1998

From Extended Jurisdiction to Privatization: International Law, Biology, and Economics in the Marine Fisheries Debates, 1937-1976

Harry N. Scheiber

Christopher J. Carr

Recommended Citation

Link to publisher version (DOI)
https://doi.org/10.15779/Z38F349

This Article is brought to you for free and open access by the Law Journals and Related Materials at Berkeley Law Scholarship Repository. It has been accepted for inclusion in Berkeley Journal of International Law by an authorized administrator of Berkeley Law Scholarship Repository. For more information, please contact jcera@law.berkeley.edu.
From Extended Jurisdiction to Privatization: International Law, Biology, and Economics in the Marine Fisheries Debates, 1937-1976

By

Harry N. Scheiber and Christopher J. Carr

"I appreciate very highly the advice which the scientists give me. However, I do not appreciate at all when economists try to think as biologists, nor when biologists are thinking as economists. What I wish to get is the facts, the real information: no philosophy."


1. Scheiber is the Stefan Riesenfeld Professor of Law and History, Boalt Hall School of Law, University of California, Berkeley. Carr received his J.D. from Boalt Hall in 1994 and is an associate at Beveridge & Diamond, LLP. He is also a Ph.D candidate in the Jurisprudence and Social Policy Program at the University of California, Berkeley. This article is dedicated to Professor Stefan A. Riesenfeld on the occasion of his 90th birthday. Funding for this research was provided by a grant from the United States Department of Commerce (NOAA) and the State of California through the California Sea Grant College Program, to the Ocean Law and Policy Program, Center for the Study of Law and Society, University of California, Berkeley. Agencies of the United States Government may reprint or distribute without restriction.

The authors wish to acknowledge research contributions in the project's early phase by Noah Baum, J.D., graduate student in the Jurisprudence and Social Policy Program, University of California, Berkeley, during the period of his service as a Sea Grant Trainee on the project; and to thank Professors James Wilen (UC Davis), Bonnie McCay (Rutgers University), Gísli Pálsson (University of Iceland), and other participants in the conference on ITQ policies at which a shorter (and preliminary) version of the present paper was first presented. The conference paper was published in a proceedings volume sponsored by the Nordic Council, see note 73, and portions are reprinted with copyright permission from the Council.

We are also indebted to members of the Ocean Governance Study Group, especially Professors Biliana Cicin-Sain and Robert Knecht (University of Delaware), Richard Hildreth (University of Oregon), Jon Van Dyke and Casey Jarmon (University of Hawaii), David D. Caron (UC Berkeley), and, above all, William T. Burke (University of Washington) and Lee Anderson (University of Delaware) for provocative and insightful discussions of fishery policies at the annual OSGG meetings.

We are also indebted to Ms. Kitty Simonds, Executive Director, Western Pacific Regional Fisheries Management Council, Honolulu, HI, for giving us access to the Council's extensive library collection; and to the late Prof. Kenneth Pitzer, College of Chemistry, UC Berkeley, for his advice on sources and his enthusiastic encouragement of the project.
Almost sixty years ago, in his great treatise Protection of Coastal Fisheries Under International Law, Stefan A. Riesenfeld sounded an eloquent warning about law and the future of environmental resources—a warning that is as apposite to our concerns today as it was prescient when it was first set forth. "The protection and conservation of natural resources," Professor Riesenfeld declared, is one of the burning problems of our age. The ruinous system of competitive exploitation has availed itself of the tremendous advances made in technique and science during the past century, to strip large portions of the globe of the benefits which a benign nature has bestowed upon them. Land and sea alike are exposed to this danger of depletion.

It is an oft-noted and much-admired hallmark of Riesenfeld's research that he brings to his analyses of major doctrinal issues in the law a highly informed concern with the underlying material realities that give rise to the doctrinal

2. STEFAN A. RIESENFELD, PROTECTION OF COASTAL FISHERIES UNDER INTERNATIONAL LAW (Carnegie Endowment for International Peace, Division of International Law, Monograph Series, No. 5) (1942) (hereinafter COASTAL FISHERIES). The study, which actually was completed in 1939, derived from a commission in 1936 to Prof. Joseph Walter Bingham of the Stanford law faculty by the Institute of Pacific Relations, on the subject of the legal status of the salmon and other fisheries of the Northeast Pacific. (Id. at ix.) The Institute's interest in the subject was inspired by the sudden threat of incursions into the rich Bristol Bay salmon grounds, previously fished only by American and Canadian small vessels, by "exploratory" expeditions of Japanese factory ships; and by the response of Alaska's delegate in Congress, supported by the Alaskan and also the Seattle-based fishing industries and their lawyers, who sought to force the Roosevelt Administration to reevaluate its posture with respect to the strict three-mile rule for offshore territorial waters jurisdiction, hoping that the State Department would assert a different doctrine for extended jurisdiction that would protect the salmon grounds from such competition by foreign-flag new entrants. This, then, was the genesis of the study. See Harry N. Scheiber, Origins of the Abstention Doctrine in Ocean Law: Japanese-U.S. Relations and the Pacific Fisheries, 1937-1958, 16 ECOLOGY L.Q. 23, 29-33 (1989). Riesenfeld's role in the project quickly extended well beyond that of research associate, as he put together a vast amount of historical data on territorial waters doctrine and practice. Bingham ended by publishing a pamphlet-length study that made the case for extended jurisdiction beyond three miles for the protection of anadromous species. See JOSEPH W. BINGHAM, REPORT ON THE INTERNATIONAL LAW OF PACIFIC COASTAL FISHERIES (1939).

Meanwhile Bingham and the Institute encouraged Riesenfeld to continue his work on an independent basis, an endeavor that culminated in the writing of his magisterial treatise, which as noted was completed in 1939. (COASTAL FISHERIES, supra at ix.) The controversial nature of his conclusions, which took a strong "realist" position and rejected the three-mile doctrine, evoked concern on the part of various directors of the Institute, particularly those based in the Atlantic Coast states and in eastern universities, who regarded Riesenfeld's position as dangerously antagonistic to Japan at a sensitive moment in diplomacy as well as being unacceptable as a matter of correct international law. Riesenfeld stoutly resisted efforts at requiring revisions or softening of his views, and ultimately the book, originally intended for publication by the Institute, was instead referred to the Carnegie Endowment by senior scholars who believed on its merits it must be brought to publication. Undoubtedly because of Japan's Pearl Harbor attack and America's entry into the war, the objections based on concern about Japan's sensitivities were cast aside or discredited, making publication no longer so controversial a matter. (This brief account of the work's history is based upon research in the archival records for 1937-42 of the Institute of Pacific Relations, Special Collections, University of Washington Library, Seattle.)

Hence, while its author was entering the U.S. Navy to serve as an enlisted man in combat areas, the treatise appeared in print and was quickly recognized as one of the landmark works of the twentieth century in the literature of international law.

3. COASTAL FISHERIES, supra note 2, at 1.
problems in question.\textsuperscript{4} This realism, so characteristic of his scholarship, is strikingly evident in the treatise on coastal fisheries law. In this work, Riesenfeld established himself prominently among the first modern scholars in international law to take into account systematically, in the evaluation of legal precepts, the effects of the great modern innovations in fishery technology. Those innovations had begun with the advent of steam-driven trawling in the mid-nineteenth century, had advanced further with factory-ship technology, and then had been intensified by the relentless rise in the scale of fishing operations and increased capital investment in the world’s fishing fleets. By the 1930s, the “distant-water” fleets that fished off other nation’s shores beyond the three-mile limits had begun to adopt large-scale methods and the new technologies; and these changes had produced a dramatic rise in the volume of the harvest recorded by the deepwater fishing fleets globally during the interwar period.\textsuperscript{5} By 1939, several important commercial fishery stocks in various ocean regions had already been severely harmed by the intensity of fishing operations. To Riesenfeld it appeared that uncontrolled harvests on the high seas undoubtedly would imperil other stocks, crucially important to coastal communities and regional or national economies, running them down to the point of practical depletion.\textsuperscript{6}

This threat of depletion had been recognized by the scientific community as early as the turn of the century, when the International Council for the Exploration of the Seas was founded—the first important international body established for study of fishery stocks, exploration of ocean areas, and development of techniques for conservation and rational management.\textsuperscript{7} In the 1930s the United States, Canada, and the northern European nations led in developing some effective programs of limitation upon fishing in their own coastal waters within the three-mile zone and therefore susceptible to individual national management programs.\textsuperscript{8} There were also important bilateral initiatives, most notably in the case of U.S.-Canadian cooperation in management of the halibut fishery off the

\textsuperscript{4} This characteristic of the work was noted, e.g., by Professors Richard Buxbaum and Fred Abbott in tributes delivered at the celebration of Professor Riesenfeld’s 90th birthday at the Berkeley Journal of International Law symposium at Boalt Hall School of Law, April 5-9, 1998.

\textsuperscript{5} See generally David Cushing, Fisheries Resources of the Sea and Their Management (1975).

\textsuperscript{6} COASTAL FISHERIES, supra note 2, at 1.

\textsuperscript{7} ICES was founded in Copenhagen in 1902. For the historical background, see Harry N. Scheiber, Modern U.S. Pacific Oceanography and the Legacy of British and Northern European Science, in Man and the Maritime Environment, 36-75 (Stephen Fisher ed.,1994); Albert W. Koers, International Regulation of Marine Fisheries: A Study of Regional Fisheries Organizations 77-79 (1973); Susan Schlee, The Edge of an Unfamiliar World: A History of Oceanography 206-43 (1973) (summary of ICES fisheries research programs before World War II).

\textsuperscript{8} The State of California was a leader with respect to coastal fisheries research and management efforts, though even excellent science proved insufficient to save one of the world’s most intensive fisheries, the sardine fishery based in Monterey. See generally Arthur F. McEvoy, The Fisherman’s Problem: Ecology and Law in the California Fisheries, 1850-1980 (1986); Arthur F. McEvoy and Harry N. Scheiber, Scientists, Entrepreneurs, and the Policy Process: A Study of the Post-1945 California Sardine Depletion, 14 J. Econ. Hist. 393 (1986).
Pacific Northwest and British Columbia coasts. The threat became palpable and immediate for one of the richest and most profitable fishing grounds in the world when the Japanese factory ships mined the salmon waters of the Northwest Pacific and then began to turn their attention to the Bristol Bay stocks that had long been exploited only by Canadian and American vessels and by the indigenous peoples of the coastal communities. And it was this immediate threat that had inspired the project from which Riesenfeld's treatise emerged.

This situation in the Pacific salmon fisheries was an ominous portent of what was developing, Riesenfeld believed, as a dangerous global pattern. The application of the new technology and larger scale of distant-water fishing, by fleets operating hundreds or even thousands of miles from their home ports, off the coasts of other nation-states, threatened, Riesenfeld cautioned, "not only severe competition, but the very substantial danger of depletion."

In the absence of comprehensive programs of international cooperation in high-seas fishery management, the only solution at hand, Riesenfeld contended, was a realistic adjustment of doctrine. He did not regard as valid in all circumstances and for all time the three-mile offshore limit of sovereignty, a rule treated as a virtually sacred canon by American and British scholars and contended for as established customary law by interested nations. His treatise documented the many historic instances when alternative doctrines had been advanced and acted upon by the coastal nations. He presented historical evidence demonstrating that even the modern nations subscribing to the three-mile doctrine (including the United States and the United Kingdom) had departed from championing that rule when special circumstances, such as enforcement against smuggling, warranted such a departure.

"... [R]easons of policy," Riesenfeld concluded, "are the only factors which dictate the position of a nation on this question, and ... the reasons depend upon the particular interests of the nation concerned." Thus he urged the abandonment of the "mechanical three-

---

9. Reference is to the halibut management program undertaken under terms of U.S.-Canadian conventions of 1923, 1930 and 1937. Koers, supra note 7, at 80. Under their terms, an International Fisheries Commission (known the Halibut Commission) imposed strict limits on fishing effort, following which a nearly-defunct fishery was over the years restored to a high level of productivity. Id. at 80-82; Dewitt Gilbert, Fish for Tomorrow 43-63 (1988). See infra note 42 and accompanying text.

10. Scheiber, supra note 2, at 29-33.

11. See supra note 2.

12. Coastal Fisheries, supra note 2, at 1. At about the same time, the British scientist and fishery management expert F. S. Russell was publicizing widely the dilemma of conservationist management that had emerged in the North Atlantic. F. S. Russell, The Overfishing Problem (1942). The British government was by the late 1930s taking diplomatic initiatives to encourage multilateral cooperation for restraint of aggregate commercial fishing effort in international waters (an effort also designed to head off initiatives being discussed by Norway and Iceland to bar British trawlers from their coastal waters beyond the three-mile line by extending jurisdiction out past the traditionally recognized territorial sea). The outbreak of the war in 1939 aborted these efforts.

13. The doctrine had already been under reconsideration in studies sponsored by the League of Nations and looking toward possible codification of new rules. The effort had come to nothing, however, and was effectively suspended by the late 1930s when Riesenfeld was writing. See Coastal Fisheries, supra note 2, at 120-124.

14. See generally, Coastal Fisheries, supra note 2.

15. Id. at 281.
mile rule," with all its pretensions as settled law. He proposed instead the principle that, when it was indisputably evident that coastal fishing grounds, owing to their primordial importance for coastal states, and owing to the very imminent danger of their complete destruction resulting from the employment of piratical techniques by distant nations, can be adequately preserved only by the control and exclusive exploitation by the coastal state, international law must and does recognize the right to such control and exploitation by the coastal state, unless the vested, long standing rights of other nations are thereby infringed.17

When Riesenfeld's treatise appeared in print, the United States had already entered the Second World War. Therefore the issues raised as a matter of theory by Riesenfeld and others—and raised as a matter of active U.S. policy by the response to the advent of Japanese fishing in Bristol Bay in 1937-38—were largely set aside in public and scholarly debate. Within diplomatic circles, however, the issue of whether the three-mile rule must yield to a different doctrine remained a matter of active consideration. This was true especially in Washington, since President Franklin D. Roosevelt had personally announced an interest in the idea, embodied in Riesenfeld's work and in the interest-based views that had been advanced by the Alaska fishing industry, that American jurisdiction over offshore waters—warranting exclusion of outsiders from fishing when protection of the stocks required it—ought to be formulated as an objective of U.S. policy.18 And in the immediate aftermath of World War II, in a direct line from the Bristol Bay confrontation and an internal governmental policy debate of ocean law in Washington, a debate in which arguments documented in Riesenfeld's treatise were of central importance, the U.S. Government did in fact move to argue for extended offshore jurisdiction over fisheries activities in what appeared, at least superficially, to be an abandonment of the established three-mile doctrine.

