A Review of “All the Fish in the Sea: Maximum Sustainable Yield and the Failure of Fisheries Management”

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BOOK REVIEW


Moses asked God, “Shall all the fish of the sea be gathered together for them, and be enough for them?” He asked this compound question in the context of God’s promise to feed the Hebrews during their 40 years in the Sinai Desert (Numbers 11:22). Moses spoke rhetorically of gathering “all the fish” and of the sufficiency of that total, but whereas Moses asked only about the sufficiency of a single harvest, Finley uses the same words “all the fish in the sea” to write about the sustainability of repeated harvests.

The history of marine fishing (and whaling) has been one of the continual increase of our power to gather fish and the reality that they are never enough. These two empirical trends have intersected repeatedly in unsustainability, that is, overfishing one regional population after another. This much we know. What we do not know is how to fish sustainably. Finley addresses the history of this question in a book that is most easily read as a play, with an introduction, body, climax, and denouement.

Chapter 1 describes the development over the 20th century of several methods of answering the question “How much fishing is enough?” Here Finley abstracts the general history of the science of fisheries (e.g., Smith 1994) but in an expanded context emphasizing the intersection of science and policy. In this chapter she introduces three key characters in her play, the United Kingdom, the United States, and Japan, as well as some of the scientists who became either agents of change or actors reading from scripts. These characters appear again and again during the body, climax, and denouement of the play.

Chapters 2–7 form the body of Finley’s play. She chronicles as subplots the conflicts among those three nations (which incidentally involve many other nations) over a complex array of fisheries. She does a good job helping the reader keep oriented, especially when the same human players keep showing up—sometimes as agents and sometimes as actors, sometimes as scientists and sometimes as politicians. These subplots involve many species in many specific geographic settings and include, for example, the rebuilding of food supplies after World War II by both Japan and the United Kingdom, access to anadromous salmon fisheries in coastal areas and on the high seas, access to the coastal baitfish needed by deepwater tuna fishermen off the coast of Central America, quasi-military battles fought out using Icelandic fishing vessels, actual military confrontations by the Peruvian navy, and exploratory fishery projects in the North Pacific Ocean and Caribbean Sea. All of these subplots are colored by the Cold War. They are all necessary to advance Finley’s play towards Rome, the location for the climax in Chapter 8.

Under encouragement from (particularly) the United States, the United Nations sponsored a “technical” meeting convened by the Food and Agriculture Organization in Rome in May 1955. Finley argues that this meeting was technical in name only, noting that “scientists helped run the meeting, but science did not.” And it is here that the roles of the various scientists described in the body of the play become evident, some as agents and some as actors, some as players and some as played. The meeting adopted a management regime with the “principle objective . . . to obtain the optimum sustainable yield . . . so as to secure a maximum supply of food.” It also adopted the idea “that the government would not interfere with private enterprise” and that “the ‘technical’ problem of deciding when regulation would be needed would be performed by neutral experts.” In June, a month later, this regime was proposed to the International Law Commission meeting in Geneva, which adopted it as a “legal concept, in addition to its role as a policy objective and as a scientific principle.” Also adopted was the principle that the management of fisheries was not necessary until after scientists had demonstrated population effects of fishing. This maximum sustainable yield (MSY) approach met the U.S. policy goals of the time as well as the goals of other countries with large, distant-water fleets, and it became the backbone of many international fisheries agreements in the post–World War II era.

Finley’s denouement in Chapter 9 traces the connections between the Rome conference and subsequent developments in global fishing. As she spells out for fishery after fishery, those developments were more akin to Moses’ question about gathering all the fishes of the sea than to her question of attaining sustainability. Her historical research has earned her the right to interpret the history she has assembled. Among other things, she concludes that MSY as it came to be implemented starting in midcentury proved to be a “disaster for fisheries science” and “created a false sense of security” for managers.

The limitations of MSY had been anticipated by many, notably biologist Peter Larkin in his premature “epitaph” (Larkin 1977). There he identifies MSY’s scientific inadequacy (in that

1 MSY, 1930s–1970s
Here lies the concept MSY.
It advocated yields too high
And didn’t spell out how to slice the pie.
We bury it with the best of wishes,
Especially on behalf of fishes.
We don’t know yet what will take its place,
But hope it’s as good for the human race.
R. I. P.
its estimates of sustainable yields were too high) and its man-
agement inadequacy (in that it did not deal with the allocation
of the yield). In introducing his epitaph, Larkin suggested that
while MSY had had some short-term value it had little long-term
value:

Like the hero of a western movie, MSY rode in off the range,
cought the villains at their work, and established order of a sort. But
it’s now time for MSY to ride off into the sunset.

But MSY refused to ride off, as seen, for example, in Carl
Safina’s (2012) review of Finley’s book. He fails to recognize
that MSY management has the two components—yield and
allocation—of which Larkin spoke. Rather, Safina dissects MSY
and concludes that the fisheries problems that Finley identifies
were due to a failure of management, not to a failure of science.
These problems were, he writes, a “near-inevitable result of a
technological explosion.” That perspective misses Finley’s point
entirely. Maximum sustainable yield was sold as a science-based
management approach that, in the face of the changes Safina
alludes to, failed to achieve sustainable fishing in almost all
settings.

Why did it fail? Finley makes two specific claims that need
to be evaluated. First, she writes,

[the existence of MSY in its multiple realms—politically, scien-
tifically, and legally—has reinforced its perception as being based in
science, rather than in policy, and has contributed to the inability of
scientists to implement the growing body of ecological knowledge
into effective action to increase biological resilience.

Second, since the 1955 meeting in Rome,

[there has been no formal attempt to bring scientists together to
decide the overall direction of fisheries science and how its objec-
tives should fit into fishery management. While current management
is heavy with language that privileges the place of science within
the management process, the science involved remains stuck in the
assumptions of 1955, that fishing creates the conditions that produce
more fish.

Finley’s identification of a missing dialogue within fisheries
science relates to something Jason Link and I suggested earlier.
Autopsies of failed fisheries, such as those on which Finley bases
her claims, could be a valuable part of improving fisheries sci-
ence (Smith and Link 2005). There have been a number of recent
historical treatments of specific fisheries in addition to Finley’s
(e.g., Bailey 2013). These and others that need to be prepared
could provide a sound basis for part of the dialogue that Finley
is suggesting. But Link and I also questioned whether fisheries
science has sufficient maturity to maintain such a dialogue. Or,
per Finley’s understanding of the 1955 Rome meeting, would
such an undertaking be merely repetition—discussions led by
scientists constrained by current political contexts rather than
discussions led by science?

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