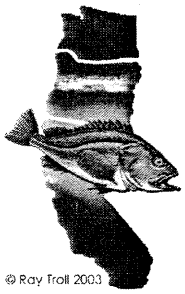

Pacific Marine Conservation Council

February 17, 2004

Donald K. Hansen, Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 200
Portland, OR 97220-1384

Re: Individual Fishing Quota considerations for the Pacific Coast groundfish fishery

Dear Chairman Hansen,

Pacific Marine Conservation Council (PMCC) is dedicated to the work of ensuring sustainable fisheries for the coastal communities that depend on commercial and recreational fishing revenue. PMCC is very concerned that individual fishing quota (IFQ) systems, while offering potential for management of certain fisheries, could have negative consequences for the diversity and integrity of historic fishing communities. Without exceptionally thoughtful planning, IFQs could cause far more problems than they are expected to solve.

Establishment of an IFQ program for the West Coast trawl fleet would be a major departure from current management systems. The current IFQ discussion emerges during a period in which the groundfish fishery has already seen substantial change. Rebuilding plans for nine species of groundfish are in various stages of development. The Council has made unprecedented use of spatial management in closing large areas of the continental shelf to specific gear effort. Ninety-two limited entry trawl permits were recently removed from the fishery at a cost of $46 million. Vehicle Monitoring Systems are being explored as management and enforcement tools. New information regarding bycatch, species distribution, habitat association and co-occurrence of species is becoming available through the West Coast observer program.

Prior to taking the radical step of seriously considering IFQ-based management, it is essential to review and analyze the impacts of recent changes to the groundfish fishery, and new information that is now available, through the vehicle of a comprehensive supplemental programmatic environmental impact statement. The National Environmental Policy Act (at 40 C.F.R. § 1502.9(c)) requires preparation of supplemental EIS when "the agency makes substantial changes in the proposed action that are relevant to environmental concerns;" or when "there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The groundfish fishery certainly qualifies on both accounts, and it would be entirely appropriate for

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the Pacific Fishery Management Council to urge NOAA Fisheries to begin work on a programmatic EIS as soon as possible.

PMCC does not advocate for a programmatic EIS simply to create yet another document. We believe that an open public process examining all aspects of this fishery, in all their complex relationships, will prove valuable as future actions are contemplated – including IFQs.

Ultimately any IFQ system that is developed should meet basic standards to protect sport fishing interests, commercial fishing businesses, coastal communities, and the public interest. IFQs must not in any way be construed to be property rights; rather, they are fishing privileges to be granted for a set duration. There must be fair and equitable initial allocation of shares and strict limits on accumulation of quota. There needs to be a mechanism for independent review of the systems. As an IFQ program is developed, management should seek to preserve the full range of historical participation in the fishery, rather than simply favoring the most efficient operations. Fishermen participating in the groundfish fishery should have the opportunity to vote whether to develop or approve an IFQ system. And the public deserves to see a conservation benefit from granting IFQ privileges, including incentives for use of gear which has the least bycatch and the least adverse impacts on habitat. Unfortunately, what we've seen from the Council's Ad Hoc Trawl IFQ Committee does not conform to most of these standards.

PMCC is providing members of the Council with copies "*Who Owns America's Fisheries*," by Seth Macinko and Daniel Bromley (Island Press, 2002). We offer this information as background on the subject of IFQs and "rights-based" fishing. While we find some interest in the royalty auction described in the text, we are not at this time advocating for such an approach. Macinko and Bromley do offer some fresh perspectives that we hope that the Council members will find intriguing. You might also consider reviewing the National Research Council report "*Sharing the Fish: Toward a National Policy on Individual Fishing Quotas*" 1999, National Academy Press.

Thank you for considering our comments. If you have any questions please call me at (503) 325-8188.

Respectfully submitted,

Peter Huhtala
Senior Policy Director

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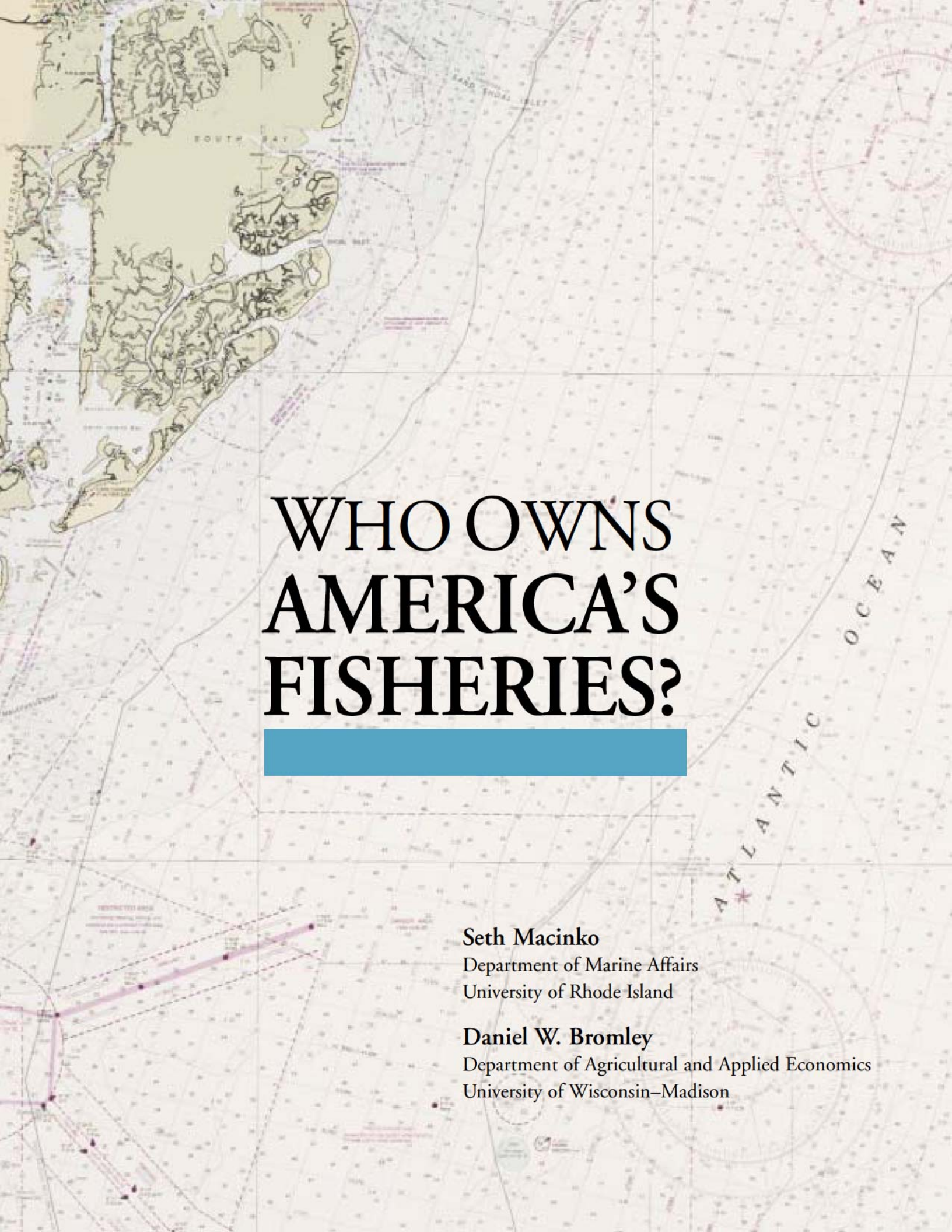

WHO OWNS AMERICA'S FISHERIES?

Seth Macinko
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The work on which these findings are based was initiated and sponsored by The Pew Charitable Trusts. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of The Pew Charitable Trusts.