The so-called "Truman Proclamation on High-Seas Fisheries," issued by the President in September 1945, reflected this change in U.S. policy.19 As Roosevelt's successor in the White House, acting on the policy initiative that Roosevelt himself had set in motion, Truman declared in this executive proclamation that, (1) when high-seas fisheries had been exploited historically by the United States, and (2) when additional entrants into that fishery might endanger survival of the fishery stocks, the United States reserved the right to declare a high-seas "conservation zone" within which all fishing (by any nation involved) would be "subject to the regulation and control of the United States."20

16. Id. at 282.
17. Id. at 282 (emphasis added).
19. Proclamation No. 2668, 3 C.F.R. 68 (1943-48). This proclamation was issued on the same day as the famous sister proclamation declaring U.S. sovereignty over the resources of the seabed (offshore oil) as far as the limits of the continental shelf—the document that established the basis for modern continental shelf doctrine as it was subsequently developed in the UN Law of the Sea Convention. See generally HOLliCK, supra note 18.
20. Scheiber, supra note 2, at 34.
With the Truman Proclamation, the United States set in motion the modern diplomacy of ocean enclosures by the coastal states. The proclamation's apparently unilateralist jurisdictional claims of authority in the high seas, and its broad terms more generally, were soon abandoned by the U.S. Government itself. However, the proclamation inspired a group of Latin American nations to respond almost immediately with extended offshore jurisdictional claims of their own, some as far out to sea as 200 miles. Following this came the well-known succession of historic events, which we do not propose to rehearse here, leading the United States to bring the law of territorial seas and offshore jurisdiction to the United Nations for systematic reconsideration. It is sufficient in the context of our concerns to note that one of the core changes in international law promulgated in the UN Convention on the Law of the Sea (UNCLOS) three decades later, would be the validation of extended jurisdiction to 200 miles for control by coastal states of the offshore fisheries, but with specification of a complementary obligation to manage the resources on the basis of full utilization and sustainability. The acceptance in UNCLOS of extended jurisdiction, together with the emphasis on sustainability, serves as a vivid indication of how, forty years after publication, Riesenfeld's proposals had worked their way into accepted law—not only in the literal sense of validating jurisdiction beyond three miles, but also in the spirit in which Riesenfeld had originally advanced them. This was the spirit of realism about the palpable threat of resource depletion and its implications for law, linked with a stated concern for advancing the ultimate objective of multilateralism and international cooperation to sustain the viability of ocean resources as a heritage for future generations.

II. THE THREE DIMENSIONS OF THE FISHERIES MANAGEMENT DEBATE SINCE 1945

The movement for extended offshore jurisdiction of coastal states, supported intellectually over six decades' time by Riesenfeld's pioneering treatise, has been one of three separate but intertwined strands in the post-World War II debate on how to manage and conserve the living marine resources of our planet. The other two strands in the debate have been developed not by legal scholars, but rather, on the one hand, by scientists who work in the fields of basic marine biology and of applied marine resources management; and, on the other hand, by resource economists interested in assigning private property rights in the fisheries, to supplant the commons regime that had long been traditional. These three strands of the debate on fisheries management—legal, biological, and economic—supported management-policy approaches that were sometimes opposed to one another and at other times represented a synthesis or fusion of ideas. The economists entered into the field of discussion about fisheries much later than the biologists, but by the 1970s prominent figures in economic theory were engaged in a continuing discourse that has subsequently intersected with both scientific and legal discourse on both domestic

21. See generally Hollick, supra note 18.
22. The economists entered into the field of discussion about fisheries much later than the biologists, but by the 1970s prominent figures in economic theory were engaged in a continuing discourse that has subsequently intersected with both scientific and legal discourse on both domestic
One common element in the history of these variously complementary or competitive approaches to fishery management has been the notion that an essential step in protecting endangered fisheries is to limit entry into the fishery in some manner. Riesenfeld's view, expressed in his 1942 treatise, was straightforward. Extended jurisdiction should be declared by the coastal state, unilaterally if necessary, when conditions warranted, by drawing jurisdictional lines out to sea that were consistent with the realities of the fishery stocks and their habitats in light of the exploitative regimes to which they were subjected; and foreign vessels could be excluded if conditions warranted it. This concept implied a critical role for the biologists, since defining the conditions under which such a legal innovation was warranted would require application of scientific techniques and knowledge. Thus Riesenfeld's approach raised at the outset the question, When is a fishery population stock or species endangered, and so in need of intervention by the state to protect it from depletion? Biologists took up this challenge willingly, since they had long been struggling with the methodological issues involved in determining when stocks were being depleted to the point where significant regulation was indicated. Their contribution to the debate, as Riesenfeld and other international lawyers framed it, would be to propose a reliance upon the concept of maximum sustainable yield (MSY), or upon variants of that concept such as optimal sustainable yield. The MSY concept, in turn, was then incorporated by the international lawyers and diplomats in both bilateral treaties and in UNCLOS debates, as a measure on which the definition of a condition warranting extended jurisdiction would turn.

By the early 1950s, however, a group of influential economists had launched a serious challenge to this approach. They insisted, instead, that the core criterion in the design of fishery management regimes should be efficiency in allocation of human resources and capital, rather than the condition of the fish stocks. From the efforts of these economists, a well-articulated campaign for the actual privatization of rights to fish in coastal and ocean waters had emerged by the 1970s. The most important expression of this view is the concept of the Individual Transferable Quota (ITQ). The ITQ idea involves the creation of property rights in the form of issuing licenses to fish for a specified quantity of the species in question. The licenses are either of long duration or permanent, and are transferable by sale through private contracts in a market created by the state but given a life of its own after its initial establishment by government.

To analyze historically this third strand in the debate, as it was generated by the economists—and to recount how the economists' ideas became part of the...
larger discourse over fisheries policy, involving biologists and international lawyers—is the main purpose of what follows in this Article.

III.
THE PRIVATIZATION IDEA

This privatization idea—especially with regard to ITQs—has spread rapidly in fisheries management, both in terms of its acceptance as a legitimate alternative to free and unlimited access to fishing waters, or to top-down command management regimes, and in terms of its actual adoption in recent years by many countries as a policy for management of marine fisheries exploitation and conservation. The popularity of the new approach stems, no doubt, from the more general rise of free-market ideology throughout the world, especially since the Reagan years in America and the Thatcher regime in Britain. But the popularity of this idea also stems from the recognition that a great tragedy is befalling the ocean commons. This tragedy is reflected in the continued rise through the 1980s of intensity and volume of ocean fishing, with a consequent threat to the survival of many commercially important stocks throughout the globe. We have suffered the actual depletion and collapse of such historic and once-rich fisheries as the Northwest Atlantic cod fishery. The 200-mile zones for exclusive coastal state jurisdiction under UNCLOS have failed to stem the trend toward depletion—an institutional innovation proven ineffective. And, perhaps most important of all, there has been a failure of scientific management regimes of great variety, designed by biologists and applied by politically controlled administrative agencies, to halt or reverse the pattern of collapse and depletion.26 A map of the world’s ocean fishery stocks today illustrates a shocking number of areas in which stocks are seriously endangered or actually depleted; and according to UN and national governments’ data, upwards of 70 or 75 per cent of major commercial fisheries in many of the world’s leading marine fishing nations are either closed or in a critical state.27 Against this background, there is an almost desperate quest by policy experts and governments to at least experiment with new schemes that seem to offer promise where established scientific approaches have failed.28 Little wonder, therefore, that the privatization idea expressed in the ITQ concept has spread rapidly in popularity and actual application. It is now being applied in robust form in several coun-

26. This is apart, too, from the failure of some of the leading multilateral organizations managing international fisheries to work effectively enough on their own to avoid depletion, or to withstand the impact of uncontrolled interlopers who penetrate the managed ocean areas and harvest stocks. See generally, WILLIAM T. BURKE, THE NEW INTERNATIONAL LAW OF FISHERIES (1994); essays in MANAGEMENT OF WORLD FISHERIES: IMPLICATIONS OF EXTENDED COASTAL STATE JURISDICTION (Edward L. Miles ed., 1989).


tries for management of stocks in their 200-mile zones, and besides it has become important in discussions of international management approaches.29

Numerous scholarly writings and policy papers of recent years have provided a variety of perspectives on the major issues still before us, both regarding the legitimacy of privatization and regarding the empirical consequences of implementation that is now going forward in different parts of the world. It is extremely rare to find in the citations in this growing literature, however, references to works published before 1970; generally speaking, their analyses proceed with very little consideration, sometimes none at all, of the historical background of the modern-day ITQ concept and its practical implementation.30

In light of the intensified interest today in ITQs—and in the larger question of how and whether marine fishery rights should be privatized—it seems timely to consider the “pre-history” of the current-day debate, and to inquire how the discourses taking place today, both on theory and on policy in fisheries management, have been shaped by earlier policy experience and analysis. In the present political and intellectual atmosphere of the industrialized countries, free-market ideas have gained new prominence across the board, dominating debate in resource policy generally and not only in discussion of what should be done about the marine fisheries.31 It is thus more important than ever to consider the historical foundations of ideas that might be advanced thoughtfully as solutions to resource problems but that are all too readily taken up as panaceas when they are pushed into prominence in the political arena.

The inquiry we undertake in this Article is concerned in part with the historical sociology of knowledge, since we examine the interplay of ideas and policy process involving scientists, politicians, fishery agency professional managers, as well as economists (and still more recently, anthropologists). Our inquiry also seeks, however, to examine basic empirical questions of historical continuity and discontinuity. We are concerned to analyze the degree to which the objectives and implementing techniques associated with privatization schemes are truly innovative; the degree to which, instead, the newer ideas should be seen as conceived in counterpoint with traditional concepts; and the extent to which the leading ideas in today’s debates actually are simply variants of objectives and techniques of limited entry that have been at the center of fishery management debate in the past.

29. See generally, Symposium, Property Rights and Fisheries Management, 28 Ocean & Coastal Mgmt. 3 (1995); Rights Based Fishing (P. A. Neher et al., eds. 1989).
30. For example, the citations in the excellent policy and social science papers in the symposium publication of Social Implications of a Quota System in Fisheries contain virtually no references to any writings published prior to 1970 on the theme of privatization or ITQs. Symposium, 593 Social Implications of Quota Systems in Fisheries (TemaNord series, 1997).
IV.
AN APPROACH TO ITQ HISTORY: THE SEVERAL DIMENSIONS OF THE FISHERIES MANAGEMENT DEBATE, 1945 TO THE PRESENT

It is customary in the academic literature to trace the origins of the basic "property rights" idea in fisheries to the pioneering writings in the mid-1950s of Gordon (1954) and Scott (1955), while giving credit also to the somewhat later contributions of a few other economists and biologists. It is also common to find in academic writings, when any attention is paid at all to historical background, that the history of the ITQ idea is written as a linear account of ideas that originated mainly with the papers on common property by Gordon and Scott, were developed over two decades' time by theorists, and then culminated in the fully mature ITQ idea in the 1990s.32

We propose that it provides a more useful perspective to regard the ITQ concept as the product of a much larger academic and policy debate, over many decades' time, on the question of how laws should be designed to conserve the fishery stocks and at the same time to serve defined social and economic objectives (most notably preventing the collapse of commercial marine fishing enterprises or the destruction through economic disaster of established coastal fishing communities). Instead of isolating the linear intellectual history of the ITQ concept as a self-contained story, we therefore treat the emergent ITQ idea here as a variant—albeit a distinctive one, because of privatization of the fish stocks—of the more comprehensive concept (the larger genus, as it were), of "limited entry."

The limited entry concept came into prominence in the post-World War II era as one instrument among many—the other implementing instruments included limitation of gear, vessel size, and limits for time on the water, etc.—that were designed to reduce fishing effort in the exploitation of specific stocks.33 To fully understand the limited entry idea in all its variants, including the now-current ITQ concept, we need to take account of two other important features of the historic fishery-management debates of the last half-century.

The first of these features is the dualistic nature of the limited entry debate: it went forward on two distinct fronts—one having to do with the relations among nations in international fishing waters, the other having its focus on purely domestic management of fishing in territorial seas (the waters controlled entirely by the coastal nations off their shores, at one time to three miles but gradually extended to the present-day 200-mile economic zones).


33. The ITQ concept is also concerned, as we have said, with the core idea of placing a limit upon effort; but it reaches to the reform of the basic structure of the fishing industry by excluding those who are not awarded a property right in the resource (or a franchise or license, as a form of vested property, for access to the resource).
The second major feature of the history is the counterpoint of tension that has existed from nearly the earliest days of the privatization debate to the current moment. This tension involves, on the one side, those who define the objective of fisheries management as the maximization of the biomass of fishery stocks under a regime of exploitation—that is, those who advocate the goal of Maximum Sustainable Yield (MSY), with its focus on the resource itself. On the other side are those who instead insist that considerations of "economic efficiency" (or maximization) need to be introduced as criteria for designing exploitation regimes, even when it requires acceptance of prescribed fishing at levels that will vary from MSY; their focus is upon optimality or maximization conceived in terms of the economy and not only the fishery.

Analysis of the relationship among these different factors in the development of the modern debate makes it a complex history indeed, whether viewed as intellectual history, historical sociology, or history of policy dynamics. As a way of reducing somewhat the difficulties of this complexity, we frame the present analysis mainly in the history of debate of theory and policy in the United States and Canada. This will not, we think, bear the risks of excessively narrow perspective, since we do not discern anything in the record we analyze here that would be seriously out of line with the intellectual and policy history in other countries on which there are data for comparison. In any event, we hope that our analysis will provide a basis for some systematic international comparisons.

