

SAVING GLOBAL FISHERIES

Reducing Fishing Capacity to Promote Sustainability

J. Samuel Barkin and Elizabeth R. DeSombre



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Acronyms

CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CPR	common-pool resource
EEZ	exclusive economic zone
EU	European Union
FAO	United Nations Food and Agriculture Organization
FOC	flag of convenience
GDP	gross domestic product
GEF	Global Environment Facility
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
ITQ	individual transferable quota
IUU	illegal, unreported, and unregulated
MEY	maximum economic yield
MSY	maximum sustainable yield
NAFO	Northwest Atlantic Fisheries Organization
NEAFC	Northeast Atlantic Fisheries Commission
OECD	Organization for Economic Cooperation and Development
RFMO	regional fisheries management organization
SEAFO	Southeast Atlantic Fisheries Organization
TAC	total allowable catch
TURF	territorial use right for fishing

UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
WCPFC	Western and Central Pacific Fisheries Commission
WTO	World Trade Organization
WWF	World Wildlife Fund

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Introduction

The earth's oceans are overfished. Despite more than a half-century of extensive cooperation among the world's fishing nations, 80 percent of commercial fisheries are overexploited, significantly depleted, or fully exploited.¹ One particularly alarmist study predicted the complete collapse of global fisheries by 2048.² Other studies suggest that global populations of large predatory fish (those species such as tuna and swordfish that are subject to international management) are at a mere 10 percent of their preindustrial exploitation levels.³ These individual species losses contribute to larger-scale losses within the ecosystem.

Although the most dire predictions of ecosystem collapse may (or may not) be overstating the problem, it is certainly the case that current rates of fishing are in the aggregate unsustainable. Although some specific fisheries have become increasingly well managed, international efforts have failed to reduce overexploitation at a global scale. Smaller successes have not scaled up, and fish species across many parts of the ocean have declined.

This dramatic depletion of ocean ecosystems has serious consequences for people. Fish are an important source of food for a growing human population, accounting for 15 percent of the global consumption of animal protein; in some places, fish can constitute fully half of the

1. FAO, *The State of World Fisheries and Aquaculture* (Rome: FAO, 2009).

2. Boris Worm, Edward B. Barbier, Nicola Beaumont, J. Emmett Duffy, Carl Folke, Benjamin S. Halpern, Jeremy B. C. Jackson, et al., "Impacts of Biodiversity Loss on Ocean Ecosystem Services," *Science* 314 (2006): 787–790.

3. Ranson A. Myers and Boris Worm, "Rapid Worldwide Depletion of Predatory Fish Communities," *Nature* 423 (2003): 280–283.

animal protein consumed by a state's population.⁴ The authors of a major collective analysis of the effect of fisheries depletion on marine biodiversity evaluated the effects that this fishery devastation has on the ecosystem services provided (to humans) by the ocean and concluded that the loss of marine biodiversity "is increasingly impairing the ocean's capacity to provide food, maintain water quality, and recover from perturbations."⁵

Understanding the Problem

How did the global fisheries crisis become so bad? The situation has been characterized as "too many boats, chasing too few fish."⁶ The United Nations Food and Agriculture Organization (FAO) in its 1999 International Plan of Action for the Management of Fishing Capacity called on states to develop National Plans of Action to manage fishing capacity,⁷ but more than a decade later only three states have filed such plans with the FAO.⁸ By some estimates, global fishing capacity is at 250 percent of the sustainable level.⁹ There are too few fish because they have been overfished by centuries of commercial fishing efforts and subject to decades of unsuccessful management. There are too many fishers because ocean fish are unowned until they are captured, which leads to a global race to catch them before someone else does. Bigger, faster vessels can get to the fish first and capture them fastest. But once the fish are caught, these ships are left with nothing to do and are underutilized capital. So states subsidize their fishers to assist them in this endeavor, allowing bigger vessels and

4. FAO, *The State of World Fisheries and Aquaculture*, 58–65.

5. Worm et al., "Impacts of Biodiversity Loss on Ocean Ecosystem Services," 787.

6. By, among others, Joe Borg, EU Commissioner for Fisheries and Marine Affairs. See David Charter, "Too Many Boats Chasing Down Too Few Fish," *London Times*, 16 April 2009, <http://www.timesonline.co.uk/tol/travel/news/article6101802.ece>.

7. FAO, "International Plan of Action for the Management of Fishing Capacity," 1999, <http://www.fao.org/fishery/ipoa-capacity/legal-text/en>.