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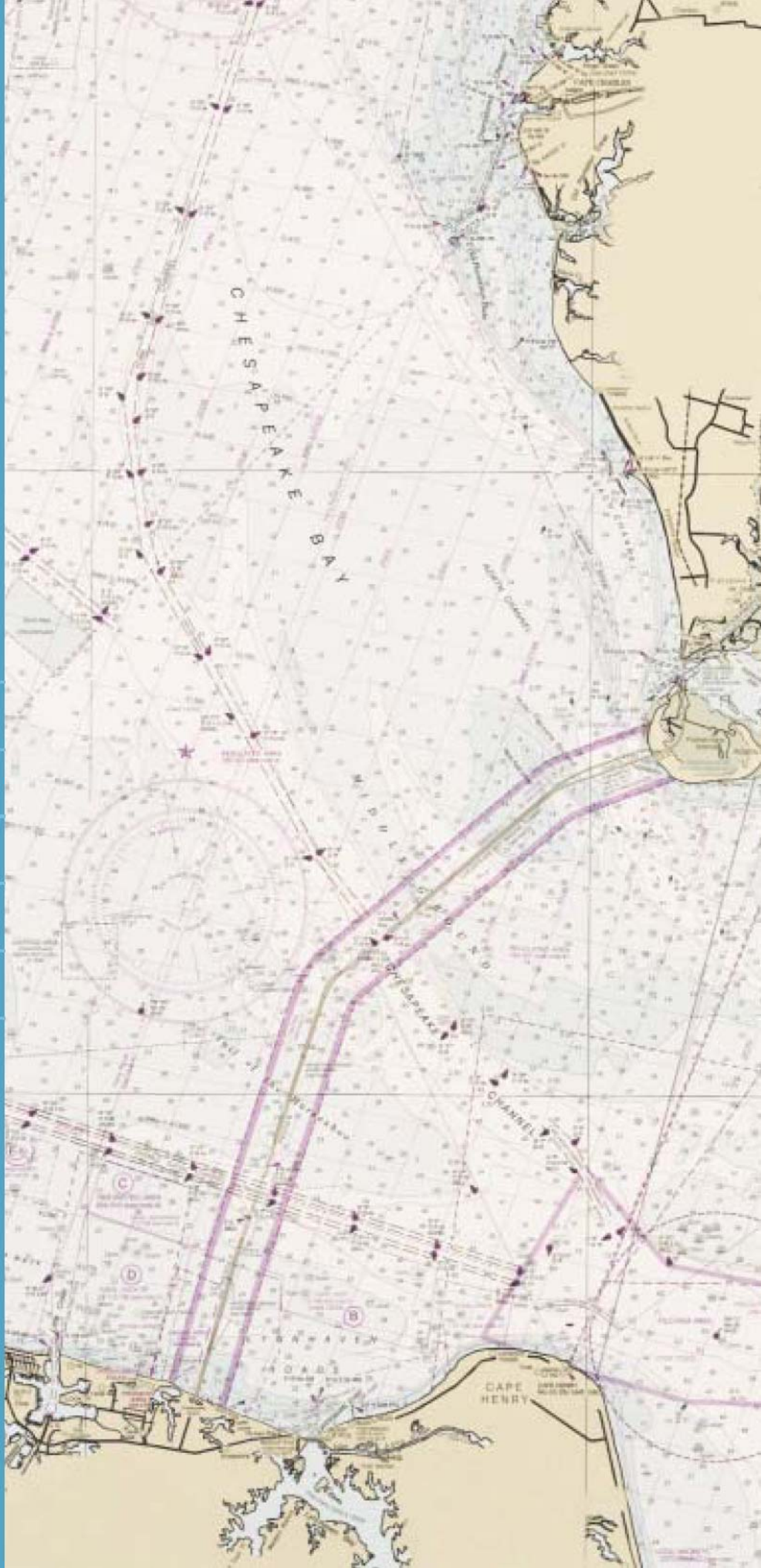
Contents

This report is intended to stimulate a national conversation about our marine fishery resources and to present ideas for reforming the management of commercial fisheries.



U.S. Commercial Fisheries Management

Time for a National Conversation

Our purpose here is to stimulate a national conversation about America's marine fishery resources and about policies for reforming the management of commercial fisheries. The management of commercial marine fisheries in the United States appears to be at a crossroads. Accounts abound of how fisheries, and fisheries management, are in a state of crisis. The nature of the perceived crisis varies. Concerns include the health of the fish stocks off our shores (many are judged to be overfished), the health of the commercial fishing industry (often said to be overcrowded and economically depressed), the impacts of commercial fishing on the broader marine environment, the relationship between commercial fishing and other human uses of marine resources (including other consumptive uses, such as recreational fishing, as well as nonconsumptive uses), the alleged dysfunction of the governance system, and, finally, the idea that all of these individual concerns are interrelated in one sorry mess. Amid these sensations of crisis, the law that guides fisheries management at the national level (the Magnuson-Stevens Fishery Conservation and Management Act—or "Magnuson-Stevens Act") is up for reauthorization in 2002. Historically, Congress uses the reauthorization process as an opportunity to make changes in the Magnuson-Stevens Act that reflect changing American perceptions about the values and purposes of ocean fishery resources. Given the current crisis atmosphere, the present reauthorization offers a particularly good opportunity for a national dialogue regarding America's fishery resources.

In addition to the sense of crisis, most current discussions of fisheries management in the United States share one other consistent feature—a single, and simplistic, prescription for reform. So-called "rights-based" fishing is offered as the solution to much, if not all, that ails fisheries management. The most common form of rights-based fishing is a management tool known as individual fishing quotas (IFQs), in which individual fishing firms are allocated specific catch shares. Often the terms "rights-based fishing" and "IFQs" are used interchangeably. IFQs are controversial, however, as evidenced by the current Congressional moratorium on their further use in federal fishery management plans. The IFQ moratorium dates to the previous reauthorization of the Magnuson-Stevens Act in 1996. Perhaps ironically, the moratorium on IFQs has raised them to the status of forbidden fruit. Much of the discussion associated with the current reauthorization process can be expected to focus on IFQs. This paper devotes considerable attention to the idea of rights-based fishing and IFQs but will begin its contribution to a national dialogue on fisheries policy with a consideration of the national interest in the fishery resources off our shores. Readers who are new to fisheries issues and unfamiliar with how fisheries are conducted and how they have been managed are directed to the introductory primer presented in the Appendix.

Guiding Principles

Any national policy reflects and is imbued by national guiding principles. Congress recognized the need for national principles when it formulated the Magnuson-Stevens Act around the concept of "national standards." Currently, ten national standards establish the broad contours for federal fisheries management in the United States (see box below). We suggest that this list is incomplete, overlooking three fundamental principles, and that this oversight contributes to the current sense of crisis. Phrased as additional national standards, these essential but missing principles are as follows:

- **Conservation and management policies must be based on, and assert, national public ownership of fishery resources.**
- **Conservation and management policies must incorporate a financial return to the owning public.**
- **Conservation and management policies must consider appropriate strategies to ease the immediate transition between shifts in management policies, and these policies must not impede the transition to future policies that may be deemed necessary in light of changing ocean ecosystem dynamics and changing societal valuations of those ecosystems.**

NATIONAL STANDARDS FOR A NATIONAL RESOURCE

Congress built the domestic management system articulated in the Magnuson-Stevens Act around the idea of controlling national standards. Ten national standards establish the broad framework for fisheries management within the exclusive economic zone:

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2. Conservation and management measures shall be based upon the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
8. Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.
9. Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

PRINCIPLE 1:

The Fishery Is a Public Asset.

The idea of national fishery legislation featuring national standards fundamentally implies that those resources are "the Nation's fishery resources" [Magnuson-Stevens Act, Sec. 2 (a)(6)]. In other words, the founding idea of federal fisheries policy is that the living resources in the nation's exclusive economic zone (EEZ) are the property of all U.S. citizens. This public ownership is not really in doubt (despite implications to the contrary that surface when IFQs are explained in terms of "property rights"), nor is it unusual. The fishery resource of the EEZ is a public asset managed by a public agency (the National Marine Fisheries Service, assisted by the various regional fishery management councils), just as a host of other natural resource-based public assets are managed by public agencies (see box, right).

WHO OWNS THE FISHERY RESOURCE?