We acknowledge the transit of ideas across the Atlantic from Northern Europe that profoundly influenced the emergence of new scientific ideas in fisheries management in America in the 1940s and 1950s. For the most part, however, the new economic writings that brought free-market ideology to the debate over fisheries management came from theorists who were based in Canadian and U.S. academic and research institutions. In this regard too, a largely North American focus seems justified.

34. See e.g., Scheiber, supra note 7 (on the transit and influence of Northern European and British scientific ideas, and their impact on fishery oceanography). It is important to note that the Danish economist Jens Warming, who had written in 1938 on maximizing economies in fisheries, and two other Europeans—MacGegor and Gerhardsen—were cited in one of the earliest theoretical studies, which also discussed the implications of the famous work by Michael Graham, The Fish Gate (1943) in which Graham developed his argument that unregulated fisheries could not be profitable. See Scott, FAO (1962), supra note 32, at 26. See also infra text at note 39.

There has recently been a new wave of influence coming across the Atlantic largely from Northern Europe, although also from Canada (as exemplified in the writings and activist policy involvement of Professor Milton Freeman and others), that has brought anthropologists into the debate with a perspective that focuses upon the impact of fishery management schemes—including ITQs and perhaps even more prominently the International Whaling Commission moratorium policy—upon traditional and indigenous coastal communities. See generally Anne Brydon, Whale-sitting: Spaciality in Icelandic Nationalism, in, Images of Contemporary Iceland: Everyday Lives and Global Contexts (Gísli Pálsso & E. P. Durrenberger eds., 1996); Oran Young et al., Subsistence, Sustainability, and Sea Mammals: Reconstructing the International Whaling Regime, 23 Ocean and Coastal Mgmt. 117-27 (1994); Harry N. Scheiber, Historical Memory, Cultural Claims, and Environmental Ethics in the Jurisprudence of Whaling Regulation, 38 Ocean and Coastal Mgmt. 5 (1998).
A surprising piece of evidence encountered in our research shows that as early as 1942—a decade before Scott, Christie, and Crutchfield, et al., entered the lists—the ITQ concept was set forth lucidly in a debate involving two U.S. Government fishery biologist-managers, William C. Herrington and Robert Nesbit.\(^{35}\) The debate was occasioned by an action taken by the State of Maryland government that limited entry to one of the state’s major fisheries, thereby introducing the property-rights approach to access that lies at the center of today’s ITQ programs and theories. The state, in this case, placed a freeze on new issuances of fishermen’s licenses, and the overall plan had many of the core attributes of today’s ITQ plans—including eligibility based upon average individual harvests in previous years—and also recognized explicitly the problem of “in-and-out” operators whose occasional participation had intensified fishing effort in periods of abundance with adverse effects on market prices.\(^{36}\) Nesbit made an extended argument for the plan, with an analysis of the concept of “economic rent,” and suggested the inherent superiority of a regime that vested property rights as part of a limited-entry scheme. He condemned the practice, common in fisheries management everywhere at the time, of mandating technological or operating inefficiencies through controls on gear; and he advocated an attack upon the “evils of over-competition” by organizing a program for retirement of vessels “in excess of those necessary for orderly and efficient harvest of maximum [sic] annual crops.”\(^{37}\)

William Herrington offered an elaborate critique of both Nesbit’s views and of the Maryland plan, predicting myriad difficulties in implementation that would involve subjective judgments by government managers. According to Herrington, setting the level of income deemed appropriate, when determining numbers of licenses and allocations of harvest rights, together with the possibility that changes in fish prices might require increases or reductions in the number of licenses in future years, and the continuing necessity for placing limits on gear and/or season, all posed problems that would lead to “a confusion of issues and an inefficient management program.”\(^{38}\) Herrington’s analysis is of interest to us as historians above all because it clarified the paradox that in the name of “free market” principles the allocation of licenses would actually introduce a “managed social economy” with wide discretion in the hands of administrators; and that such a regime was by no means intrinsically immune from the potential for damaging the fishery stocks and their sustainability.\(^{39}\) Although he himself was a government scientist and regime manager for Northwest Atlantic

---

37. *Id.* at 37.
38. *Id.* at 20.
39. *Id.* at 21.
fisheries, Herrington’s views of administrative discretion were couched in dour
terms:

If you decide to manage the fishery with the objective of obtaining for the fisher-
man the income to which he is entitled, you are entering the whole broad field of
management economy, which has occupied the attention of the Technocrats, De-
partment of Agriculture planners, the silver block [sic], NRA [National Recovery
Administration—a New Deal agency that imposed a complex regulatory scheme
on industry], Townsend Planners, and numerous others. 40

Instead of focusing on protection of the income to which the fisherman is “enti-
tled” (whatever that might be), Herrington argued, management should adhere to
proven techniques for conserving stocks—as the Halibut Commission had suc-
cessfully applied in saving a once-nearly-collapsed fishery on the Pacific Coast
of Canada and the Northwestern United States. 41

It is especially important to note that Herrington relied heavily upon the
example of the Halibut Commission. A decade earlier this commission had
closed down the halibut fishery almost entirely in order to permit stocks to re-
cover to levels at which fishing might resume—thus restoring, as nearly all fish-
ery specialists would have argued, the profitability of the industry there. In this
regard, Herrington was expressing one of the canons of the faith held by fishery
biologists and managers of his time: they regarded the Halibut Commission’s
techniques and example as models for emulation. 42 Indeed, when economists
such as James Crutchfield in later years attacked the record of the Halibut Com-
misson, they assaulted a totem held nearly sacred by an entire generation of
fishery biologists—a confrontation to which we return later in this Article.

The Herrington-Nesbit debate was a genetic sport, as it were—far ahead of
its time in the way the issues were framed and analyzed. However, the policy
decision that had occasioned the debate (Maryland’s 1941 law), together with
the question whether its privatization principles should be adopted by govern-
ment agencies managing fisheries elsewhere, proved to be of only transitory
significance. For with the return of peace in 1945 and the apparent recovery of
fishing levels in the Maryland waters, the plan was abandoned and the state

40. Id. at 55.
41. Id.
42. For the reverence with which the regulatory history under the Halibut Commission was
commonly viewed, see, e.g., F. Hewerd Bell, Economic Effects of Regulation of the Pacific Halibut
Fishery, in B I O L O G I C A L A N D E C O N O M I C ASPECTS OF F I S H E R Y M A N A G E M E N T (Crutchfield ed., 1959);
DEWRIT GILBERT, FISH FOR TOMORROW 53-60 (1988); Harry N. Scheiber, Pacific Ocean Resources,
ECOLOGY L. Q. 383 (1986). William Thompson, director of research for the commission, was not
modest in claiming that as the result of the halibut investigations following conclusion of the treaty
in 1930, “The laws governing the population of fish were discovered . . . . It was shown that the
abundance of the stock of fish could be controlled by varying the intensity of the fishery” in a
manner that assured that “reduction of the amount of fishing does not decrease the yield.” William
Thompson, The Hand of Industry in Conservation Research, PACIFIC FISHERMAN, March 1947, at
24. See also Scheiber, Pacific Ocean Resources, supra, at 392 n. 24 (discussing critique of the
Halibut Commission “myth” launched by the fishery biologist Martin Burkenroad in 1951, in which
Burkenroad argued that the cycle of natural events in the ecosystem, not the agency’s regulatory
regime, offered a plausible explanation of fluctuations in abundance) (citing Martin Burkenroad,
(1951)).
returned to more traditional methods of regulation. We shall encounter William C. Herrington again in this Article, for in the postwar Occupation administration in Japan he played a key role in designing fishery law reforms that in 1949 provided for common property ownership in coastal fisheries—and still later, he was a key figure in advocacy of the United States position as a diplomatic officer in Law of the Sea negotiations.

As a matter of intellectual history, however, the debate was of very great significance because of its influence on H. Scott Gordon's thinking. When, twelve years later, Gordon published his first major paper setting forth a theory of property rights in fisheries, he acknowledged the "especially remarkable efforts" of a few earlier writers—most notably Robert Nesbit in his paper in the Maryland policy debate—for originality in their pioneering analyses (albeit not sufficiently formal analyses, in Gordon's view) on the economic implications of common property and alternative approaches to fisheries management.

The vesting of property rights in a fishery was not entirely unknown elsewhere in the industrialized nations prior to the advancement of theoretical proposals by the economists in the mid-1950s. Most notable, perhaps, was the adoption of the 1949 New Fisheries Law in Japan under the Occupation—a law which, in one of history's ironies, was written and adopted under the tutelage of Herrington, who was then serving as head of the fisheries division of General Douglas MacArthur's Occupation command. Japan's law established a system of licensing vessels for the major ocean fisheries and provided for property rights in certain coastal waters, with provisions for transfer or purchase of license rights. South Africa also enacted measures in 1953 that provided for limits upon entry, which had been demanded by the established fishing interests to insure satisfactory individual incomes. Thus the notion of limiting entry was not altogether absent from the range of known options in the 1940s and early 1950s, as an instrument for relieving harvest pressure on fisheries and for the related objective of sustaining fishing operators' incomes.

43. FAO (1962), supra note 32, at 234-235 (quoting McHugh).
44. See infra text at note 43; see generally Hollick, supra note 18 (on Herrington's activities as a diplomat).
45. Gordon, supra note 32, at 124. Gordon also acknowledged the suggestive earlier writings of A G. Huntsman and Harden F. Taylor, among others. Id at 124 n.3, 138 n.29.
46. The 1949 law also provided the basis for retirement of vessels from fisheries regarded as depleted or endangered (from the standpoint of exceeding MSY levels) or their transfer to fisheries not yet deemed threatened with over-exploitation (i.e., at below MSY levels). It also provided for buyouts of vessels regarded as inefficient because of size or gear. Y. Asada, License Limitation Regulations: The Japanese System, 30 J. Fisheries Research Board of Canada 12, 2085-2095 (1973).
VI.
THE CAMPAIGN TO ENSHRINE MAXIMUM SUSTAINABLE YIELD, IN
RELATION TO THE ADVENT OF ECOSYSTEM RESEARCH,
1946 TO 1958

Prior to World War II, most advanced fishery management regimes employed the concept of Catch per Unit of Effort (CPUE) to calculate maximum yield. (Maximum yield is the point in fishing at which yields would be reversed and begin to drop if further fishing effort, in a given season, were to be permitted.) The entire calculation was based upon the experience of the harvest, with account taken also of the age (recruitment year) and size of fish taken. Thus the accuracy of reported statistics of the catch was highly important to the calculation. The actual management measures were drawn from a limited repertoire that included limits on gear, limits on time on the water per vessel, seasonal restrictions on the entire fleet, and establishment of a total allowable catch (known today as TAC, but in the 1930s typically called simply the overall "quota").

Immediately after the war, however, American fishery biologists on the West Coast found themselves suddenly equipped with new vessels and state-of-the-art gear contributed from Navy inventories as a byproduct of the wartime fleet’s demobilization. These scientists thus were able to initiate a major program of research based upon management theories developed during 1900-1930 in Northern Europe and Great Britain. These theories conceived of fisheries ecosystem management as superior to a CPUE approach—with systematic evaluation of the condition of stocks to be based not only on harvest experience but also upon the synoptic collection and analysis of data on the entire ecosystem (chemistry, atmosphere conditions, currents and upwellings, etc.) relating to the fishery environment, as well as biological data relating to population groupings, migration patterns, inter-species competition, nutriments, and other characteristics of the biomass and its dynamics.

The plenitude of ships, gear, and operational funding that suddenly became available to these Pacific projects gave strong impetus to the idea that the full complexities of ecosystem study could be successfully analyzed in the scientific determination of Maximum Sustainable Yield (MSY) for fisheries. Among the scientists who led in research in this mode were Milner Schaefer, John Marr, Oscar Sette, Wilbert McLeod Chapman, E. H. Ahlstrom, and Lionel Walford. Their immediate achievement was to reconceptualize the basic approach to research in fishery oceanography and management, placing the focus on ecologi-

48. See, inter alia, McHugh, supra note 35, at 38-41. The CPUE approach was the first stage of the more comprehensive history of fisheries management science as it concentrated on the population dynamics of stocks; the second phase was the shift to maximum sustainable yield (MSY), which itself was subject to the criticism from an early day that it gave insufficient attention to ecological factors (discussed in the following paragraph, infra).

cal interactions and systems. In this respect they were far ahead of the more general movement in natural resources management toward an ecological perspective and holistic research designs such as became fashionable 15 to 20 years later in other areas of resource management. Despite the massive collection of ecosystem data on the California Current region, on the California sardine collapse of the 1940s and 1950s, and on the newly explored tuna grounds of the Eastern Tropical Pacific, the actual management of stocks continued to rely heavily upon harvest data well into the 1950s; but as the result of the Pacific scientists' studies, biologists and management officials did explicitly—and indeed forcefully—recognize the ideal of a management process that would take account of the complex uncertainties of environmental relationships in the marine ecosystems that were inhabited by the target species.

Thus a new orthodoxy emerged, linking MSY as the ideal goal of fishery management with the ecosystem concept. The devotion of the postwar community of fishery scientists to these models of management—neither of which gave any systematic attention to calculating socioeconomic efficiencies—meant that within a few years the biologist-managers would come into direct conflict with the economists who would advocate new maximization and optimization theories and who would reject MSY as an unacceptable canon for management. The community of fishery biologists maintained their dedication to the MSY ideal for reasons that were founded both in science and, we think, in politics. As an intellectual matter, they believed that the MSY question could be pursued in a truly scientific and objective mode of inquiry. The biologists regarded economic-maximization objectives, however, as epistemologically distinct, involving subjective values that should not be permitted to undermine the ethic of conservation—or, put in their terms, the ethic of sustained yield—with the risk that these values carried of damaging marine fish stocks. From the biologists' standpoint, fishery regulation in the early 20th century had been often the product of narrowly conceived interest-group pressures by the fishermen and canning companies. They regarded MSY, by contrast, as being "a logical, scientific foundation for a type of management which focused on the fish, not on the fishermen . . . . As a theoretical objective, MSY avoided the myriad problems now labeled 'social, political, and economic.'"

