the threat to artisanal fisheries is not industrial fishing but industrial aquaculture. Such ventures are able to deliver preplanned and preordered quantities to international markets, thus marginalizing the value of capture fisheries.

Contrary to the author’s suggestion that arapaima are “easy prey for hunters,” they are, in fact, extremely difficult to harpoon. To do so effectively requires years of training. As such, the potential loss of traditional fisheries represents a cultural loss as well.

However, the biggest challenges for artisanal fisheries—at least in the highly developed



areas such as the United States, Canada, and Europe—are explicit government policies that seek to privatize access to what, until recently, were public goods: the fish resources of the coastal seas. These policies are structured such that governments distribute quotas—called catch shares—to fisheries based on their previous catch history, which means that owners of large fleets get the lion’s share. Such inequality, which is aggravated by the fact that the shares are tradable, gives

large-scale fisheries access to a fixed fraction of the total allowable catch (TAC), as determined by a science-based management agency, in perpetuity.

Bailey correctly points out that such policies invariably lead to the quotas or shares being concentrated in the hands of a few industrial fleet operators, with formerly independent owner-operators (mostly artisanal in nature) having few options but to work as hired crew on the quota owners’ vessels. The seeming intractability of this problem explains the melancholic tone of the book, much of which is dedicated to describing the vanishing of coastal fishing cultures.

However, Bailey also describes some positive developments, including the emergence of community-based artisanal fisheries, where members pay in advance for certain quantities of fresh fish. Such ventures enable artisanal fishers to purchase supplies for a fishing season and to later deliver high-quality fresh fish at lower prices than through conventional outlets. This provides livelihood security for the artisanal fishers

*MIKE GOLDWATER/ALAMY STOCK PHOTO*  
*Fishermen in Nungwi, Tanzania, prepare to set out to sea.*

and assurance of good-quality fresh seafood supply for the communities involved.

There are several small errors throughout the book (e.g., the main shellfish caught in Chile—the “loco”—is sold in international markets, not local ones), which would have merited better editing. However, overall, *Fishing Lessons* makes a good case for abandoning current practices and policies that marginalize artisanal fisheries and disrupt fishing jobs and communities all over the world.

#### *References*

1. D. Pauly, D. Zeller, Nat. Commun. 7, 10244 (2016)

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Link: <https://blogs.sciencemag.org/books/2018/04/09/fishing-lessons/>