"The American people own the fish in the EEZ"

The John H. Heinz III Center
[2000:61]

In the language of the Magnuson-Stevens Act, the U.S. claims "sovereign rights and exclusive fishery management authority over all fish, and all Continental Shelf fishery resources, within the exclusive economic zone [MSFCMA Sec. 101 (a)]." Despite this, one still sees reference to the idea that "no one owns the fish until they have been caught." Or, equally curious, "if everybody owns it, then nobody does." With respect to this latter claim, we note that no one talks this way about Yellowstone National Park. The confusion springs from a failure to understand the concept of ownership. More telling perhaps, the management of our national parks can leave little doubt that while they indeed "belong to" the American people, they are under the careful jurisdiction of a management agency dedicated to protecting them from degradation.

PUBLIC OWNERSHIP AND MANAGEMENT OF THE NATURAL RESOURCE WEALTH OF A NATION: A COMMON IDEA

Public ownership of natural resources is the common pattern in the U.S. Within the U.S. EEZ, fishery resources are national, public assets. As a result, living marine assets are managed by the National Marine Fisheries Service (NMFS) on the same basis that various federal agencies manage other natural resources:

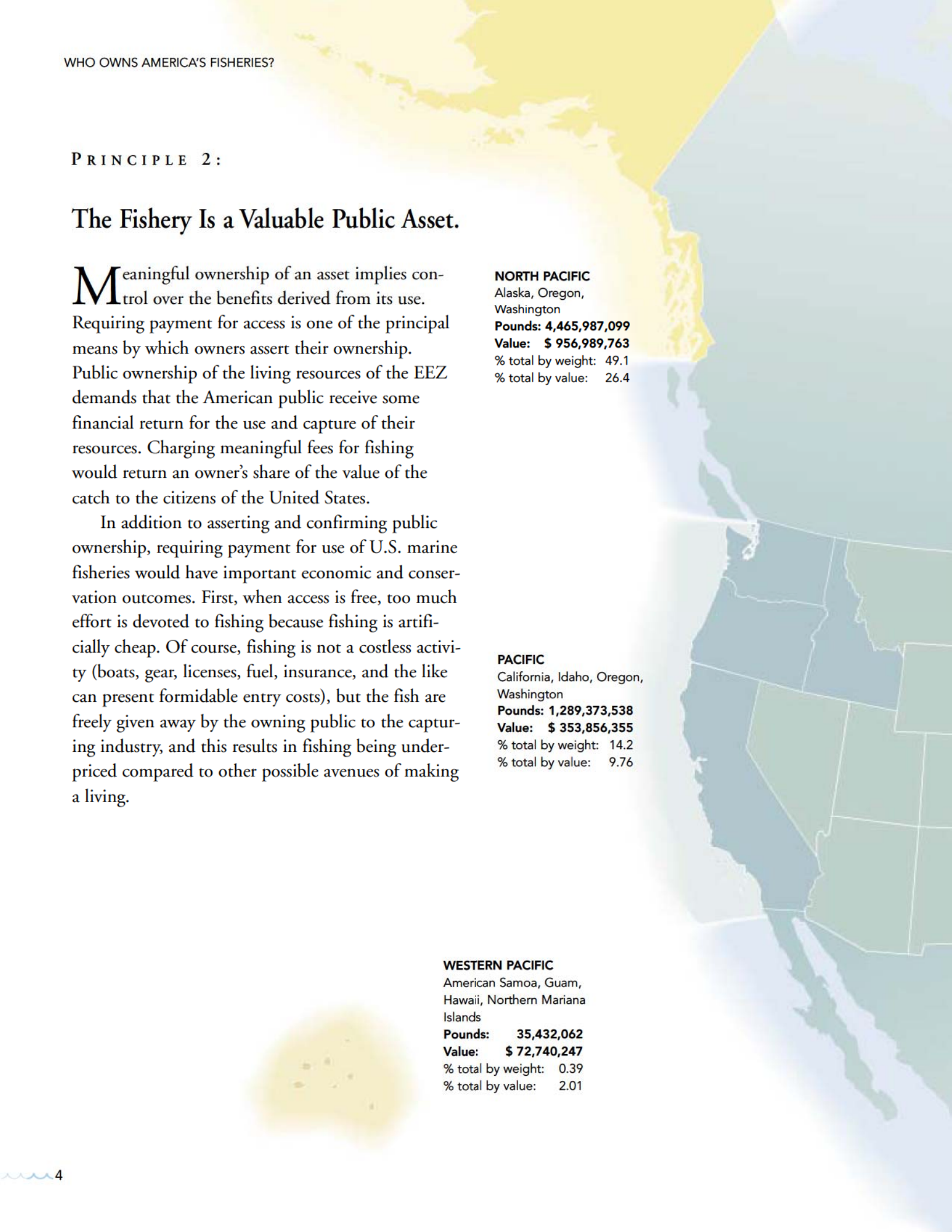
- The Minerals Management Service (MMS) manages oil deposits in the outer continental shelf.
- The U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) manage forests and livestock forage on public lands.
- The National Park Service (NPS) manages wilderness areas, parks, sanctuaries, and monuments.
- The Federal Aviation Authority (FAA) manages airspace.
- The Federal Communications Commission (FCC) manages the radio spectrum.
- The Environmental Protection Agency (EPA) manages water and air quality.

PRINCIPLE 2:

The Fishery Is a Valuable Public Asset.

Meaningful ownership of an asset implies control over the benefits derived from its use. Requiring payment for access is one of the principal means by which owners assert their ownership. Public ownership of the living resources of the EEZ demands that the American public receive some financial return for the use and capture of their resources. Charging meaningful fees for fishing would return an owner's share of the value of the catch to the citizens of the United States.

In addition to asserting and confirming public ownership, requiring payment for use of U.S. marine fisheries would have important economic and conservation outcomes. First, when access is free, too much effort is devoted to fishing because fishing is artificially cheap. Of course, fishing is not a costless activity (boats, gear, licenses, fuel, insurance, and the like can present formidable entry costs), but the fish are freely given away by the owning public to the capturing industry, and this results in fishing being underpriced compared to other possible avenues of making a living.



NORTH PACIFIC
Alaska, Oregon, Washington
Pounds: 4,465,987,099
Value: $ 956,989,763
% total by weight: 49.1
% total by value: 26.4

PACIFIC
California, Idaho, Oregon, Washington
Pounds: 1,289,373,538
Value: $ 353,856,355
% total by weight: 14.2
% total by value: 9.76

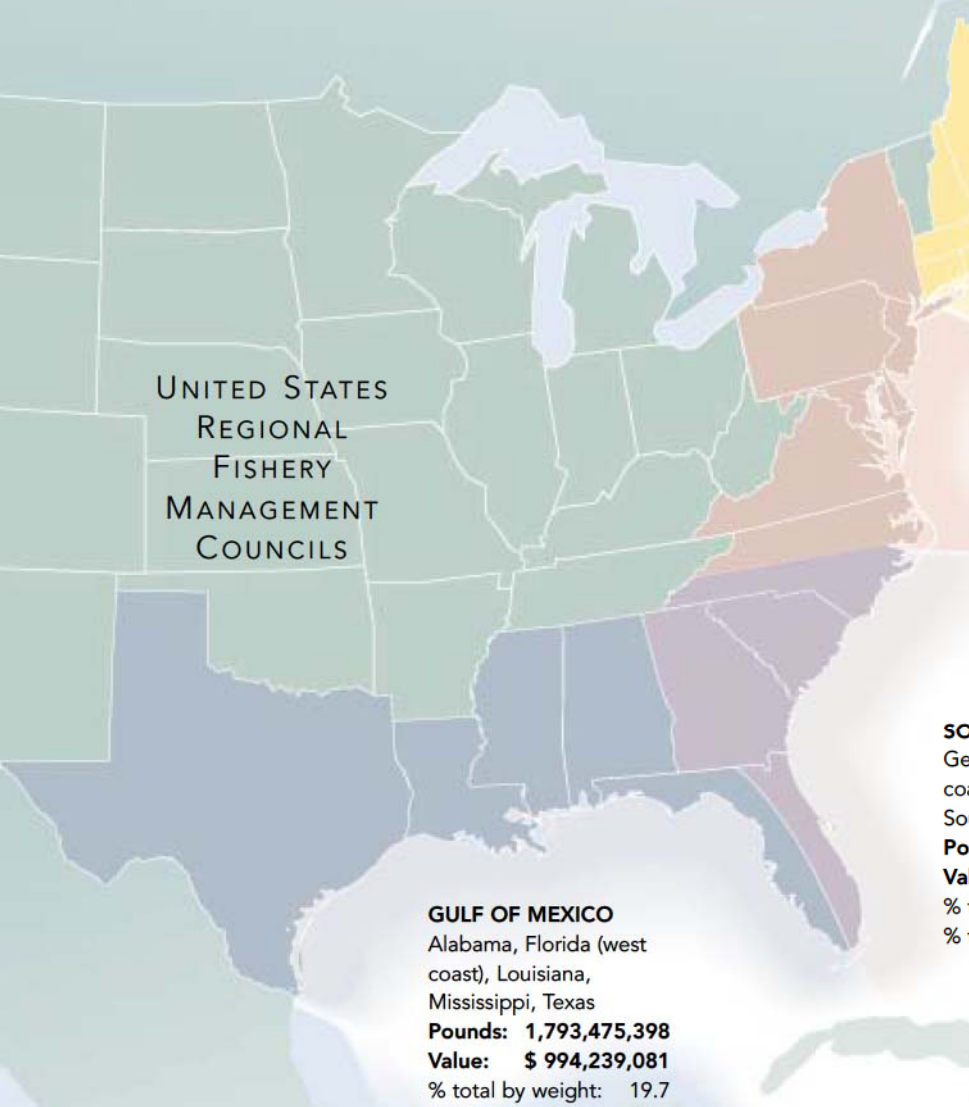
WESTERN PACIFIC
American Samoa, Guam, Hawaii, Northern Mariana Islands
Pounds: 35,432,062
Value: $ 72,740,247
% total by weight: 0.39
% total by value: 2.01