There was also a pragmatic motive, however, in the scientists' devotion to the MSY canon. They championed MSY as they did because of the political reality that the MSY concept had proven attractive to the fishing industry itself—enough so that on the Pacific Coast the U.S. and Canadian scientists had obtained consistent support from the industry both for the financing of research

50. See generally Scheiber, supra note 24.
51. See generally Scheiber, supra note 24; Scheiber, supra note 42, at 421-4, 464-9.
52. Scheiber, supra note 42; see also Amy L. Toro, Transformations in Fisheries Management: A Study of William C. Herrington (paper presented at the Fifth International Congress in Oceanographic History, San Diego, 1993) (on file with authors).
programs and for the operation of management regimes. Thus any attack on the MSY ideal (let alone an assault that came from a discipline outside the physical and biological sciences) would pose a serious threat to the highly fragile political coalition that championed both scientific fisheries research and the regulation of commercial and recreational fishing. Not least important, the MSY ideal could be portrayed to the lay public as an unqualified good: "[M]aximizing the food resource was a worthy public goal." Wilbert M. Chapman, one of the leaders in the postwar movement for enthronement of the MSY ideal—and a prime mover in the formation of new management regimes that were based on the goal of sustainable commercial fisheries—in later years emphasized the public appeal of MSY in defending the concept against criticism by economists. The fishing industry, he wrote, accepted the validity of the MSY concept; moreover, the general public "understands the thesis and is not only in favor of it but demands its application," and it was a concept which had proven its political usefulness in the record of regulatory measures already mobilized under the MSY banner. In sum, this was "a standard to which all can rally."

During the 1950s, the scientists' commitment to the MSY concept was also reinforced by events in the arena of international fisheries management, as the sustainable yield idea became a lodestone concept in the emerging oceans law and diplomacy of the period. The first step in elevating MSY to such prominence came with the negotiation of the 1952 North Pacific Fisheries Convention, by which Japan, the United States, and Canada brought Northeast Pacific salmon, halibut, and herring under a regime of limited entry. The instrumentality for limitation of entry was the concept of "abstention." According to this concept, one signatory state would abstain from entering into fishing grounds already under exploitation by either or both of the others—that is, if a scientific advisory commission found a named target species was already being fished at MSY or higher levels. The scientific community regarded it as a major achievement that the treaty provided for periodic study of stocks of each designated species, to be conducted by scientific boards whose charge was to reassess the MSY calculations in light of changing catch and ecosystem data. Lending an extraordinary element of continuity to the story of MSY debate was the fact that William Herrington—who, as we have seen, had contributed a decade earlier to the first important public discussion in the United States of economic efficiency versus sustained yield management—was at that time in State Department service and led the American delegation in the negotiation of the North Pacific Convention in Tokyo.

Meanwhile, the U.S. Government was taking other diplomatic initiatives that further enhanced the prominence of the MSY concept. First came a series of agreements beginning in 1949, by which the United States and various Latin

54. See Scheiber, supra note 42; see also infra part II.
55. Nielsen, supra note 53.
57. Scheiber, supra note 2, at 83-90. Chapman and Herrington were instrumental in the design of this treaty.
58. See Herrington's memoir of his negotiation of this convention, in ELQ (1986).
American governments established the Inter-American Tropical Tuna Commission investigations, a research enterprise that mobilized the ecosystem approach to provide data on MSY that would serve as a basis eventually for international regulation of the tuna catch in the Eastern Tropical Pacific. The discussions between the United States and Costa Rica in 1949 offer a telling glimpse of how regulation was then conceived. Citing the Halibut Commission regime as the proper model, U.S. negotiator Wilbert Chapman (who, like Herrington, was a leading champion of MSY), explained to the Costa Rican delegation that once the MSY figure was calculated, there would be no national quotas set. Rather, a total allowable catch would be based on MSY, so that "Whoever gets there first, can fish just as many fish as they can catch" within the terms of the allowable total.  

Obviously, such a regime favored the most technologically advanced, best capitalized fishing fleet when more than one nation was involved competitively in the fishery. It was thus a move by which the State Department linked MSY-based management with the political/regulatory idea, favorable to the United States, of open competition for the catch within the framework of international control—that is to say, a “fishery Olympics” or “derby” approach, with every boat authorized to fish on the grounds seeking to take the largest possible fraction of the total allowable catch. Similarly, under Chapman’s leadership while he served in the State Department, the United States spearheaded the negotiation of the Northwest Atlantic Fisheries Convention. Again, joint research was provided for, with calculation of MSY of targeted stocks as the objective.

The successful incorporation into various international fisheries of the MSY standard—now understood in contextual terms that reflected the new ecosystem research approach—gave the concept prominence when the United Nations moved in the 1950s to codify rules of international law regarding fisheries. Thus MSY, and its variant Optimum Sustainable Yield, along with the companion principle of “full utilization,” became the intellectual cornerstone of the 1958 UN Convention that defined the law for conservation and management of the living marine resources of the high seas. In later years, when the United Nations instituted talks for a more comprehensive Law of the Sea Convention, the U.S. Government would continue to press for MSY and full utilization as the desirable management standard. Moreover, North American fishery scientists—and doubtless many of their colleagues in the fisheries science community in other countries—believed that the MSY ideal would prove as useful in at-

---


61. See HOLLICK, supra note 18; see also WILLIAM T. BURKE, THE NEW INTERNATIONAL LAW OF FISHERIES: UNCLOS 1982 AND BEYOND (1994). Although U.S. diplomats and policy officers made strong public statements about the need for full utilization of resources in order to meet global nutritional needs, the U.S. position undoubtedly was strongly motivated by a concern to assure continued access to fishery resources (especially to tuna stocks) that were of interest to U.S. distant-water fleets and not fully utilized by coastal states. Id.
tracting support from the fisheries industries and the lay public internationally as it has been in the American domestic arena.\textsuperscript{62}

Thus, American fisheries biologists had many reasons to adhere to their commitment to MSY. The success of the MSY standard as a rallying point to build domestic support for management regimes, the high hopes for increasing importance of the standard in relation to the objectives of American fisheries diplomacy globally, and the continued faith that scientists had in the objectivity of research geared to MSY calculations merged to harden the scientists' resistance to the challenges to sustainability ideas that lay ahead in a confrontation with economists.

VII.
The Common Property Idea

The challenge to MSY came soon enough. In the earliest forays of the economists into the fisheries management debate in the early 1950s, the major theoretical statements of common property concepts were linked to an assault upon the biologists' preoccupation with the sustainability concept. Thus in 1954, when Scott Gordon introduced his formal model of the common property dilemma, he deplored the way in which scientists seemed to give exclusive attention to the quantity of fish caught and the survival levels of stocks. Gordon observed that the MSY approach, "often hailed in the biological literature as the 'new theory' or the 'modern formulation' of the fisheries problem," was seriously flawed. He argued that, by focusing attention solely on the catch, the scientists' approach "neglects entirely the inputs of other factors of production which are used in fishing and must be accounted for as costs." Gordon contended that fishermen were not exogenous elements, as the biologists seemed to treat them. Rather, he insisted, the behavior of the fishermen, in a framework of economic incentives and disincentives shaped by both the market and government, must be taken into account and "made into an integrated element of a general and systematic 'economic' theory."\textsuperscript{63}

This was the platform from which Gordon launched his famous argument that economic rent could not be captured so long as ocean fisheries remained a common property resource. If the resource was to be everyone's property, then it could be no one's: "Common-property natural resources are free goods for the individual and scarce goods for society." Until management regimes became concerned with the issue of the "socially optimum manner of exploitation," fishery stocks would in the long run be threatened with depletion as inputs rose and

\textsuperscript{62.} Wilbert Chapman was a leading exponent of this optimistic view. \textit{See, e.g.}, Chapman, \textit{Effect of the 1960 Law of the Sea Conference}, 13 \textit{PROC. GULF & CARIBBEAN FISHERIES INSTITUTE} 38 (1961). The full utilization view was inconsistent with the interests of less developed nations with coastal resources that the industrial powers' distant water fleets sought to exploit—a fact that would color the U.N. debates for many years to come, but the full moral and political implications of which possibly were not well recognized in American policy circles at the time. Such, at least, is the view of two former diplomats in confidential interviews given to the senior author.

\textsuperscript{63.} Gordon, \textit{supra} note 32, at 128.
incomes fell.\textsuperscript{64} Gordon thus gave early expression to the skeptical view of MSY that would pervade the economic literature in the four decades to follow. Neither then nor later would economists generally demonstrate much patience with a formulation that in their view amounted to the enunciation of a "socially meaningless" objective.\textsuperscript{65}

Adding insult to injury, Gordon attacked the record of the Halibut Commission, so revered by the fishery scientists. Far from being the "great achievement in modern fisheries management" that Herrington, Chapman, and nearly all other leading champions of MSY asserted it was, the commission in Gordon's view had achieved only the appearance of success. In fact, he argued, there was "no clear-cut evidence that halibut fishermen were made relatively more prosperous by the control measures." Any evidence of prosperity was illusory since their potential rents had been "dissipated" by the failure to limit fishing effort by vesting of property rights in the resource or (alternatively) by its ownership in the government but licensing vessels on the basis of limited access.\textsuperscript{66}

Gordon's signal contribution was to give new prominence to the concept of limited entry, with or without a vesting of property rights in the private sector, as an instrument for reducing fishing effort. For many participants in the fishery debate, limited entry did not require a debunking of MSY altogether. In fact, as Larkin has argued, for some it appeared to be "the best way of reconciling the MSY and economic religions [sic]."\textsuperscript{67} The MSY standard could be invoked to establish the allowable catch, and then limited entry could be adopted as the instrumentality for its achievement.

It is not our concern here to give detailed attention to the substance of the Gordon-Scott property rights theories, nor to the subsequent revisions that were proposed by Christy and others; for these topics are covered very adequately in the literature.\textsuperscript{68} Instead we will now focus on limited entry, and upon how privatization ideas would later emerge as a dominant variant of the limited entry theory—a variant which, as many participants in the policy debate would contend, offered a compelling new basis for innovations of management. The privatization idea would be especially attractive because it was (at least superficially) consistent with the resurgent free-market economic ideas that would rapidly gain ascendancy in the 1980s among the intellectual and policy elites in the industrially advanced fishing nations.\textsuperscript{69}

\textsuperscript{64} Id. at 135, 136.
\textsuperscript{65} FRANCIS T. CHRISTY, JR. & ANTHONY SCOTT, THE COMMONWEALTH IN OCEAN FISHERIES 225 (1965).
\textsuperscript{66} Gordon, supra note 32, at 132-33.
\textsuperscript{67} P.A. Larkin, Transactions of the American Fisheries Society: An Epitaph for the Concept of Maximum Sustained Yield, 106 TRANS. AM. FISH. SOC. 1, 7 (1977).
\textsuperscript{68} See, e.g., Pearse, supra note 25; JAMES A. CRUTCHFIELD AND GIULIO PONTECORVO, THE PACIFIC SALMON FISHERIES (1969); Nielsen, supra note 53.
\textsuperscript{69} The authors are indebted on this point to Professor Gísli Palsson's introductory remarks made at the symposium Social Implications of the Quota Systems in Fisheries, held at the Vestman Islands, Iceland, in May 1996. See Social Implications of the Quota Systems in Fisheries, supra note 30.
In what follows in this Article, we consider the principal landmarks in the debates of limited entry after the assault on MSY first gained momentum in the 1950s.70

VII.
UN TECHNICAL CONFERENCE OF 1955, AND THE 1958 UN CONVENTION

In 1955 the United Nations Food and Agriculture Organization convened a technical conference on conservation of the living resources of the sea. This conference served as the preliminary scientific meeting, preceding the first UN conference on Law of the Sea. Among the scientists who participated in the conference there was a complete consensus that achieving Maximum Sustainable Yield was the proper objective of any new regime. Indeed, fisheries economics was hardly considered: Milner Schaefer—a leading theorist in fishery population dynamics who was then director of the Inter-American Tropical Tuna Commission investigations—was the only contributor who made specific reference to recent economic studies, when he referred to Gordon’s assertion that maximization of economic yield was a sounder goal for management than MSY.71 Although Schaefer acknowledged that entry limitations—as opposed to the standard gear and seasonal restrictions—offered the possibility of enlarging net economic yields, he gave no systematic attention to developing this idea. Schaefer’s was a lone voice, as no one else at the conference addressed the issue.

A year later, however, FAO did become interested enough in the emerging economic critique that it sponsored a conference at Rome which produced the symposium volume The Economics of Fishing. The views of Gordon and Scott, both of whom were participants, dominated the conference. There was also discussion from others of how limitation of access through imposing taxes or issuing licenses could assure capture of rents from the resource.72 Gordon cited a quaint example: the informal limited entry scheme then in operation in two small Atlantic Coast lobster fisheries in the United States, under which local harvesters had established their own entry limits and policed themselves extralegally. Enforcement was a blunt instrument under this scheme. The awkward problem of new entrants was handled simply: “Outsiders were excluded by being shot at”!73

70. There is some overlap, of course, in the chronological boundaries of the topics we have selected as being of landmark status.
73. Professor Wilson, principal adviser to the 1996 scheme for lobster regulation in Maine, admitted in floor discussion of a lecture at the Vestman Islands, Iceland Conference, that the use of such private coercion—not necessarily involving gunfire, however—could be counted upon in enforcement of the plan. Notes of Harry N. Scheiber, University of California, Berkeley School of
In any event, Gordon was afforded on this occasion the chance to reiterate his mantra—that for the economists, "unlike the biologists, . . . the objective was not to benefit the fish, or the biologists, or the fishermen, but the economy." And although he was not himself present, the economist Jens Warming of Denmark had a manifest influence on the discussion, his arguments for imposing entry limits on fisheries so as to raise marginal productivity being introduced by several speakers.  

Curiously enough, when the FAO two years later convened another symposium of experts on the economics of fisheries, scant attention was given to the management techniques—limited entry or any other—that might be considered in the quest for maximizing economic yields at the societal level. A fuller airing of the limited entry option remained to be accomplished in other forums.