8. FAO, "National Plans of Action—International Plan of Action for the Management of Fishing Capacity," 2011, <http://www.fao.org/fishery/ipoa-capacity/npoa/en>; the three states are the United States, Namibia, and Indonesia.

9. WWF, *Hard Facts, Hidden Problems: A Review of Current Data on Fishing Subsidies* (Washington, DC: WWF, 2001), ii.

fancier technology that enable stocks to be depleted faster, leading the fishing race to become even more necessary.

This dynamic is exacerbated by two other causes of subsidization. Governments and development banks fund growth in fishing fleets as a form of economic development, causing growth in the number and effectiveness of vessels even though there are fewer and fewer fish for them to catch. Although the logic of using marine capture fisheries as a source of economic development ultimately fails, the lure of developing an industry to exploit a resource that seems readily available nonetheless often drives subsidies in the short term. And more broadly, fishing is often a cultural emblem and a vestige of a hunter-gatherer past. This romantic view of fishing and fishing communities is often able to generate subsidies from governments even when economic logic suggests that support for the industry is misplaced.

Existing patterns of international cooperation try to limit the number of fish that can be caught, while simultaneously encouraging—explicitly through subsidies or implicitly through policies that reward greater capitalization—increased fishing capacity. They may succeed at protecting individual species or regions, but at the cost of shifting existing capacity to new fish stocks or new areas. These solutions focus on the wrong part of the problem. Capacity is moved around rather than being effectively limited or reduced. We call this phenomenon a balloon problem because when fishing capacity is squeezed in one place, it balloons out somewhere else. If we are to save global fisheries, we need to change fundamentally the way we approach fishing at the domestic and international level. We need to see fisheries as long-term environmental resources embedded in ecosystems rather than as solutions to short-term domestic employment crises or the embodiment of noble cultural emblems. We need to stop subsidizing fishers and figure out how to get people out of the industry.

Our Proposed Solutions

In order to be effective, the international regulatory system, in which regional fisheries management organizations (RFMOs) attempt to reduce overexploitation of marine fisheries by limiting amounts that fishers can catch and the ways in which they can fish, must be reformed. It needs to be augmented by mechanisms to reduce fishing capacity and to decrease

the number of people and amount of capital employed in the industry. Some successful efforts at national fisheries management, entirely within the jurisdiction of individual countries, already undertake these measures. But there are no equivalent mechanisms at the international level. Individual countries can only be effective at managing fisheries that are wholly within their waters. International fisheries, including fish that live all or part of their lives in the high seas as well as fish that swim across national marine boundaries, cannot be protected without global mechanisms to reduce fishing capacity.

We argue for a global fisheries organization as the institutional mechanism that can best address the problem of international overcapacity in the fishing industry. This organization would have three key aims. The first would simply be to advocate for less capacity—for a view of and regulatory setting for global fisheries that focuses on sustainability. The second would be to encourage and coordinate cooperatively reducing subsidies to the fishing industry, which may account for close to half of the industry's total value. Only a comprehensive approach to reducing subsidies can avoid the problem of free riders, countries that try for a competitive advantage by subsidizing their own industries while other countries do not. The third would be to work toward a global system of fishing permits, or individual transferable quotas (ITQs), for international fisheries. By more closely aligning fishers' interests with the demands of sustainable resource management, an ITQ system would help to remove capacity from the system while at the same time improving the fishing industry's financial as well as environmental sustainability.

We need to create a new set of mechanisms for managing practice within the industry that might have a chance of success. This new set of mechanisms must augment and complement the existing pattern of microregulation in which fishers' access to specific fish stocks is restricted, but without any concomitant decrease in the global supply and capacity of fishers. The current approach has been demonstrated both theoretically and empirically to be ineffective on its own and therefore insufficient. We need, in addition, a focus on the macroscale by thinking in terms of fishing capacity as well as of managing specific stocks. This focus involves both conceptualizing the problem differently and creating forms of regulation that can reduce the global supply of fishers and work to align their incentives with long-term management of global fisheries.

The proposal we make in the second half of this book, for a global fisheries organization, is ambitious. It calls for a fundamental restructuring of global fisheries politics and of the institutions that govern international fisheries management. It is not something that can be achieved easily and may well not be something that can be achieved either under current international political conditions or in one step. Nor do we propose here the details of institutional design or funding for a global fisheries organization or the specific mechanics of an agreement to reduce subsidies or create an international ITQ system, in part because such a proposal would at this point be premature. Rather, our goal here is to make the case that a macroapproach to international fisheries management is necessary and to suggest one way in which we might think about macroscale regulation. Our goal, in other words, is to promote a conversation, not a specific conclusion;¹⁰ to provide some foundations rather than a complete architecture.