COMMERCIAL FISHERIES LANDINGS IN 2000

TOTAL

POUNDS: 9,094,002,732

VALUE: $ 3,625,140,184



NEW ENGLAND
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island
Pounds: 573,803,230
Value: $ 677,826,181
% total by weight: 6.31
% total by value: 18.7

MID-ATLANTIC
Delaware, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Virginia
Pounds: 711,999,042
Value: $ 345,846,393
% total by weight: 7.83
% total by value: 9.54

SOUTH ATLANTIC
Georgia, Florida (east coast), North Carolina, South Carolina
Pounds: 220,959,498
Value: $217,198,458
% total by weight: 2.43
% total by value: 5.99

CARIBBEAN
Puerto Rico, U.S. Virgin Islands
Pounds: 2,972,865
Value: $6,443,706
% total by weight: 0.03
% total by value: 0.18

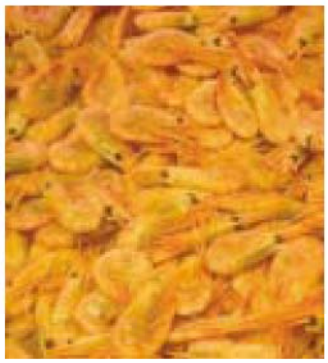
GULF OF MEXICO
Alabama, Florida (west coast), Louisiana, Mississippi, Texas
Pounds: 1,793,475,398
Value: $ 994,239,081
% total by weight: 19.7
% total by value: 27.4

Second, the free nature of fish raises an equity issue relative to how we treat other public natural resources. It is important to acknowledge that requiring the fishing industry to pay for the opportunity to capture marine resources would not be a dangerous or odd precedent:

- The U.S. Forest Service charges ranchers a fee to graze livestock on national forest lands and charges timber companies to cut timber.
- The Bureau of Land Management charges a grazing fee for use of public rangelands.
- The Minerals Management Service earns millions of dollars annually from the sale of oil drilling and extraction from the outer continental shelf.
- The Federal Communications Commission auctions licenses to firms that wish to use the nation's radio/TV waves.

The concept of charging for access to fish invariably raises concerns about squeezing out small-scale "mom-and-pop" firms that are responsible for much commercial fishing in the United States. This is a concern, but the issue is not unique to fisheries management. For example, small firms have not been driven out of the timber and livestock industries simply by the presence of mechanisms for pricing access to relevant public resources. In fact, the fishing industry stands out as the exception to the principle that those who benefit from the use and enjoyment of national assets should pay for that privilege. Charging for fish would put fishing on an equal footing with other industries that use our public natural resources, and it is clearly feasible in a manner that does not disadvantage small firms. Indeed, this paper will argue that policies based on this principle can and should be

more equitable than current approaches to refining fisheries management.



Third, the free status of fish does not reflect just how particular our exploitation of marine ecosystems is. In essence, our dietary preferences involve us in a high-grading of nature. As we demand more of but a microcosm of the full spectrum of living aquatic resources, and as the nation's fisheries come to be managed just for this very narrow portion of the spectrum, much of the rest of the ocean ecosystem is called into service as a dedicated food source for what we wish to eat, and another large fraction is sacrificed to our very efficient and specialized catching techniques. Since our seafood markets do not capture the ecological linkages involved in this form of high-grading, the objects we take (and eat) from the oceans are artificially cheap. They are too cheap because all of the other services of nature that are implicated in the production of this high-graded product are not accounted for in an economic sense. If certain ecologically valuable resources of the oceans are a primary food source for the few things we wish to eat, if our appetite for those selected fish products is seemingly insatiable, and if these fish are given away free of charge by the owners (the American citizens), then too many of the prey species are being sacrificed in the service of our appetite for artificially cheap fish. Or, if a particular catching technology destroys turtles, porpoises, coral reefs, or ocean-bottom ecosystems, then again there is an artificial incentive to harvest too many of those things we wish to eat. Consumers should pay more for the products we demand from the marine ecosystem, and a pricing regime for fish landings would pass along that higher cost to consumers of fish so that economic incentives begin to be rectified throughout the seafood chain.

PRINCIPLE 3:

Transitional Paths to New Policies Are Needed Both Now and in the Future.

There is a pressing need to find new pathways to improved public policy for the nation's ocean fisheries. There are both human and ecological reasons for paying more attention to transitional paths between policies. On the human side, while the debates over policy changes may be prolonged, the actual switch in policy regimes following a decision is frequently sudden and severe. Much of the trauma of fisheries management is associated with this abrupt transition. Greater attention to transition phases would expand the range of desirable and feasible policy options. On the ecological side, transitional flexibility is necessary because ocean ecosystems are inherently dynamic and thus demand adaptive flexibility, as opposed to rigid and irreversible policy trajectories.

Finally, both ecological and human rationales are integrated into an additional emphasis on transition phases. Our collective understanding of ocean ecosystems is evolving, as are societal valuations of the wealth of the goods and services provided by those ecosystems. What comes to be regarded by a particular society as a "resource" arises from a process of cultural appraisal, and these appraisals change as societies and cultures undergo change. Transitional flexibility is necessary to accommodate these evolving understandings and valuations.

IFQs as Rights-Based Fishing, Or Fisheries as Public Resources?

Unfortunately, consideration of the guiding national principles suggested above has, until now, been overshadowed by that forbidden fruit in U.S. fisheries management: the individual fishing quota (IFQ). Discussions of IFQs dominate the policy scene these days, and IFQ discussions worldwide feature a crescendo of claims that rights-based fishing is the last best hope for marine fisheries. Such claims are worrisome for two reasons. First, IFQs are touted as a property-rights solution to fisheries problems that have nothing at all to do with property rights. It is odd that a flawed diagnosis of the "fishery problem" has given rise to a touted "solution" that has nothing at all to do with the problem. Second, despite what is claimed for them, IFQs are clearly not property rights. Ironically, advocacy for IFQs brings together those who are confused about the nature of the fishery problem (and the property aspects of IFQs), with those who wish to privatize the oceans in whatever way possible and merely see IFQs as a convenient instrument to accomplish that feat. Both of these campaigns warrant scrutiny.