IX.
THE LIMITED ENTRY IDEA ASCENDANT: CONFERENCES AT THE UNIVERSITY OF WASHINGTON, 1957 AND 1959

It was entirely appropriate that the faculty of the University of Washington at Seattle should have stepped forward in 1957 to provide the first such major forum for fuller analysis of limited entry options. Graduates of this university’s school of fisheries had long been at the leading edge of the new fisheries oceanography on the West Coast. William F. Thompson—the doyen of traditional fishery management theory and architect of the famed Halibut Commission regulations—had trained a steady parade of doctoral and master’s degree students who had done notable research on many of the West Coast commercial fisheries. Moreover, a number of his junior research associates in a major industry-supported salmon research program that he directed at the university had assumed leadership in the MSY-oriented studies and the recent campaigns for new-style regulation. All of these younger men maintained a respectful relationship with Thompson, despite the latter’s outspoken skepticism about the ecosystem approach. Thompson believed things ought to be kept simple, with CPUE calculations and physical measurements from fishery harvests as the best evidence to be used in establishing allocations.

The Washington campus provided a congenial environment for serious intellectual exchange on new ideas for management, not only because of the scientific work done at the University’s school of fisheries but also because of the .

Law, taken at the Symposium Social Implications of Quota Systems in Fisheries, supra note 30. See also, James A. Acheson and Robert S. Steneck, The Role of Management in the Renewal of [the] Maine Lobster Industry, in Social Implications of Quota Systems in Fisheries 9, 18-19 (Gísli Pálsson & Petursdottir eds., 1997) (quoting a Maine lobster fisherman as saying that a poacher or other violator of the rules "will not only have trouble with the wardens, he will have problems with his neighbors as well"). There is an oral tradition that in Galicia, Spain, some of the small boats operating in waters time out of mind “belonging” to specific families or coastal communities carry arms; interlopers appear at the risk of their lives. Senior author’s interview with fishery managers in Galicia, 1993.

74. FAO Roundtable, supra note 72, at 132.
76. Scheiber, supra note 42, at 391.
receptiveness of Thompson and his faculty colleagues to close working relationships with the industry.\textsuperscript{77} If the scientists at the university provided an interested audience for economists' ideas, a young member of the university's economics faculty, James Crutchfield, became the catalyst for an emerging debate. Crutchfield had written a dissertation on labor organization and the fisheries, awakening his interest in the larger problem of how to maximize incomes on the boats and in the coastal communities. He had participated in the discussion at the FAO conference on the economics of fisheries, staking out his ground as a hard-line exponent of market values. In organizing the university's 1957 conference, Crutchfield joined forces with Richard Van Cleve—a Thompson Ph.D., formerly ranking scientist-manager of the California fisheries agency, now dean of the School of Fisheries in Seattle. Scott and Crutchfield were the only economists who made presentations. Even with the biologists and managers dominating the consideration of limited entry, however, it was the economists' ideas that seemed to drive the discussions.

Another meeting followed at Seattle, in 1959, with the theme "Biological and Economic Aspects of Fisheries Management." The papers and commentaries were published in a volume edited by Crutchfield, and it provides a wide range of insights into how participants in the debate from several disciplines struggled to work out the relative merits and the possible functional interrelationships of the MSY concept, limited entry techniques, and the implications of common property theory.

Crutchfield sounded the tone for the economists at the 1959 meeting when, with Thompson in the room, he contended that the Halibut Commission had failed to realize the full potential economic gains from the fishery because the regulatory system was operating too exclusively "under biological terms of reference." Crutchfield then called for limited entry as the alternative to the commission's traditional approach, which had involved the setting of an aggregate quota, then limiting time on the water for the fishermen.\textsuperscript{78} A highly revealing exchange followed—no doubt dramatic for the participants at the time, given Thompson's eminence in Pacific Coast fishery circles—in which Thompson gave voice to what would become the leitmotif of biologists who had reservations about limited entry and privatization. Obviously defensive about his commission's achievements, Thompson reminded the economists that when halibut management had begun eighteen years earlier the fishery had been manifestly in danger of complete collapse—and fishermen's incomes were entirely at jeopardy for the long run. He admitted that the management regime had perhaps been lacking in fine-tuning sufficient to produce the economists' coveted goal of maximum net economic yield. Still, Thompson insisted, there were other values than purely economic values to be considered. He declared that the commis-


sion's efforts had replaced a cycle of "ruthless changes in the economic condition" of fishermen with a stability that (even if inefficient in macro terms) was favored by the fishermen themselves—as they now preferred their "softer life." In effect, Thompson offered the example of a "sustainable anachronism" (as a later commentator would characterize a fishery such as the halibut industry's) as a perfectly acceptable alternative, in terms of social values, to a ruthlessly efficient fishery.

The 1959 meeting also focused on the advantages of limited entry in the Alaska salmon fisheries, which had been proposed to address a notorious problem of overcapitalization there. Lacking authority to limit the number of vessels working the fishery, the federal agency in charge had imposed mandatory inefficiencies, in the traditional manner, seeking to achieve MSY levels by imposing limits on boat size and gear (even banning the use of engines). W. C. Arnold, who was one of the leaders in the industry, proposed augmenting the agency's authority to empower it to impose entry limits, or at least to experiment with other ways of displacing open-access management.

An indication that the economists were obtaining a sympathetic hearing from some of the scientists was given when the prominent biologist and federal official Dayton Alverson joined in the condemnation of gear regulations that were designed to produce fewer fish per unit of effort on the water. The fisheries business, Alverson averred, was "perhaps unique in being the only industry on record [that] hired an inefficiency expert." In the years following, the economists' calls for limited entry schemes would invariably be accompanied by attacks on "irrational" gear and vessel regulation. This was surely the weakest point in the armor of both the more traditional and the newer-ecosystem-oriented fishery biologists and managers.

X.
THE EARLY 1960s: PROPOSALS FOR LIMITED ENTRY IN DOMESTIC FISHERIES

The early 1960s produced some further refinements in the economic theory of the fishery, but perhaps more important to the advancement of the debate was a series of specific programs for actual implementation of limited entry in domestic fisheries. We shall treat them briefly, seriatim.

A. The Sinclair Report, 1960

First in time was a study by Sol Sinclair, an economist at the University of Manitoba who in 1957 had been commissioned to study the salmon and halibut fisheries with a view toward "evolving management practices and regulations

79. Id. at 84.
81. Crutchfield, supra note 78, at 97.
82. Id. at 147.
that will permit [efficient] economic operations within these two fisheries."}\(^{83}\)

Published in 1960, the Sinclair Report recommended a licensing scheme to limit entry in British Columbia’s halibut and salmon grounds. Sinclair rejected the alternatives of privatization of ownership (which Sinclair found unacceptable on legal, political, and social grounds) and taxation of fishermen or the catch (because even if acceptable politically, Sinclair argued, taxes would simply give an incentive to operators to increase capitalization). The licensing scheme he did recommend provided for a transition from initial licensing at a fee to a system of permanent, transferable licenses to be sold by the government through competitive bidding.\(^{84}\)

Sinclair’s proposals were vigorously opposed by the fishermen’s unions, and they were not implemented at the time. However, nine years later, in 1969, when the fishery seemed to be in danger of utter collapse, the British Columbia government did institute a limited entry program for salmon based largely on Sinclair’s plan.\(^{85}\)

**B. FAO Ottawa Conference, 1961**

The Sinclair Report had an immediate impact on the dialogue among economists. The FAO held a conference in Ottawa in 1961 on the subject of economic effects of fishery regulations. This conference provided a forum for discussions both of the limited entry theory and of additional specific program proposals. Responding to Sinclair’s summary report, Crutchfield suggested applicability of the licensing approach to all the major fisheries of the Pacific Northwest coast. He offered a specific proposal for the halibut fishery, arguing that government ownership of the resource should be combined with ordering of property rights and incentives that would maximize rational exploitation. Like Sinclair, he rejected the use of taxes for political as well as economic reasons, settling on licensing as the way to get at the basic problem of excess capacity. A licensing of vessels, initially without fee, he argued, should be followed by gradual reduction of fleet tonnage either through repurchase (followed by auction) or else by the imposition of licensing fees or the equivalent in taxes.\(^{86}\)

An intriguing aspect of Crutchfield’s presentation was his rejection of outright “private ownership” of the fish stocks. This approach, he contended, was not only illegal (as he thought) but also impractical because a sea fishery “cannot be subdivided into separable units to ensure competitive behavior by a large number of individual private owners.” On the other hand, the kind of property right in operations (through licensing) that he contemplated was entirely legal—he had little patience for charges that limiting entry was a “dictatorial and un-American interference with individual rights”—as well as enhancing to effi-

---

ciency. Crutchfield pointed to an ironic outcome that he expected, and welcomed, if his plan were to be adopted: the need for regulatory interventions, which necessarily interfered with "individual rights," would likely be greatly reduced as market dynamics began to work under his scheme of "limited property rights." No ambiguity resided in how Crutchfield treated the effects upon efficiency of gear regulation, a common managerial tool: "As long as everybody knows that an improved catching method will be promptly legislated out of existence," he declared, "there is no particular reason for either governments or industry to spend much time on innovations." 87

A sustained argument for the sole-ownership approach was put forward, however, by Scott, who cited a parallel in the market-oriented prescription advanced by James M. Buchanan (who in later years became a major theorist in the new free-market economics movement) for controlling external diseconomies in the use of a highway system. Scott averred that what he termed "unified ownership" (by all the authorized fishing operators) should be linked with a system by which a manager could assign vessels the rights to fish. This system, he contended, would work to end the inefficient competition among boats seeking to enhance their catching technology, with the attendant overcapitalization. It would thereby reduce vessel and gear congestion on fishing grounds, which had become a persistent problem in Pacific Coast waters; and it would induce vessel owners to pay crews wages rather than shares, lending additional stability to the industry. 88

Another more focused proposal was offered by the economist Giulio Pontecorvo, who addressed the problems of the North American lobster fishery, which he argued was suffering from excess capacity because the existing Canadian and U.S. regulations (including low license fees) imposed no effective barriers to entry. Pontecorvo proposed a buying-scheme for licensing by assigned grounds or areas, the program to be administered by an international commission. 89

More generally, the Ottawa Conference revealed wide agreement among the economists who participated with respect to desirability of limited entry. Licensing was the preferred approach; Gordon, for example, favored creating "something like a private property right" in sedentary fisheries in a well defined area, but he favored licensing for international fisheries such as the halibut (which was administered jointly by Canada and the U.S. through the Halibut Commission) and presumably for non-sedentary species. For his part, Scott had to concede that his proposal for a sole-ownership/administered-management approach won little support. 90

87. Id. at 380, 384, 78.
89. Pontecorvo, supra note 68, at 259, 264.
90. Id. at 336.
C. Studies of the Halibut and Salmon Fisheries

At the close of the Ottawa conference, Crutchfield declared that sufficient economic theorizing had now been done. Fisheries administrators must now begin the task, he said, of incorporating economic efficiency principles into their management.\(^9\) In collaboration with another economist, Arnold Zellner, Crutchfield offered an example of how significant advantages might be attained through limited entry. Taking the contentious example of the halibut fishery, they offered rough quantitative estimates of increased income that would result if fewer boats were permitted on the water and were able to make more trips per season. Professor Thompson’s defense of the “softer life” that he alleged was the preference of the fishermen themselves failed to move Crutchfield and Zellner!\(^9\)

In a parallel study of the salmon fishery commissioned by the State of Washington, Crutchfield played a major role in the project; it was designed to determine the precise number of vessels, operating at least four days a week, that were needed to harvest the runs satisfactorily. The growth in size and efficiency of Washington’s salmon fleet during the previous decade had forced the International Pacific Salmon Commission to so drastically cut the number of fishing days that operations were highly uneconomic despite impressive catch levels; and the commission had been called upon by the Canadian and U.S. governments to respond with some kind of plan for fleet reduction.\(^9\) Relying upon Crutchfield’s economic analysis and the biological work of Donald Bevan, the study concluded that a one-third reduction in number of fishing-gear units could be instituted without loss of harvest volume. They calculated the resultant additional income for the industry at $700,000 to $1.5 million, depending on volume and composition of the year’s run. To accomplish this they recommended a restrictive licensing system. Licenses would be issued by sale only to vessels with a recent history of fishing for salmon, the license to specify the type of gear permitted; the license might be renewed or transferred, and the license fees would be used to finance a buy-back program (government purchasing vessels and gear from private operators) so as to reduce the number of licenses over time.\(^9\)

D. Response of the Biologists

Both the Crutchfield-Zellner study and the Washington State study of salmon were significant for their quantification efforts—putting dollar amounts, however imperfectly estimated, upon the benefits of limited entry. An approach comparable to the cost-benefit analysis of investments then being used by engineers and economists to assess dams and other types of capital projects, the cost-

---

91. Crutchfield, supra note 32, at 486-88.
92. Id. at 90-93. On Thompson, see note 77 supra.
94. Id. at 45, 118-19.
benefit analysis that these studies provided doubtless seemed to Crutchfield and other "policy entrepreneurs" in fisheries studies a powerful argument for introducing limited entry theory into management practice design.