We are not proposing an all-or-nothing solution. Although the ideas for macroregulation and for a global fisheries organization would work best in concert, any progress made in cooperative efforts to reduce capacity would help improve international fisheries management. Getting the conversation going in a way that changes discourse and thinking to focus on capacity would be a good start and would constitute a partial success. Any cooperative efforts to limit, reduce, and ultimately eliminate subsidies, even in the absence of a global fisheries organization, would constitute a more significant success. Both conversation and cooperation would provide effective building blocks to construct discussions for an international ITQ or ITQ-like mechanism.

We must also stress that we are not suggesting that our approach should either replace existing microlevel fisheries regulation or displace alternative ideas for improving global fisheries management. Our proposal for international ITQs builds on regulation by RFMOs and needs effective microlevel management to work. And subsidy reduction alone

10. We are promoting this conversation rather than starting it. Previous discussions of macroscale regulation of international fisheries include G. T. Crothers and Lindie Nelson, "High Seas Fisheries Governance: A Framework for the Future?" *Marine Resource Economics* 21 (2007): 341–353; Robin Allen, James Joseph, and Dale Squires, *Conservation and Management of Transnational Tuna Fisheries* (Malden, MA: Wiley-Blackwell, 2010); and James Joseph, *Past Developments and Future Options for Managing Tuna Fishing Capacity, with Special Emphasis on Tuna Purse-Seine Fleets* (Rome: FAO, 2005).

will not necessarily help any given overexploited species. A system for capacity management can be usefully augmented by mechanisms such as marine protected areas, which allow stocks safe spaces in which to breed and maintain reserves of genetic and ecological diversity. Finally, social movements such as the sustainable-seafood movement can provide invaluable political momentum on which to build efforts to address overcapacity in global fisheries.

Most important, our goal is to make clear that doing a better job of what the current regulatory system is doing is not only insufficient, but can be counterproductive. Regional management of fisheries when fishing vessels are able to operate globally simply encourages vessels to chase available fish. Without decreasing capacity, international regulation of fish, even if undertaken globally, cannot succeed. If we are to save global fisheries, we need to change the way fisheries management is done.

Book Overview

Part I of the book diagnoses the problems that collectively underpin the current overcapacity in and underprotection of global fisheries. We begin in chapter 2 with an overview of current patterns of international regulation designed to manage global fisheries and the difficulties faced by international regulators. These difficulties include the implications of the common-pool resource (CPR) structure of global fisheries—the mismatch between individual and collective (and short-run and long-run) incentives that are at the core of many international environmental problems. These problems are compounded by unusually prevalent problems of scientific uncertainty and major hurdles to the monitoring and enforcement of rules. International fisheries management is dominated by RFMOs, which focus on the management of either region-specific or species-specific individual fisheries. These organizations rely on scientific advice about sustainable catch levels, create rules about things such as quotas and fishing methods, and attempt to monitor and enforce fishing behavior and rules. But even when this pattern of management works at the microscale by reducing the pressure on specific species, it fails at the macroscale issue of reducing the pressure on global fisheries resources.

Chapter 3 evaluates this broader point about the ineffectiveness of microregulation by examining the political economy of fisheries regulation.

A discussion of the economic implications of CPRs and the challenges faced by environmental economics in dealing with CPR problems sets the broad outline of the problem. The global nature of ocean fish resources magnifies these problems by embedding them in a multilevel interaction in which states face both domestic constituencies and international obligations; the domestic politics of fisheries often leaves fishers with barriers to exit from the industry. We ultimately argue that the type of micro-regulation practiced by RFMOs and states creates what we call a balloon problem. International regulation focuses on reducing fishing effort with respect to specific species, but this sort of regulation creates a balloon effect: if fishing effort is squeezed in one place, but fishing capacity remains constant, fishers, rather than exiting the industry, will look for somewhere else to fish. Reducing fishing pressure on particular fish stocks, in other words, has the effect of transferring the pressure to other stocks rather than reducing overall global levels of overfishing.

Why have so many national fisheries regulators not responded to clear evidence of overfishing by acting to reduce fishing capacity, either individually or collectively? Chapter 4 argues that a key reason for this lapse is that most fisheries regulators focus on fisheries as an industry to be protected and developed rather than on fish as a resource to be conserved. In short, there is a widespread problem of industry capture of both national and international fisheries regulators. Fisheries regulators are often as concerned about supporting and mollifying their constituents as they are about long-term management of natural resources. Fishers have a political voice, but fish do not. At the domestic level, subsidies are the primary effect of this political capture. At the international level, regulations within RFMOs are much laxer than scientific advice recommends. In both cases, fishing pressure increases and stocks decline.