Piercing the Palaver over Property Rights: Broadening Our Options

It has become an article of faith—indeed, a dogma—that the problem facing fisheries in the United States is a property rights problem, specifically a lack of property rights. (The dogma is usually vague, however, about what it is that needs, but does not have, the status of a property right.) Given this odd diagnosis, it is not surprising that the solution is then identified to be property rights, specifically, private property rights in the form of IFQs. The phrase "rights-based fishing" is commonly understood as shorthand for this paired property rights diagnosis/property rights prescription. Actually, "rights-based fishing" is shorthand for an entire set of linked assertions that fuel current support for IFQs. Stepping through these assertions one at a time will reveal the incoherence of the present embrace of IFQs as the rights-based salvation of America's fisheries.

The basic argument for IFQs-as-rights-based-fishing goes something like this (phrased in the specific vocabulary deployed by IFQ advocates): The central problem afflicting fisheries is the lack of **property rights** under prevailing **open access** to the resources. In the absence of property rights, a competitive **race for fish** develops. Under the race for fish, there are **too many boats chasing too few fish**, resulting in **rent dissipation** and the presumption that **no one is making any money**. Further, the fish stock is imperiled by the associated catch levels, which are unsustainable. Introducing property rights will make fisheries management similar to management of other natural resources. IFQs as **rights-based fishing** will **rationalize** the industry, **raise incomes**, and promote **stewardship**.

We will now consider these assertions.

Assertion 1:

Open access is the problem because there are no property rights.

Reality: There are clear property rights in U.S. marine fisheries—the owners of those assets are all U.S. citizens. If the federal government manages fishery resources poorly, the fault lies not with the lack of property rights but rather with flawed management objectives and processes.

Discussion: An enduring illusion in fisheries policy is that the ocean and the marine life in it are un-owned. As already mentioned, this belief is patently false. The citizens of the United States are the owners of the fishery resources in the EEZ. Therefore, the various management bodies responsible for managing those resources are compelled to do so for the long-term well-being of the citizenry, and for the sustainability of the fragile resources themselves. The intense focus on property rights by IFQ proponents overlooks the critical distinction between ownership (property) and management (indeed, governance). One can have bad management under a variety of ownership regimes.(see box below) The presence of established (public) property rights is a minor inconvenience for a movement dedicated to (private) property rights as the solution. The assertion that no property rights exist (even if that is not the case) is thus seen as a necessary part of the argument for rights-based fishing.

THE CRISIS IN FISHERIES IS A MANAGEMENT PROBLEM, NOT A PROPERTY PROBLEM.

Fisheries policy in the U.S. will advance once there is broad understanding of the distinction between ownership (property) and management. The U.S. has already established a clear property rights regime in the ocean fishery resource. To the extent that there are fishery management problems, these cannot be blamed on the absence of property rights.

Assertion 2:

Open access is the problem because it is not closed access.

Reality: Open access per se cannot be the problem if limited access per se is not the solution.

Discussion: From the incorrect premise that there is an absence of property rights, it is then concluded that the fishery is an "open-access resource," this time meaning that entry into the fishery is unrestricted (see box, p. 10). Suddenly open access is the problem because it is not closed access. The policy prescription flowing from this assertion is that closed or limited access is the solution to the problems of unrestricted entry. In fact, the characterization of U.S. fisheries as "open access" is increasingly outdated. More and more fisheries in the United States are managed under various forms of closed or limited access. Yet despite this trend toward closed access, all of the perceptions of crisis generally remain, directly contradicting the notion that limited or closed access is the solution.

The case of license limitation schemes reveals a logical contradiction within the campaign for IFQs as rights-based fishing. License limitation schemes, in which managers issue a set number of fishing licenses for a fishery (see Appendix), are perhaps the ultimate form of closed or limited access and were originally conceived as a property-rights-based solution to the perceived problems of unrestricted entry (Rettig and Ginter, 1978; Copes, 1986). It is now widely recognized, however, that license limitation schemes not only fail to solve the problems of racing for fish (and excess capacity), but often exacerbate them as well (OECD, 1997; Sutinen, 2001). In an odd twist, the failure of license limitation programs is frequently used as an argument for IFQs. The essential problem here is one of consistency in logic. Specifically, licenses as limited access and as "private property" did not solve the problems said to stem from "open access" and from a lack of private property.

WHAT DOES "OPEN ACCESS" MEAN?

The roots of much misdiagnosis in fishery policy lie in confusion over the precise meaning of the term "open access." There are three general classes of property regimes: (1) private property; (2) common property; and (3) state property [Bromley, 1991]. But there is also a situation in which no property rights exist, which is called "open access." In contrast, those writing about fishery policy seem to have picked up some of the language of property regimes but have failed to connect the language with the concept. That is how a management regime in which anyone may go fishing comes to be called "open access" even though that pursuit of fish may be occurring in the EEZ, which is a state property regime. Hence "open access" as "unrestricted entry" becomes transformed into "open access" as "no property." The confusion is so rampant as to warrant a shift in terminology. Fisheries in the EEZ that anyone may enter are correctly called "unrestricted entry" fisheries occurring within a regime of established property rights.

If licenses-as-private-property-rights fail to correct the problem, the logical conclusion must be that (alleged) private property rights per se will not solve the problems of unrestricted entry, in turn suggesting that perhaps something is wrong with the initial property rights diagnosis. One solution to this problem would be to make the issue go away by definition. That is, if property rights must be the solution to unrestricted entry, then licenses, by definition, must not be property rights since licenses have not worked. Something like this logic appears to be playing out as license limitation does indeed seem to be subject to a revisionist removal from the contemporary toolbox of rights-based fishing.[1] In contrast, it seems clear that if limiting access through licenses is not the solution then "open access" cannot be the problem.

ASSERTION 3:

IFQs are property rights.

REALITY: IFQ fisheries are actually catch-share fisheries. IFQ permit holders do not have property rights; they have an opportunity to capture a share of the fruits of an asset owned by all U.S. citizens. IFQ holders can bring no enforceable claims against others that are materially different from the claims possible under any license scheme.

DISCUSSION: Supporters of IFQs argue that they work because they are private property rights.[2] This argument actually contains two assertions. The first is that IFQs are property rights, while the second is that IFQs work because they are property rights. Below we consider these claims, beginning with the idea that IFQs are property rights.

Congress Had a Different Idea

Congressional intent regarding the "property" status of IFQs is clear. In the Magnuson-Stevens Act [Sec. 3 (21)], Congress defined an IFQ as:

> a federal *permit* under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person. (emphasis added)

A federal permit suggests a privilege, not a property right. In fact, Congress provided further clarity regarding property rights and permit-based limited access systems generally [Magnuson-Stevens Act, Sec. 303 (d)(3)]:

An individual fishing quota or other limited access system authorization—

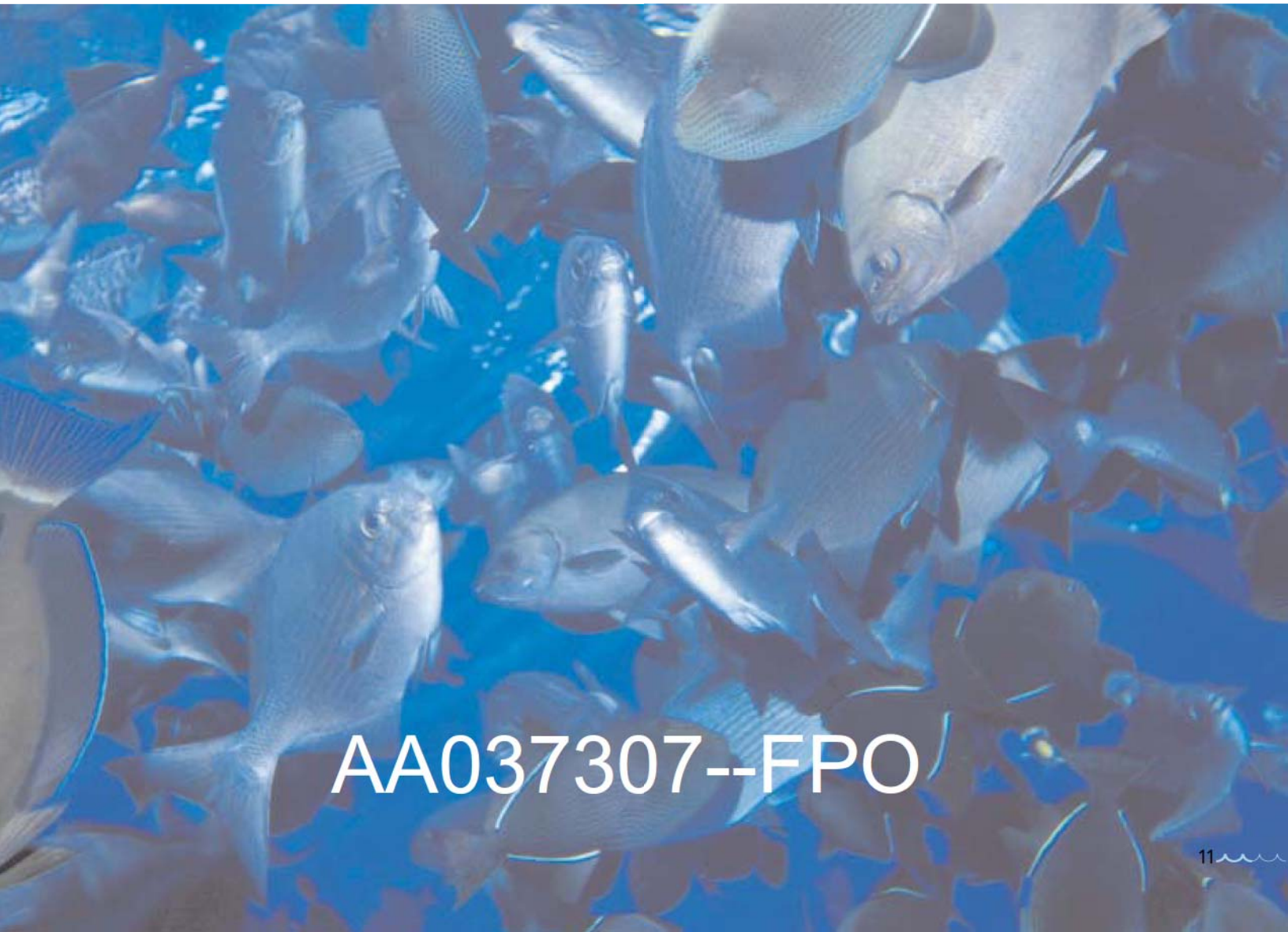
(A) shall be considered a permit for the purposes of sections 307, 308, and 309;

(B) may be revoked or limited at any time in accordance with this Act;

(C) shall not confer any right of compensation to the holder of such individual fishing quota or other such limited access system authorization if it is revoked or limited; and

(D) shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested.

Congress used remarkably similar and explicit language when constructing the management regime for another public resource, the public rangelands. In the Taylor Grazing Act of 1934 (TGA), Congress attempted to address conditions of overcrowding, excess investment, racing, and resource degradation on public rangelands. The TGA established a system of individually allocated grazing permits that ended the free-for-all basis of public range use. Notably, Congress expressly defined the grazing permits as privileges, rather than property rights. And the U.S. Supreme Court has consistently ruled that federal grazing permits are not property rights. Similarly, IFQs are federal permits that extend select privileges, not rights, to the permit holders.



But IFQs Must Be Rights, Mustn't They?

Rights as Enforceable Claims

Despite clear statutory language, the proponents of rights-based fishing persist in maintaining that IFQs are property rights. Surprisingly, the literature on IFQs devotes little attention to what the terms "rights," "property," and "property rights" actually mean in a legal sense.[3] (see box below). Once rights are understood as enforceable claims against others, the property rights status of IFQs is called into question. To understand the issue, one must ask the following question about income streams arising from particular settings and circumstances in commercial fishing: "What claims can IFQ holders bring—and against whom may those claims be brought?"

Claims can be of two sorts: (1) those brought by one or more individuals against one or more other individuals (as in contract disputes); and (2) those brought by one or more individuals against the state. Only the latter entails the idea of constitutionally protected property rights (income streams). In the case of claims between individuals, what enforceable claims can an IFQ holder ("A") bring against another IFQ holder ("B")? A cannot claim that B is catching specific fish that belong to A. Nor can A claim that B is catching A's particular allotted share of the total allowable catch (TAC). Indeed, A cannot claim that B is fishing in a location—or at a time—that "belongs to" A. Yet these are the kinds of "externalities" that the proponents of IFQs assert are resolved because of the alleged property rights status of IFQs (e.g., Sutinen, 2001).

In fact, all A can do is alert the managing authority that B is violating some condition of the management scheme that binds all IFQ holders. For example, A can report that B is fishing outside of the prescribed IFQ season, or that B has been fishing in an area for which B does not hold IFQs, or even that B does not hold any IFQs. But these are exactly the

RIGHTS, PROPERTY, AND PROPERTY RIGHTS

Rights are collectively ratified permission to compel the government to come to your assistance in particular situations. That is, the state stands ready to be enlisted in the cause of those to whom it has granted rights. Rights expand the capacities of the individual by indicating what one can do with the aid of the collective power.

Property is not an object such as land but is, instead, a value. When one buys a piece of land (in the vernacular, a "piece of property") one acquires not some physical object but rather control over a benefit stream arising from that setting and circumstance that runs into the future.

Property rights bring together these two ideas. Property rights define the limits of the law pertaining to the income appropriable from control of income-producing settings and circumstances. In practical terms, the content of property rights is determined when conflicting rights claims are brought before that legal body created to resolve conflicting claims in a democracy. In the United States this body is the Supreme Court. This means that property rights are the result of a process that determines which of the conflicting rights claims before the court seems better, at the moment, to uphold [Bromley, 1997; Hohfeld, 1917; Macpherson, 1973, 1978].

same kinds of claims A can bring under any licensing scheme (including nonlimited licenses under unrestricted entry). Even if A alerts the authorities that B has caught more than B is permitted to by his or her holdings of IFQs, this is simply a special case of a violation of the terms of the licensing scheme. And in none of these situations does A have an enforceable claim against B. Rather, A is merely an informant who alerts the authorities that B has violated the terms of the IFQ licensing scheme. The management authorities step in on behalf of the real property rights holders—the public owners of the resource—and protect that ownership by bringing action against B for violating terms of the licensing scheme that was adopted in order to protect the public owners' interest in the resource.

In regard to claims by an individual IFQ holder against the state, the most important limitation is that no IFQ holder has a legitimate claim for compensation (which is what a property right entails in the United States) if the state reduces the TAC, even to zero. The most that A can claim is unfair denial (denial "without cause") of the opportunity to catch his or her permitted share of the TAC. That is, assuming A is in full compliance with the IFQ scheme, the state cannot arbitrarily restrict A while allowing all other IFQ holders to fish. But this is an equal-protection guarantee that covers any licensing scheme, not a guarantee that rests on property rights that are thought to reside in IFQs.

In summary, any claim that an IFQ permit holder may bring that will compel the state's police protection is not materially different from the sustainable claims that a fisher can bring under any permit-based management system, including the standard registration permits common to almost all fishery management schemes. Ironically, those proponents of rights-based fishing who have detected a problem with the assertion that IFQs are property rights now argue for outright privatization of the entire marine environment (see box, right).

PRIVATIZATION AND "RIGHTS-BASED" FISHING: HOW FAR DOES IT GO?

A few selections from leading proponents of "rights-based" fishing will illustrate the scope of their privatization plans:

"ITQs [IFQs] are part of one of the great institutional changes of our times: the enclosure and privatization of the common resources of the ocean. These are now mostly **the exclusive property of the coastal states of the world** [Neher et al. 1989, p. 3 (emphasis added)]."

"Of course, private quotas are only harvesting rights. They apply only after a TAC has been set. Thus a quota system cannot dispense with some outside means of determining each year's TAC. Neither can they take over other aspects of managing the fishstock and its predators and preys; nor of protecting its environment. This requires sole ownership. . . [Scott, 1989, p. 27]."

"[I]ndividual permanent catch quotas of a regulator-determined TAC are only a stage in the development of management from licensing to private rights. This evolution can be expected to continue until the owner has a share in management decisions regarding the catch; and, further still, until he has an owner's share in management of the biomass and its environment. . . [Scott, 1989, p.33]."