Fishery biologists, however, generally showed little sign of being ready to cede the field to the economists. As we have shown, the biologists had firmly committed themselves to MSY as the goal of management, and they were prone to resist strongly its adulteration or displacement by a competing philosophy. "Fear that economists are interested in rushing in to overturn everything that has previously been done," Crutchfield shrewdly observed, went far toward explaining the biologists' resistance.95 Because the biologists who participated in the limited-entry debate were generally experienced in dealing with hands-on, practical management problems, they were prone to see the economists as naive about the ingenuity with which fishermen could find ways to frustrate the purposes of regulation. The economists' bold self-confidence, often seen as arrogance, sometimes was compounded by a lack of simple politesse. Their style was exemplified by the way the Halibut Commission, long the exemplar of management for the biologists, was made a prime target for attacks by the economists. One leading biologist thus offered his advice that "a modicum of humility" would not hurt the cause of economists who were proceeding in ways that further stiffened the biologists' backs; it was difficult to concede points to critics who only grudgingly conceded that some biologically based regulations had actually achieved MSY, let alone prevented the complete collapse of some important fisheries.96 Withal, the economists often seemed to give the biologists and managers little credit for positive accomplishments.97 Although the increasingly formal, abstract approach taken by the economists was not intimidating to most biologists, this intellectual style of the economists probably did serve to widen the communications gulf between themselves and many fishery-management administrators.98

That the economists played too well the role of detached "outsiders" was often remarked upon by the biologists. One scientist pointedly recommended that "at least some economists go to sea frequently and acquire a first-hand knowledge of fishing operations."99 This was an especially telling remark, implicitly invoking as it did the ideal model of the fisheries scientist, described a few years earlier by William F. Thompson as an individual who "can do research on the sea, . . . on the mathematics of sampling and of many other forms of human activity, on the habits of many species . . . [and] must be a chemist, a mathematician, a zoologist, a politician, an economist, a publicity expert. He

95. FAO (1962), supra note 32, at 330.
96. FAO (1962), supra note 32, at 485.
97. FAO (1962), supra note 32, at 296, 340, 396.
98. Some of the older-established fishery managers, without much advanced training in ecology, let alone in statistical biodynamics, understandably felt similarly threatened by some of the challenges put forward to traditional management techniques by the scientists who pioneered in ecosystem studies and in biodynamic analysis. See, e.g., FAO (1962) supra note 32, at 486-490 (summary remarks of Crutchfield and Pritchard).
must be able to sleep in a forecastle, poison a lake, do long hours at the micro-
scope, sit at a table with diplomats, and convince both his public and his spon-
sors that he is earning his salary."\textsuperscript{100}

Of course, only a small number of the leading biologists lived up to that
kind of standard—though some of the few who did, such as Chapman, Schaefer,
Van Cleve, and McKernan, were in fact among the leading participants in the
debates of limited entry at this time. All the same, very few economists were
much versed in the rudiments of the relevant science, let alone having had any
experience in the practical arena of fisheries management—to say nothing of
having actually spent any time on the water with fishermen. The biologists and
managers also chided the economists for underestimating the political factors in
management. "When you impose entry restrictions," Herrington averred,
"abuses will crop up as surely as there will be benefits."\textsuperscript{101} Similarly, Chapman
warned that "when biologists . . . come to the matter of economic regulation,
they are inclined to look not only under the tablecloth but also under the carpet
to see where the joker is, to see what is being foisted upon us under the guise of
helping the fishery," because in the political world contests for political advan-
tage always lay behind conflict over management proposals.\textsuperscript{102} Biologists un-
derstood full well, according to Van Cleve, that economic efficiencies should be
worked into the calculus of management. But the best efforts of biologists had
been undermined in many instances by special-interest pressures; and econo-
mists should not think the situation should be any different for them: "We can
speak as much as we want about instituting regulations that will limit entry and
list the shortcomings of currently enforced measures, but I do not think that we
shall find a way of controlling legislatures. . . . We have to be realistic, there-
fore, and propose controls which are likely to be accepted by the legislators and
by the public."\textsuperscript{103}

Several prominent biologists also expressed concern about efficiency-ori-
ented economic solutions to the fisheries problem on the grounds that limited
entry was in blatant violation of a "freedom of fishing" ideology that they re-
garded as implicit in American constitutionalism, or at least in the American
cultural tradition of individualism. Donald Bevan, for example, early in the de-
bate warned that projects for limiting the numbers of fishermen would be seen
as antithetical to the overriding jurisprudential principle of equal protection
under the law. (Besides, some of the coastal states’ constitutions included spe-
cific provisions guaranteeing public access to the fisheries, at least for recrea-
tional fishing.) Opponents of limited entry invoked almost as a talisman the
public right of fishery recognized in the Magna Carta and handed down through
the doctrines of public waters in civil law or public trust and related concepts in

\textsuperscript{100} William F. Thompson, Lecture at University of Washington College of Fisheries (1953)
\textit{(manuscript in Thompson Papers, University of Washington Archives)}.

\textsuperscript{101} FAO (1962), \textit{supra} note 32, at 92.

\textsuperscript{102} FAO (1962), \textit{supra} note 32, at 90-91.

\textsuperscript{103} FAO (1962), \textit{supra} note 32, at 340.
common law. In Canada, too, the political and legal culture seemed to run against limited entry efforts, even though the British Columbia fishermen's union and some other elements in the fishing industry had occasionally pressed for imposition of limits in order to stabilize the industry and sustain its profitability.

In the last analysis, the biologists' response to the proposals being advanced by economists were colored deeply by skepticism about consequences. There was nothing new, as the scientists reiterated in many discussions, about the idea of limiting entry—an idea, as Herrington declared,

[that was] acceptable to most biologists working in the field of conservation. Limited entry has certain advantages: for example, it would probably make resource management much simpler in some cases. There is also the incentive of greater profits. To me at least, however, the big problem involved is how to administer limited entry. . . . One cannot work on the basis of frictionless models; frictions are encountered every time a regulation is introduced.

For Herrington, as for most of his colleagues in science and management, it seemed the most appropriate course to adhere to what a later generation would term the precautionary principle: "If conservation takes priority and the resource is preserved for the moment," he advised, "we have at least sufficient time to experiment in the economic field. If we have to establish priorities, therefore, it seems to me safer to concentrate on conservation than on economic aspects."

XI.
SHIFT OF FOCUS TO INTERNATIONAL FISHERIES MANAGEMENT

While the economists' campaign for reform was encountering resistance on the domestic front, attention began to shift to the possibilities of limited entry in international fisheries. Here the actors (at least in the first instance) would be the coastal nations, as they might extend their offshore limits and exclude foreign-flag fleets from fishing, or at least subject the foreign vessels to restrictive controls; in the second instance, the new restricted zones might also become the arena for limited entry or other types of economic-efficiency-oriented regulation of domestic-flag vessels as well. Even though little progress had as yet been made, to the early 1960s, in legitimization of limited entry principles in evolving international law, at least the issue of extended jurisdiction beyond the tradi-

104. See Crutchfield, supra note 78, at 97. See also Comments by Donald E. Bevan, in Limited Entry into the Commercial Fisheries, 75-1 INSTITUTE FOR MARINE STUDIES 83 (1974).
105. The Sinclair proposal, for example, was not implemented until 1968, and then only because of an extraordinary constellation of political circumstances: a Liberal victory in the national parliamentary elections, together with the appointment as fisheries minister of a western economist who was familiar with the British Columbia salmon fishery and sympathetic to the goals of economic rationalization. J. Carl Munt ed., Limited Entry Into the Commercial Fisheries, 75-1 INSTITUTE FOR MARINE STUDIES (1974); P. H. Pearse, From Open Access to Private Property: Recent Innovations in Fishing Rights as Instruments of Fisheries Policy, OCEAN DEVELOPMENT AND INT'L LAW, 23 (1992); Francis T. Christy, Jr., Fisheries Management and the Law of the Sea, in ECON. ASPECTS OF FISH PRODUCTION 4 (OECD, 1971).
106. FAO (1962), supra note 32, at 154
107. Id. at 153.
tional three-mile offshore limit had become a focal point of debate and tension, with the possibility of new opportunities for limited entry policies—or, seen in other terms, the possibility that limited entry policy might become an absolute imperative for many coastal nations. Moreover, with the rising pressure on fisheries in Canadian and American coastal waters, as the result of increasing numbers of foreign fleets and rising scale of operations, the policy imperatives seemed to favor limited entry ideas. "Economic considerations are now more important than biological," one leading American fishery biologist declared in 1959, "because the really big problem is competition from foreign countries."108

As has been well recognized by early commentators, the shift in attention to the international fisheries marked a significant moment in the intellectual history of limited entry theory.109 A work that played a powerful part in effecting this shift was a book by Christy and Scott, The Common Wealth in Ocean Fisheries, published in 1965. If for no other reason, the Christy-Scott study attracted much attention because it pursued so forcefully the theme that MSY was a "socially meaningless" objective.110 Building upon Scott's earlier proposals for sole ownership—"that deus ex machina of fishery economists"111—Christy and Scott proposed "internationalization" of high seas fisheries. Under their scheme, nations would be given a right to share in the catch, with the inputs for exploitation of the high-seas fisheries—vessels and fishermen—to be purchased by an international authority, the net proceeds of the entire operation to be distributed to the shareholder nations.112 Interestingly, Christy and Scott maintained an exclusive focus on the limited entry problem in the "high seas" fisheries, i.e., the waters beyond the outer limits (whether three miles or farther out) of coastal state jurisdiction.

Another factor impelling the discussion of limited entry in the direction of the international arena was the belief—apparently widely shared among biologists and managers—that rationalization of management was much more likely to be achieved when international treaties were the vehicle for reform than when national or subnational governments dealt with domestic offshore waters over which they had exclusive control. The U.S. government official and biologist Donald McKernan averred that this was true—diplomats found it much easier to act independently and transcend parochial self-interest than did politicians, who must answer directly to constituents in the fisheries. McKernan, the Special

108. Crutchfield, supra note 78, at 85.
110. Christy and Scott, supra note 65.
111. Christy, supra note 105, at 24.
112. Christy and Scott, supra note 65, at 238-41. Within their framework of attention to the high seas areas alone, they did not view national quotas as a useful solution to the problem of unrestrained entry and competition. In their view, uncertainty as to stock levels would induce nations to try to take their quotas as soon as possible (to complete their allocated harvest before overall levels might have to be adjusted downward); and they were certain that in the race to take their quotas, countries would not disadvantage their own operators by limiting entry into their national fleets. Id. at 209-11. Ironically, the Icelandic government has recently taken precisely the limited entry measures that Christy and Scott regarded as so unlikely, by limiting access to the fisheries in which the Northwest Atlantic Fisheries Organization has allocated national quotas.
Assistant for Fisheries and Wildlife to the Secretary of State, wrote to a colleague in 1970:

You point out... that if the United States were able to control fishing on the shelf, it would be able to initiate effective management of the resources, resources that use the estuary and resources where the United States has directly or indirectly invested capital in maintaining their productivity. This is obviously the simplest way to approach the problem. Any other way is complicated, not nearly so direct, and, in many respects, not so effective. But take the other side of the coin. Such absolute jurisdiction over coastal resources inevitably leads to under-utilization of the resources of the sea on the one hand and because of the coastal State unilateral authority leads to irresponsible depletion on the other hand.

This has happened in our own country. The California sardine was completely under our control and was allowed to be seriously depleted and has been lost... Thus, on balance, I prefer the more difficult, the less clean, the less precise multilateral and international control of resources obviously combined with the special relationships of the coastal state to those living resources found off its coast or associated with its coast as is the case of the Atlantic and Pacific salmons. As you have stated, the bilateral and multilateral devices now being employed are inadequate, but they are providing a measure of success without the attendant long-term problems associated with unilateral control of jurisdiction.113

International negotiations on the rules of high seas fisheries and the rights of coastal states went on intensively in the early 1970s. The limited entry idea was both nurtured by the negotiations and, at the same time, gave impetus to exploration of new international rules that would depart from the free-access tradition. Throughout the 1960s and early 1970s, coastal states were unilaterally declaring extensions of their exclusive fishing zones offshore. The United States, although long officially dedicated to preservation of the three-mile limit, itself extended jurisdiction to 12 miles in 1966 (and then, a decade later, in 1976, would extend unilaterally to 200 miles).114 The economists who were pressing for efficiency-based management welcomed the creation of the larger zones of exclusive control, since the zonal approach unambiguously assigned property rights in the fisheries to the coastal states—and, thereby, best facilitated a move toward economic rationalization in the ordering of fishing operations within the zone.115

In the late 1960s, the setting of national quotas by an international fishery management organization came into new prominence with discussions within ICNAF (the International Commission for the Northwest Atlantic Fisheries), culminating in adoption of a national quota system in 1972. As a member of ICNAF's Standing Committee on Regulatory Measures, charged with recommending policies for more effective management, Crutchfield had a strong hand

113. Letter to Richard Stroud, October 9, 1970 (in Donald L. McKernan Papers, University of Washington Archive, Seattle); see also Hon. Donald L. McKernan, A Developing Policy for International Fisheries, in THE FUTURE OF THE SEA’S RESOURCES 147 (Second Annual Conference of the Law of the Sea Institute, 1967).
115. Donald McRae & Gordon Munro, Coastal State Rights Within the 200-Mile Exclusive Economic Zone, in RIGHTS BASED FISHING 97, 100 (P.A. Neher et al. Eds., 1989).
in this move. Indeed, the committee went further than the commission itself proved willing to go. The committee endorsed the view that to achieve the full economic benefits of quotas, entry must be limited at the national level. Otherwise, overcapitalization would continue to plague the fleets of the participating countries.\(^{116}\)

International and domestic management issues were treated as interrelated questions in the continuing American debate. This was exemplified by the report of the Stratton Commission, which had been appointed by the President in 1967 and charged with recommending basic policy for marine science, engineering, and resources.\(^{117}\) Crutchfield was named chair of its panel on marine resources; and so it was no surprise that the final report recommended the incorporation of maximizing net economic yield as a "major objective" of fishery management, to be achieved through limited entry programs that would put an end to the "economic absurdity" of gear limitations.\(^{118}\)

For international fisheries, the Commission gave strong endorsement to national catch quotas, calling upon ICNAF to adopt such a basis for regulation. The report also recommended that in the event ICNAF pursued such a policy, the United States should "take advantage of the opportunity afforded by a [national] quota system to rationalize its fishing effort in the North Atlantic." Extending the endorsement to the Pacific region as well, the commission recommended substitution of national quotas for the abstention approach in management of salmon, herring, and halibut under terms of the International North Pacific Fisheries Convention of 1953. And, contrary to the long-standing U.S. official policy on migratory tuna—a policy that defended completely free access by the American tuna fleet regardless of national exclusive fishing zones for other species—the commission recommended that coastal states be allocated catch quotas.\(^{119}\)

In subsequent years, ICNAF did undertake to institute national quotas, as already noted; but the organization rejected a U.S. government proposal to authorize creation of quotas "on the basis of scientific investigations, or economic or technical considerations, or both," in the interest of "the rational utilization" of the stocks. Instead, the new ICNAF rules provided for scientific management


\(^{118}\) Report, supra note 117.