Chapter 5 discusses an additional reason that it has been so difficult for rational actors to seek restraint in fishing: the culture of fishing and of fishing regulation. Parts of this issue are structural. Collective-action problems are exacerbated by the CPR nature of fisheries, and domestic fishing interests are able to garner much more political power than their size or economic importance would suggest. Other parts of the problem are cultural. Fishing is often culturally embedded as a pursuit that must be supported for social and symbolic reasons, despite the economic and environmental reasons to limit it. The discourse of fisheries management

also contributes to the problem, with academic approaches to analysis of fisheries problems focusing too much on the natural science of fish and not enough on the social science of fishers.

These political, economic, and cultural factors contribute to regulation for the good of the fishing industry rather than for the common good; one major effect of this approach is the subsidization of all aspects of the fishing industry, addressed in chapter 6. Many governments actively subsidize their fishing industries, creating capacity far in excess of what the market would support on its own, let alone what the resource base can support. This subsidy is sometimes overt, through direct subsidies for vessels or fishing activities. It is often indirect, though. Governments fund the modernization of fleets, which inevitably increases capacity even if it reduces the number of vessels at sea. They subsidize their fleets by buying access to foreign waters or providing other services to the industry that are paid for through general taxation. And they keep fishing communities afloat well beyond the time when they are no longer commercially viable, through social welfare models designed to protect existing industries rather than develop new ones. These subsidies create a vicious cycle in which those who receive them are able to increase their political voice for continuing subsidies and for pursuing short-term fishing policies that deplete fisheries and thus lead to demands for increase subsidization. Decreasing subsidies will be extremely difficult, but it is central to the ability to decrease capacity and thus manage fisheries for the long term.

One problematic form of subsidization is the use of fisheries as a tool for economic development, discussed in chapter 7. It is understandable that governments and aid organizations might look to fishing expansion when seeking development. Expanding fishing capacity yields employment benefits immediately, whereas the costs of excess capacity are felt over a longer period. We argue, however, that pursuing fishing as development policy is misguided. Unlike for most other industries, the fixed limit on the size of fish stocks means that fisheries have a built-in limit to growth. As soon as a fishing industry is successfully developed, therefore, it must immediately be reined in, or it will begin to overexploit its resource. This dynamic makes fisheries development unsuitable as an engine of continuing economic growth. Arguments that developing countries should be allowed the same opportunities to develop as industrialized countries miss the broader point that using fisheries as development

policy is not only problematic for the health of global fish stocks, but also counterproductive to the development opportunities it is supposed to create.

Part II of the book develops our proposals for saving global fisheries by addressing these problems. Chapter 8 argues that we need to embed the system of regional fisheries management within an overarching global institution. Looking at fisheries management as a global issue entails embedding the current system of RFMOs and national regulation within a global rather than regional multilateral framework. The new global fisheries organization we propose would need to be oriented to the environment rather than to industry. Among its other tasks (such as information gathering and enforcement), a new institution would help coordinate international binding efforts to reduce subsidies and manage capacity.

We then make an extended argument for the advantages of creating property rights as the way for this global organization to functionally manage capacity and regulate catch levels globally. Chapter 9 examines the arguments for privatization as one type of solution to managing CPR problems and how such an approach might function usefully in a fisheries context. Several decades of experience with domestic-level ITQ systems for managing fisheries suggest the advantages of such programs for aligning fishers' interests with long-term fishery conservation. This chapter evaluates design options for such programs and their successes (and difficulties) at the domestic level.

Chapter 10 then discusses how a global organization might realistically be created. Scaling ITQ systems up to the international level presents a number of technical and political challenges. This chapter discusses parameters for how this organization might be designed. Such a system would allow RFMO regulation to work effectively by deflating the balloon problem. Quotas on some species would not create undue pressure elsewhere in the oceans because overall capacity would be limited accordingly. The new system would also decrease pressure for subsidization (which in turn would decrease pressure for unsustainable catch levels) and would create opportunities for fishers to exit the system in an economically beneficial way.

We are under no illusion that the approaches we propose will be easy, but they are necessary. Chapter 11 recapitulates the key elements in this book and points out both the potential of and some of the limits to our

arguments. Current forms of international management of fisheries are unsustainable both environmentally and economically; they harm the human populations they are supposed to help and fail to create long-term economic development or sustenance. If we hope to save global fisheries, we need to address the pathologies of the current domestic and international approaches to ocean fisheries and undertake new efforts to protect ecosystems and communities. This book is our proposal for how these goals might be undertaken.

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