"[A]nother important issue is the quality of the property right in what really counts, *i.e.*, the resource itself and its environment [Árnason, 2000, p. 23]."

"The so-called public goods, of which roads, public parks and national defense are often-quoted examples, are by definition non-amenable to private property rights. But, on closer inspection it turns out that there are ways to turn public goods into private goods [Árnason, 2000, p. 24]."

"The solution to the current wasteful race to fish involves establishing property rights. Individual transferable quotas represent a positive step toward private property rights, and they have stopped excessive exploitation and improved fisher profitability. With the exception of New Zealand, however, current ITQs still rely heavily on political management of the resource.The ultimate solution is full-fledged property rights [Leal, 2000, p.27]."

"Unfortunately, individual quotas in the Alaskan halibut program are not secure property rights. The program's implementation language specifically states that individual quotas are not private property rights and can be taken away without compensation at any time [Leal, 2000, note 22, p. 29]."

Tradable Market Value Does Not Make a Permit a Right

Another standard argument is that IFQs must be property rights because they are traded, borrowed against, and fought over in divorce proceedings. The fact that fishers customarily trade quota shares (and limited licenses) among themselves, such trades evincing (but not creating) market values reflected in credit markets (and contested divorce proceeding claims), does not transform a permit into a property right. The U.S. Supreme Court has repeatedly held that despite the fact that federal grazing permits acquire market value, they are not—and do not become—property rights by virtue of that value [see, U.S. vs. Fuller, 409 U.S. 488, 93 S.Ct. 801 (1973); Public Lands Council vs. Babbitt, 120 S. Ct. 1815 (2000)].

Political Power vs. Property Rights

A reasonable question becomes: "does it matter that IFQs are not property rights if people in the management arena act as if they are?" A critical distinction therefore must be established: the capacity to influence political decisions in one's favor in the legislative and regulatory arenas is different from the ability to *compel* the state through the courts to come to your financial aid. The former is referred to as "political power" while the latter is to have a "property right."

The more discussion there is of rights-based fishing, the more one hears members of the fishing industry assert that they have rights. And some fishery managers seem to have adopted the idea and the language of "rights." There are two problems in this situation.[4] First, sloppy language confuses clear policy

analysis. As shown earlier, property rights have nothing to do with the failed management regimes in America's fisheries. Second, repeated talk of IFQs as "rights-based" fishing becomes manipulative of the management process itself. If managers begin to imagine that IFQs are indeed property rights then it will become more difficult to institute necessary management policies in IFQ fisheries in order to protect overfished stocks—such difficulty is heightened by the fear that if fishing restrictions should become necessary the government would need to pay compensation to fishing firms. Commercial interests have strong reasons to manufacture property claims out of the legal reality of permits and this must be resisted.

ASSERTION 4:

IFQs work because they are property rights.

REALITY: Catch shares ameliorate the race for fish without being property rights, and they do so even under conditions of remarkably short-term duration. Solving the race for fish can and should be consistent with the guiding principles of (1) public ownership; (2) a financial return to the owners of the fishery; and (3) not impeding future policy options. Insistence on rights-based fishing skews the present policy dialogue.

DISCUSSION: Proponents of IFQs seem to employ a convenient twist in their discussion of IFQs. It is alleged that IFQs work, and then—because of the myth that the fishery problem can be cured only by a heavy dose of property rights—the conclusion is that IFQs must therefore be property rights. A way out of this conceptual tail-chasing is to consider what it means to assert that IFQs "work." The signal feature of existing IFQ programs (besides the controversy over the initial gift of windfall allocations of considerable economic value) is the general alleviation of a phenomenon known as "the race for fish." The race for fish is identified as a leading problem in many, if not most, fisheries. The race—partially a literal race to the perceived best fishing grounds, partially a race for technology that improves one's relative catching ability, and always a race for a larger catch than others—has detrimental biological as well as economic consequences.

Over time, the practice of racing can lead to progressively shorter seasons as the combined catching ability of the fleet increases and culminates in intense fishing derbies of relatively short duration. A derby fishery's frenetic pace can lead to large amounts of gear being left (either lost or abandoned) in the ocean, leading to "ghost fishing." Under TAC allocations, managers face the difficult task of trying to set the length of the fishing season so that the catch does not exceed the TAC. In a derby, the season may be compressed to a matter of days, if not hours, and the fleet can easily overrun the TAC before managers can prohibit further catches. Biological concerns associated with the race for fish thus focus on both wasteful fishing practices and the risk of TAC overruns. Meanwhile, economists typically abhor the "excess capacity" associated with the race for fish. Dramatically compressed seasons suggest substantial excess catching capacity in the fleet as a whole.

The conventional policy solution for a fishery plagued by the race for fish and the related excess capacity is economic "rationalization," or rights-based fishing. Rationalization (see box, p. 16) is defined as movement to a limited-access program that allegedly confers private property rights on a portion of the industry. By somewhat circular reasoning, "rationalization" means "rights-based fishing," which in turn means IFQs.

THINKING RATIONALLY ABOUT "RATIONALIZATION"

Few phrases are more durable in fisheries policy than the claim that we must "rationalize the fishery." What exactly does this mean?

Most authors who write about fishery policy believe that fisheries would be improved if there were fewer vessels and crew engaged in fishing, and they will often utilize the phrases "fishing derbies," the "race for fish," "too many boats chasing too few fish," and how economic efficiency would be enhanced if this "redundant" labor and capital were somehow reallocated to other economic pursuits. Who can possibly be opposed to "economic efficiency"? One author claims that in general terms rationalization means the "reallocation of resources . . . under open access to a controlled system designed to maximize the net value of production from the economy as a whole [Anderson, 1977]." This view of rationalization makes a false assumption about a particular property regime (open access), and some other desired state in which the social net product is somehow maximized by the mere act of removing fishing firms.

The problem here of course is that one analyst's concern for "too many boats chasing too few fish" is another analyst's concern that undue economic concentration—too few boats chasing too few fish, thereby leading to undue market power for a fishery dominated by a few large vertically integrated factory ships—is not exactly the economic or social ideal for a nation that ostensibly cares about family-based enterprises. Talk of "rationalizing" the fishery is simply code-speak for a number of imagined ills thought to beset American fisheries policy and for the favored prescription of "rights-based" fishing. Coherent economic policy must rest on more than cunning metaphors.

Specified Catch Shares, Not Property Rights, Provide the Magic

It is clear that IFQ programs have alleviated the race for fish in those situations where market incentives do not encourage racing (exceptions would include "flash fisheries"; see Copes, 1986). But this relaxation of the frenetic derbies cannot be considered to have resulted from the provisioning of private property rights. Rather, the primary cause of the race for fish is the lack of individually specified catch shares of the overall TAC. When catch shares are unspecified, each fishing operation is presented with an incentive to outcompete other operations in the quest to garner a larger share of the TAC. One's catch is a function of how well one can compete (race) against others as the fleet approaches the TAC in the aggregate. This explanation, focused on unspecified catch shares, has nothing to do with property rights in IFQs or any other management instrument.

The various business arrangements in commercial fisheries serve to illustrate the weaknesses of the assertion that property rights are the reason IFQs alleviate the race for fish. It is not uncommon for leasing arrangements to be prevalent in IFQ fisheries.[5] Additionally, there may be second- and third-hand lease arrangements. Thus, an IFQ fishery can simultaneously feature (1) direct permit holders; (2) leaseholders; and (3) sublease holders. A property-rights-based explanation of IFQs cannot extend equally to all of these operations—they cannot all possess similar property rights. Yet IFQ permit holders do not race less than leaseholders, who in turn do not race less than sublease holders. Every firm that is actually fishing on the water faces the same reduced incentives to race simply because every firm is pursuing an individually specified catch opportunity, not because that firm possesses property rights.

The observation of reduced racing across all manner of operations in an IFQ fishery also challenges the emphasis that IFQ proponents place on "security."