\(^{119}\) Id. at 50-52.
goals to remain on a par with economic management. It remained to be seen whether any of the member countries of ICNAF would decide to move further toward rationalization as the economists had defined it, by instituting national limited entry schemes (a two-tier, or “dual,” limited-entry system) that regulated the structure and effort of their own fleets.

XII. FURTHER LIMITED ENTRY DEBATE AND EMERGENCE OF THE ITQ IDEA, 1968 TO 1973

The first round of limited entry proposals, made in the early 1960s by Sinclair, Crutchfield, and others had encountered opposition too strong to overcome in domestic program implementation. There was rising interest, however, in property rights theory in the discipline of economics generally, so that the small coterie of economists interested in fishery questions were now dealing with a concern that was becoming increasingly central to their own profession. Meanwhile, within the fisheries economics subfield, several studies that provided detailed and theoretically elaborate estimates of benefits of limited entry began to influence the continuing debate. A model for such scholarship was provided by a book-length study of the Pacific salmon fisheries by Crutchfield and Pontecorvo. Their conclusion—that nearly $50 million in potential net economic yield could be achieved by limiting entry—attracted wide attention in fishery policy circles. By this time, moreover, the influence of the economists had become powerful enough to have prompted the National Marine Fisheries Service (NMFS) to organize an Economic Research Laboratory. In 1970 its director, Frederick Bell, published an estimate of economic benefits that might be achieved by limiting entry to the inshore U.S. northern lobster fishery. NMFS also funded studies at two universities in 1970 to evaluate alternative management arrangements that would maximize capture of rents being dissipated under the regimes then in place. Meanwhile, the early preparations


121. The authors plan additional research on this interesting question of change within the discipline and the “mainstream” position that was captured by property rights theorists, including some of the leading fishery economics writers. We are indebted for important insights into the issue to Prof. Lee Anderson of the University of Delaware, who was interviewed for this project by Noah Baum and, earlier, informally by Baum and Scheiber, and who made his own records available for our use; and to Professor Oliver Williamson of Berkeley.


123. Frederick W. Bell, World-Wide Economic Aspects of Extended Fishery Jurisdiction Management, in ECON. IMPACTS OF EXTENDED FISHERIES JURISDICTION 9 (Lee G. Anderson ed., 1977). The authors have not fully resolved the issue of why the Division of Economic Research was apparently allowed to wither on the vine by the NMFS leadership. According to Frederick Bell, “Despite repeated orders by the Office of Management and Budget to introduce economics into their programs, the National Marine Fisheries Service in the U.S. has remained a vast wasteland of economic ignorance on the part of its leadership.” Id. at 9.

for the UN Law of the Sea Conference prompted the organization of several international meetings of experts that gave focused consideration to the economic aspects of fishery management. Limited entry was a major topic of discussion, in anticipation of how coastal nations might move to maximize the benefits of exclusive jurisdiction to extended offshore zones under a new Law of the Sea Convention.\(^{125}\)

As interest in their ideas intensified on both the domestic and international fronts, the economists meanwhile continued to refine the economic theory of the fishery, especially the nexus between efficiency and the vesting of property rights in marine resources. The most explicit commitment to what became a full-blown privatization approach came with an article written by Christy in 1969, in which he argued that the right to exclude others was “fundamental to the achievement of economic efficiency.” He contended that not only would the privatization of fishing rights produce increased economic yield, but it might also lead to increased absolute volume of catch.\(^{126}\)

Christy has been credited with initiating the ITQ idea,\(^{127}\) but the idea was being discussed by others as well in the early 1970s. For example, Elliot wrote in 1973 that, while “an overall quota of fish must be the principal weapon to control a fishery,” exclusivity of rights was essential within that framework:

... [T]here must be individual quotas for boats and plants as well, depending on the circumstances. What you are then doing, in effect, is to give particular people exclusive license to take part of the fish resource, in the same way that an oil company is allocated an offshore block or a mining company is given an ore concession. This idea applied to fisheries makes people throw up their hands in horror. But I am sure that in twenty years this will be the accepted method of running the fisheries.\(^{128}\)

Analogizing from the recent experiences in the arena of international management—the application of quotas by ICNAF, most notably—to hypothesize how quotas might be used in the management of domestic fisheries gave additional impetus to the discussions of property rights.\(^{129}\)

As a reflection of their conviction that economic efficiency standards were being ignored because of political factors, even more than because of resistance from the biologists, the economists’ rhetoric became stronger and increasingly focused upon direct criticism of governmental regulation of fisheries. Their cri-


\(^{127}\) See, Scott, supra note 109, at 26, 26 n.26-27.


\(^{129}\) Francis T. Christy, Jr., Fisherman Quotas: A Tentative Suggestion for Domestic Management, OCCASIONAL PAPER SERIES, LAW INSTITUTE OF THE SEA INSTITUTE, UNIVERSITY OF RHODE ISLAND, Occasional Paper 19 (1973). See also, Comment from Austen Laing, Director-General of the British Trawlers’ Federation (on file with author) (indicating how the British trawlers hoped to apply in domestic waters a variant of the policy of company allocations already adopted by the industry in response to the ICNAF quotas.)
tique charged that the regulatory programs were not only misguided, by efficiency standards, but also were excessively influenced by special-interest pressures as the consequence of the deep involvement of the regulated fishery interests in the very procedures and institutions of regulation. (Fishermen and other industry interests had representation on the advisory boards of nearly all the major management agencies.) The economists also charged that the imperatives of an efficiency ethic were being resisted because of the self-interest of administrators, including scientist-managers, in perpetuating their agencies and influence—arguments that bear many of the hallmarks of the standard present-day "public choice" critique of regulatory interventions and structures. One of Christy's papers typified this aspect of efficiency arguments, increasingly prominent in economic writings of the 1970s:

[It] is far more difficult to impose society's interest in fisheries than it is in most other natural resource enterprises. The costs of management are not borne by the users of the resource. The costs of the research, administration, and enforcement of regulations are external to the operations of the fishermen and are incurred by the public out of the public treasury. But since society's voice in the case of fisheries is not very strong . . . , the decision will hinge primarily on the wishes of the fishermen.

Because many of the fisheries biologists were associated closely with, or actually employed by, the regulatory agencies, this kind of attack hit close to home for them. In response, many biologists and managers adverted frequently to what they viewed as the naiveté (or the arrogance) of their economist-critics, who, they claimed, often lacked expert knowledge of the relevant science, or lacked appreciation of the need for understanding complex ecological systems, or—not least—lacked interest in or sufficient concern for preserving non-economic values that inhered in the social dimensions of fishing communities (and their welfare, or even survival) and for recognizing the legitimacy of recreational and conservationist criteria for management. A continuing point of contention, of course, was the continued concern of many scientists—a concern now coming under even heavier fire from the economists—to salvage what they could of MSY and the basic philosophy it represented.

We do not mean to imply, however, that all biologists and managers had closed ranks and moved in lockstep to resist efficiency concerns. In fact, some of the leaders on the scientific side became important voices in an emerging effort to reconsider MSY and substitute a concept of "optimal sustainable yield" that would incorporate economic and social as well as scientific criteria in the setting of goals for management regimes.

130. Scheiber, supra note 42, at 473-79.
132. E.g., Mundt, supra note 105, at 78-82; see also, Nielsen, supra note 53.
133. Peter Larkin, A Confidential Memorandum on Fisheries Science, in Benson (1970): 189, presented a scathing critique from an ecological scientist (he was professor of biology at the University of British Columbia) of both the simplistic (as he saw them) theories of sustainability to which many fishery scientists still subscribed, and the record of fishery management in practice, which he charged often amounted more to a "long war of attrition" than a regime that actually preserved the stocks, let alone preserved them at MSY levels.
"World Fisheries Policy: Multidisciplinary Views," published in 1972, one of the most senior federal fisheries management officials, the biologist Brian J. Rothschild, argued that MSY had proven to be "a rather poor criterion" for management. He reiterated the deficiency of the sustained yield theory—as had been demonstrated, he thought, in recent studies of forestry management—and he called for a comprehensive agenda of expanded studies. Rothschild's list of needs was a long one, but it prominently included the need to deal with the problem of open access. He also argued for "systems analysis" as an approach that could give appropriate attention to the economic efficiency issue as well as to a broad range of unresolved issues in biology and marine ecology.134

Similarly, Dayton Alverson, also a high-ranking federal agency official and respected fishery biologist, averred that "the common property problem" was the cause of increasing numbers of stocks being overfished. Echoing a theme made familiar by the economists, he deplored the "extreme political pressure on management agencies" that was often exerted by the fishing interests, with the result that regulation was too lax and stocks were given inadequate protection while the overcapitalization problem became increasingly serious.135

XIII.
THE OPTIMUM SUSTAINABLE YIELD (OSY)

By the early 1970s, the broadening critique of the MSY concept had thus begun to win wide support. Increasingly, it was recognized that MSY often had perverse, unexpected results. At a minimum, it was a management concept that assured a high degree of economic inefficiency as the harvest level rose toward the MSY limit. From the perspective of biology, it proved difficult to apply to management of sub-stocks or populations within species, as in the case of Pacific Northwest salmon, and also in the case of mixed fisheries where MSY for each species would differ from the MSY for the biomass as a whole. Even when a single species was the target, MSY calculations were affected by short-run change in ecosystem relationships.136 The recreational fishing interests in the

---


United States found MSY to be too blunt an instrument, since it did not take account of the "quality" of fishing so important to them.\textsuperscript{137} In ongoing negotiations of the Law of the Sea, the U.S. Government's diplomacy continued to advocate the MSY concept—linked to the full utilization principle, which would place the burden on coastal nations not fully exploiting fisheries in their offshore zones to open their waters to the distant water fleets of other nations.\textsuperscript{138} The oceans resources specialists in the State Department consistently pressed the notion that the codification being undertaken in international marine law should be based on the central premise that fisheries should be managed "species by species," placing the burden on the controlling governments and fishery management agencies to come up with MSY estimates for each species.\textsuperscript{139}

It became clear in 1974-75 that the tide of opinion had turned decisively in American policy councils as well as in the academic debate. One signal was the growing acceptance of the mathematical proof that was formulated in 1971 by the Canadian economist Colin Clark that MSY was suboptimal in the management of most fisheries.\textsuperscript{140} Second, not only were some prominent economists who had advocated substituting Net Economic Yield for MSY as the goal of management now coming forth with analyses that distinguished the multiple goals of management such as recreational, aesthetic, social (including employment-level maintenance), etc. But now they also explicitly recognized the legitimacy of the non-economic goals, instead of applying what seemed to be a single-dimensional economic-efficiency calculus as had been common in earlier debates.\textsuperscript{141} Crutchfield nominally welcomed the more ecumenical approach to management goals that this move represented, but he warned that acceptance of OSY was only a tiny step forward. The term must be given specific content, Crutchfield averred, and so he suggested that economists should now seek to quantify in some sort of uniform measures the value that society gave to a variety of activities and objectives.\textsuperscript{142} In other words, there was still a sense that the economists believed that even non-economic goals should be brought into the equations in economists' terms.

In a symposium held in 1974 by the American Fisheries Society, participants from the academic world, industry, and management agencies all wel-

\begin{itemize}
\item \textsuperscript{137} See Richard H. Stroud, Introductory Remarks in \textit{Optimum Sustainable Yield as a Concept in Fisheries Management}, \textit{supra} note 133, at 1, 2.
\item \textsuperscript{138} See Philip M. Roedel, \textit{A Summary and Critique of the Symposium on Optimum Sustainable Yield in Optimum Sustainable Yield as a Concept in Fisheries Management}, \textit{supra} note 133, at 79, 84.
\item \textsuperscript{139} Manuscript Correspondence of Assistant to the Under Secretary of State Donald McKer- nan, University of Washington Archives, Seattle.
\item \textsuperscript{140} Colin W. Clark, \textit{Economically Optimal Policies for the Utilization of Biologically Renewable Resources}, 12 \textit{Mathematical Biosciences} 245 (1971); see also remarks of Prof. James Wilen, University of California, Davis, in discussion of draft version of this paper at the Iceland conference, \textit{supra} note 73, May 1996.
\item \textsuperscript{141} See Crutchfield, \textit{supra} note 133, at 13-19.
\item \textsuperscript{142} See id. at 18. He recognized fully, however, the problem that common measures were almost impossible to devise to calculate certain kinds of tradeoffs.
\end{itemize}
combed the notion of incorporating multiple goals into the calculus when management regimes were designed. In 1975 the Society officially endorsed replacing the MSY concept with Optimum Sustainable Yield (OSY). In so doing, the Society echoed the endorsement already given to the OSY concept—and rejection of the MSY formulation—by the International Association of Game, Fish and Conservation Commissioners, an organization of agency officials, and by the Sport Fishing Institute in the United States as well.143

Formal abandonment of the MSY goal by policy officials followed soon afterward. Thus in 1974, as it became evident that the U.S. Congress would likely soon declare unilaterally an extended offshore fishery zone, the National Marine Fisheries Service began planning for the new management responsibilities that would fall upon the agency. The NMFS planners took it as a basic premise that the objective would be to obtain "optimum yield," defined very broadly as "utilizing fisheries resources for the greatest biological, ecological, economic, and social benefits to the nation over time."144 They took their cue from the language of the draft statute for unilateral extension of fishery jurisdiction that was then before Congress (the Magnuson Act). The July 1974 version of the proposed law, providing for a 200-mile offshore fishery zone under U.S. jurisdiction, included a provision mandating the goal of OSY—defined in the bill as "the largest net return consistent with the biological capabilities of the stock, as determined on the basis of all relevant economic and environmental factors."145 Also available to the NMFS planners was the American Fisheries Society's 1974 symposium proceedings, in which Philip Roedel proposed a definition of optimal sustainable yield as "a deliberate melding of biological, economic, social and political values designed to produce the maximum benefit to society from stocks that are sought for human use, taking into account the effect of harvesting on dependent or associated species."146

Reflecting the shift that was under way domestically, American diplomats in the Law of the Sea Conference also began to abandon the MSY/full utilization formula to which they had adhered so consistently in earlier years. Thus the U.S. delegation introduced in mid-1974 new draft articles on fisheries that specifically qualified MSY to provide for "taking into account...environmental and economic factors."147 To one commentator writing in 1976, the abandonment of the MSY ideal was a case of "forced acceptance of new ideas when the established ideas collapsed"—comparable in this sense to the similar abandonment of what had once been the conventional wisdom about the alleged "inexhaustibility" of marine fish stocks.148

144. Staff Report to the Associate Administrator for Marine Resources, NOAA; Fisheries Management under Extended Jurisdiction: A Study of Principles and Policies 6 (Mar. 24, 1975) (unpublished discussion paper).
145. Id. at 81-82.
146. See Roedel, supra note 138, at 85.
147. Id. at 84 (emphasis added)
148. Nielsen, supra note 53, at 22. Or, in terms that are often used, an old paradigm in science was displaced by a new one.
The OSY standard was problematic from the beginning, for could any formula so open-ended and inclusive ever be implemented successfully except as a transparent cover for naked policy preferences? This critique was raised in later years, for example in a widely noticed article by Larkin published in 1977. In this study, he rather sardonically summarized the way in which an intellectual and policy sea change had occurred:

... [A]bout 10 years ago many people began to have misgivings about MSY, and about maximum economic return, and started to speak of maximizing... sustained yield of social benefits... From all this sugary murk there crystallized, like fudge, the concept of optimum yield, in which optimum is whatever you wish to call it.149

Still, the appeal of the OSY concept in the mid-1970s was powerful indeed—perhaps precisely because it seemed to offer hope to every special interest with a stake in fisheries policy at a time when coalitional, or pluralist, politics was a seemingly essential precondition to success in the enactment of the Magnuson Act. Furthermore, the rhetoric of OSY was consistent with the kind of synoptic, interdisciplinary management and planning that was then current in the natural resources field more generally, e.g., in the “multiple-use, sustained-yield” approach to which Congress had committed in 1960 and would reaffirm in 1976 when it required forest management plans to “provide for multiple use... and, in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.”150

It is important for our purposes to note that with enactment of the new Magnuson fisheries law, which went into effect in 1977, the limitation of entry would become a reality of U.S. policy so far as foreign fleets were concerned. Clearly, the “Americanization” of the offshore fishing waters was a primary objective of the act, and its exclusionist potential was fully realized as foreign fleets were at first limited in their harvests and then by the end of the 1980s banned altogether from the new 200-mile zone.151 What, then, would be the future of limited entry affecting American fleets themselves? And would the trend toward incorporation of common property analysis in the formulation of fishery management policies, albeit within the now-dominant (but, as it proved, ambiguous and problematic) commitment to OSY, bring the issue of privatization or individual quotas to the forefront, as doubtless many economists then hoped? These questions remained to be answered in the years following adop-

149. Larkin, supra note 67, at 7-8.
tion of the Magnuson Act and extended jurisdiction. The debate in North America would reflect the much larger debate in fishery policy councils globally concerning the virtues of going beyond limited entry to some form of vested property rights.

XIV.
MAGNUSON ACT IMPLEMENTATION

In addition to defining very comprehensively the criteria to be incorporated in calculating the optimization of yield for the new fisheries regime, the Magnuson Act specifically authorized the newly created regional fishery management councils to "establish a system for limiting access to the fishery to achieve optimum yield." This intriguing provision of the law may have indicated, as some argued, that the increasing acceptance of OSY had had a solvent effect that facilitated acceptance of the limited entry concept: "Whereas the rights of fishermen [to free access] has been sacred in the past," one commentator wrote, "OSY philosophy requires that this aspect be placed into perspective with other societal criteria." However that may have been, as the likelihood of the Magnuson Act's passage became evident in the early 1970s, the acceptance of the limited entry idea began to spread. As one fisheries specialist recalled in a recent interview, by the early 1970s Crutchfield and other prominent economists "were in and out of the National Marine Fisheries Service offices all the time, . . . working with the Fisheries Service on getting [limited entry ideas] into the real world." The NMFS funded studies at two universities in 1970 for developing estimates of the potential economic rent of specified coastal fisheries, and to evaluate alternative management plans to capture what was calculated as the rents being lost under the plans then in place. In 1971 the federal agency convened a meeting of economists and biologists to consider sources of difference between the disciplines, and to seek common ground; and the NMFS bureaucracy began to promote the idea of restrictions on entry. Then, in 1973, the National Advisory Committee on Oceans and Atmosphere called on the federal government to "work out an approach to economic regulation of the [fishing] industry with due regard for historic rights and social consequence." Meanwhile, the Council of State Governments, an important organization representing state officials, also announced its endorsement of limited entry: a task force of the Council recommended in 1974 model legislation for the states that

154. Lee Anderson interview, supra note 121.
155. OCEAN FISHERIES MANAGEMENT: DISCUSSIONS AND RESEARCH, supra note 124, at 28.
157. E.g., William M. Terry, Fisheries and the National Interest, in WORLD FISHERIES POLICY, supra note 134, at 164, 166.
158. NATIONAL ADVISORY COMMITTEE ON OCEANS AND ATMOSPHERE, ANNUAL REPORT 42-3 (1973).
would recognize economic efficiency as a standard. In anticipation of extended jurisdiction, the NMFS similarly had recommended limited entry as the primary management tool to achieve “optimum yield” from coastal fisheries. The agency’s report attributed the problems of overexploitation, overcapitalization, and user conflict directly to the “inability of present U.S. management machinery to limit entry.”

With a 200-mile fishing zone likely to become a reality, either by unilateral action (the Magnuson Act, then being debated in Congress) or by the terms of a UN Law of the Sea Convention, the NMFS accelerated discussions within the framework of a “State-Federal Management” program instituted in 1972. This program featured marine fishing councils that were composed of state and federal management officials, charged with developing management plans to be submitted to the state legislatures and to NMFS. Each council was supported by a scientific committee, composed of both economists and biologists, to develop the data on which management measures would be based. There was no question that the federal fishery officials believed that such data collection would work in favor of limited entry management, nor that the staffing of scientific committees on an interdisciplinary basis would permit them to serve as “a platform for economists.” For example, one of the specific studies promoted by the program related to Dungeness crab on the Pacific Coast. The study team assigned to produce a management plan was composed of two economists and one biologist, who concluded that “evaluating alternatives for reducing excess effort” must become of the focus of their work.

Thus during the period 1972-75, as the State/Federal program went forward, a significant move toward institutionalization of the economists’ role in fishery management agencies had already been accomplished. The final affirmation of this new status for economists—giving them perhaps as much visibility as the biologists, if not as yet the same degree of influence in actual decision making—came when the Magnuson Act was passed with provision for regional management councils, with each one required to establish a scientific and statistical committee “to assist it in the development, collection, and evaluation of such statistical, biological, economic, social, and other scientific information” as was deemed relevant to proposed plans. But the influence of economists in the NMFS hierarchy was by no means dominant. In fact, the agency reduced the
support given to its Division of Economic Research, whose former director com-
plained in 1977 that NMFS "has remained a vast wasteland of economic igno-
rance on the part of its leadership."\textsuperscript{165} And as the regional councils established
by the Magnuson Act became the main agencies of fishery management, they
varied greatly in the degree of influence even the biologists—let alone the econ-
omists—managed to exercise in a pluralistic administrative structure that gave
powerful representation to the fishing interests.\textsuperscript{166} Nonetheless, the Magnuson
Act definition of standards for management—which included not only Optimum
Yield but, reflecting the economists’ influence, also requirements that manage-
ment plans “where practicable, promote efficiency in the utilization of fish re-
sources, . . . [and] minimize costs and avoid unnecessary duplication”—did
provide a base upon which economists could enhance their influence over policy
in future years.\textsuperscript{167} At a minimum the Magnuson Act had given the economists a
foot in the door—a “bully pulpit” from which to voice their ideas at the institu-
tional core of the new management structure. And the statute explicitly author-
ized, though it did not require, the development of new management plans based
upon limited entry.

The significance of the Magnuson Act would later be described in the fol-
lowing terms by Professor Lee Anderson, who at the time of its enactment was a
prominent member of a younger cohort of economists taking up the cause that
Gordon, Scott, Crutchfield and others had pioneered: “After [1976] there was a
basis for property rights in management. That is when the economists turned on
the heat.”\textsuperscript{168} At the time, some of the leaders in the movement for limited entry
were optimistic. Crutchfield, for example, asserted in 1977 that economic think-
ing had become so influential in the state and federal management agencies that
the issue had now become one of how to reduce excess effort; no-one ques-
tioned any longer the fact that excess effort existed and was exacting high social
costs.\textsuperscript{169} Others were less sanguine, pointing out that the Magnuson Act had
assured only that foreign vessels would be limited or excluded within the new
200-mile zone; and if this succeeded in enlarging the revenues of domestic fish-
ing operators, it would only serve to stimulate further overcapitalization, unless
the intractable political obstacles to imposing effective limits could be over-
come. This caveat about the difficulties of implementing limited entry ideas
might have been applied as much to the difficulty even of achieving MSY or
Optimum Yield goals in management. After all, the same coalitions of fishing
interests that would oppose limited entry could frustrate (and, as it proved, did in
fact frustrate) the imposition of simple harvest limits at low enough levels to

\textsuperscript{165} Anderson, \textit{supra} note 123, at 9.

\textsuperscript{166} See generally, Susan S. Hanna, \textit{User Participation and Fishery Management Performance
within the Pacific Fishery Management Council, 28 OCEAN \& COASTAL MGMT.} 23 (1995) (discuss-
ing three case studies which illustrate policy processes in one of the eight regional councils estab-
lished by the Magnuson Act).

\textsuperscript{167} Fishery Conservation and Management Act of 1976, § 301(5)-(7).

\textsuperscript{168} Two interviews with Lee Anderson, \textit{supra} note 121.

\textsuperscript{169} James A. Crutchfield, \textit{Evaluation of the Conference by an Economist, in Econ. Impacts
save the resource, without reference to limited entry. Blatant conflicts of interest in membership and decision-making style marked the operations of many of the regional councils. The federal government's own regional administrators typically failed to take a strong stand against council-based decisions that threatened to encourage overfishing, and the industry representatives often resisted scientific advice. There were also contradictions in basic policy that permitted continuation of federal tax and subsidy assistance to new capitalization of ships and gear, despite the fact that overcapacity was obvious. And the top administrators in the Commerce Department have generally been unwilling to overrule manifestly damaging management policy decisions by some councils. All these factors conspired to work against the basic objectives stated in the Magnuson Act itself. For all the same reasons, few proposals for rationalization through combining privatization of fishery rights with resource conservation management were able to make much headway despite a high degree of enthusiasm for such initiatives among scientists and economists alike. Fishery economics research itself intensified, and new lights appeared in the field in the mid-1970s and after—among them Lee Anderson, P. H. Pearse, James Wilen, Gordon Munro, Parzival Copes, Daniel Bromley, and Gary Libecap—producing new empirical work and developing varied theories around the basic property rights concept that won over the sympathetic interest and often strong political support of the newer generation of biologists. Even long-time critics of the economic approach, including William C. Herrington, began to see the merits of limited entry and privatization in a more favorable light, as the shortfalls of the conventional management approach became painfully and more increasingly evident.

The conservationist management regime envisioned by the architects of the Magnuson Act thus proved a tragic failure. The collapse of several historic fisheries (including the once-huge, historic New England cod fishery) and the endangered state of many others today, two decades after the Act went into effect, are testimony to the extent of that failure. Moreover, the ideological and

---

170. The authors will provide a full analysis in support of these contentions in a forthcoming historical study of the Magnuson Act and its implementation. But for evidence on many of these points, see generally, J. L. McHugh, *Fisheries Management under the Magnuson Act: Is it Working?*, 21 OCEAN DEV. AND INT'L LAW 254 (1990); Morton M. Miller et al., *Impressions of Ocean Fisheries Management under the Magnuson Act*, 21 OCEAN DEV. AND INT'L LAW 263 (1990); Symposium, *The Magnuson Fishery Conservation and Management Act: Retrospect and Prospect*, 9 TUL. ENVTL. L.J. 211 (1996).

171. See generally Pearse, supra note 25; Toro, supra note 52; Hsu & Wilen, supra note 152.


It is a telling commentary upon the lack of achievements under the Magnuson Act to read the Draft Implementation Plan of the NMFS for the recently agreed International Code of Conduct for Responsible Fisheries. The NMFS anticipates:

... forming a national task force ... to characterize fishing capacity problems in the United States, determine viable solutions and assign realistic time horizons for their implementation, and act on other relevant recommendations arising from the [international] meeting.
political obstacles proved far stronger than many anticipated when it came to transforming the 200-mile zone from a commons (albeit one restricted to American vessels) to an area in which the tradition of public ownership and free access should be abandoned for privatization.\textsuperscript{173} If Crutchfield and others were misguided in their optimism about achieving their ideal of rationalization in management under the Magnuson Act in 1977, they were accurate enough in viewing the longer-term future of fishery management theory as their own. For the very failures of management on conventional lines to protect the resources and the industries that relied upon them would lead to the contemporary popularity of limited-entry alternatives—including, of course, the concept of privatization embodied in the ITQ idea that has captured center stage in today's debates of fishery management.

The modern movement for “ocean enclosure” through the extension of coastal jurisdiction beyond the old three-mile line was set in motion sixty years ago by Stefan Riesenfeld and others who brought a new “legal realism” to the debate of this urgent doctrinal issue in international law. The particular type of entry limitation that was advocated by Riesenfeld, at least as an interim measure to protect fisheries from depletion, absent agreement by the distant-water fishing fleets to exercise self-restraint, has become legitimated through agreement upon the provisions of the UN Law of the Sea Convention and the nearly universal acceptance of the 200-mile limit by the world's coastal states. In regard to domestic fishery management regimes by coastal states within their own Exclusive Economic Zones, however, whether limiting entry through privatization, by use of ITQs or some other means—or indeed through any other management approach—will be capable of reversing the tragic decline in the stocks of the world's marine fishery resources, only time will tell.