These advocates are quick to discredit provisions such as short-term allocations and limited-duration programs—claiming that such provisions diminish the security of the IFQ holder and thus the potential benefits of an IFQ program (NRC, 1999). Arguments emphasizing long-term security are inextricably bound to the view of IFQs as property rights—security is seen as a necessary element (and attribute) of property rights. If you diminish security, it is argued, you diminish the property rights nature of IFQs; thus you undermine the effectiveness of the entire venture because (it is believed) IFQs work because they are property rights. In fact, racing is reduced across all fishery participants despite wide variation in the duration of the specified catching opportunities.[6]

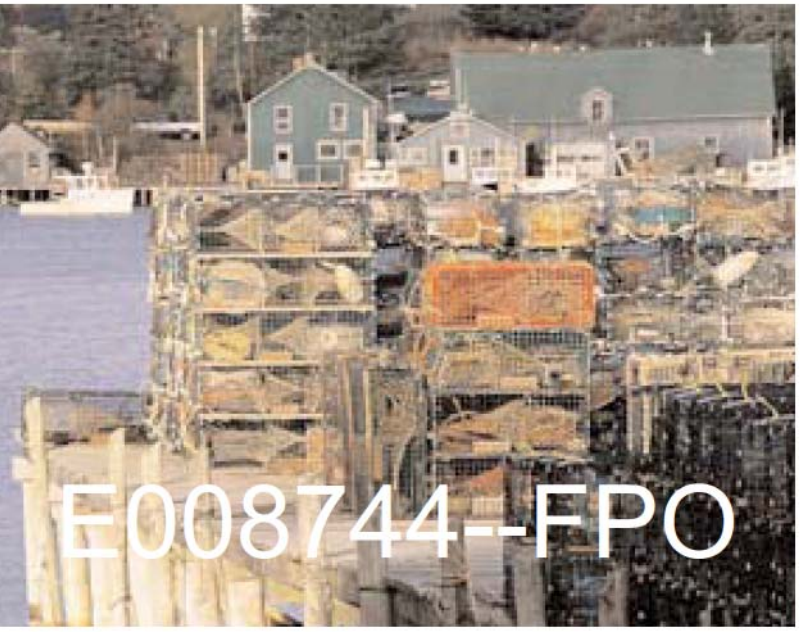
A Moment of Policy Liberation

The discussion above compels a critical fact: A management instrument (catch shares) works to address the race for fish completely independent of beliefs about property rights. This separation of instrument from ideology has profound implications for future policy discussions. As a society we have the choice of using the instrument (and obtaining the results offered by that instrument) without the inexorable privatization of a public resource. Conceptual confusion over property rights and IFQs has narrowed the range of options thereby propelling fisheries policy towards privatization. The point of insisting on conceptual clarity is that several policy choices exist—different means of reaching desired ends.

There is no reason to insist on the coupling of catch shares with the rhetoric of property rights unless privatization itself is the goal (the end). Is it possible to create private fishing rights, or to privatize the fish themselves, or even to privatize the entire marine ecosystem? Yes, property rights–based approaches are possible, but mere possibility is not a sufficient basis for policy prescription (see box, above right). Indeed, improved and sustainable management is not uniquely dependent on privati-

WE ARE **NOT** TALKING ABOUT MARINE HOMESTEADING

In the past, America has, on a few occasions, converted public assets into private property—two notable examples are the Homestead Act and the railroad land grants. Despite the claims of some IFQ proponents, IFQs are not the marine equivalent of these prior policies, and cannot be regarded as such. The key distinction lies in the fundamental purposes behind the policies. Fisheries policy stands in a completely different position than public lands policy of over a century ago. Then, the goal was to entice settlement of a seemingly open frontier. Today, no one could suggest that there is a need to entice more boats into the nation's fisheries. We owe the current array of interests involved in our fisheries a fair and compassionate transition away from the practice of unrestricted entry. We do not owe a select few of them a free, permanent endowment of the wealth of our fishery resource.



zation, and there are reasons to believe that long-run sustainable management is inconsistent with privatization. If the race for fish is considered a principal problem, then that problem can and must be addressed without the burden of mistaken claims of the need for property rights or long-term security. Liberating ourselves from this confusion and ideology allows us to search for policy options that are consistent with the guiding principles listed earlier.

Pondering the Race: Is the Cure the Cause?

For over a quarter century, the potential for enormous windfall profits under some scheme of rights-based management programs has profoundly influenced the behavior of many participants in U.S. commercial fisheries. This behavior reveals a quite normal race for present profits, but also a race for enormous windfalls of income and wealth from anticipated policy changes. Speculative entry and the retention of large numbers of vessels in a fishery are not unique to IFQ programs—they afflict all fishery programs when the industry anticipates that marketable permits will be freely given away to initial recipients.

IFQs are different, however, in that the magnitude of an initial recipient's windfall is generally directly proportional to recent catches. As a result, IFQs promote speculative fishing-for-history. Prospecting replaces fishing and the race is intensified accordingly. "Fishing-for-history" is the inevitable response of the industry to the prevailing pattern of basing future IFQ allocations on "qualifying catch history." Ironically, IFQs can serve to remove vessels in the post-implementation period, while the mere future prospect of them serves to induce additional vessels (and to retain vessels that might otherwise exit) in pre-implementation years. From the perspective of recent trends in U.S. fisheries, the irony is compounded. Although IFQ advocates blame unrestricted entry for the race for fish and excess investment, anticipation of IFQs fuels both conditions. The inevitable race and overinvestment that ensue then compel the policy shift to IFQs that the industry supports—most particularly when that initial allotment appears certain to be a gift of rather substantial income and wealth from the citizenry. The design of the IFQ system, to the extent that it is based on catch history, bestows advantages on those most responsible for racing and overinvestment (as a result of their quest for qualifying catch history). The result is a claimed cure that gives rise to the disease. Rational fisheries policy should seek to curtail such outcomes rather than promote them.

ASSERTION 5:

Private property rights ensure wise stewardship.

REALITY: Private property rights are neither necessary nor sufficient for stewardship of a public natural resource. Counterfeit claims that private property induces good stewardship are clearly necessary to a campaign seeking to privatize that natural resource.

Discussion: The most seductive claim made for IFQs-as-property rights is that IFQs will usher in a new era of stewardship of the public's fishery resources. When stewardship is the issue, however, support for IFQs enters the realm of faith-based fishing:

> Much of the political support for IFQs is similarly driven by faith in the assumption that privatization will foster ecological sensibility [NRC, 1999, p. 35].

In simplest terms, the stewardship argument contends that if you own something, you will take care of it. In the rights-based literature, the ideal steward is a sole owner. Barring a sole owner of the fishery, it is asserted that the issuance of IFQs will come close to creating good stewardship because owners of fishing quotas will have the incentive to fish cautiously in order to protect the economic value of their future share of the TAC. This faith in the stewardship-inducing qualities of IFQs must be challenged on several fronts—beginning with the history of natural resource management in the United States.

Consider Land: Private Ownership Does Not Equal Stewardship

Land is no stranger to private ownership, but privately owned land is no stranger to ecological abuse (see box, above right). Publicly owned national treasures such as Yosemite, Yellowstone, and the Grand Canyon are proof that private ownership is not necessary or sufficient for wise stewardship. Since the creation of Yellowstone National Park in 1872, the one sure path toward enhanced protection of precious natural assets from being harvested, burned, plowed, or shot into oblivion has been to bestow protection through public ownership and control.[7]

A TWO-WORD ANSWER TO THE QUESTION "DOES PRIVATE OWNERSHIP EQUAL STEWARDSHIP?"

"Dust Bowl"

The IFQ/"rights-based" fishing literature seems unaware of the history of abuse of land by private owners. Aldo Leopold's famous call for a "land ethic" testifies to the lack of a simple relationship between private ownership and stewardship [Leopold, 1966]. In reality, sensitive stewardship does not spring from private ownership—or any other ownership regime. Rather stewardship springs from a concern for the natural resource into the future. That concern may be activated in a number of ways, but merely changing ownership is not sufficient.

Discounting the Future

Certainly, the government does not always get it perfectly right, but private and public owners have very different planning horizons and very different objectives. At issue are differences in "discounting" future benefits and the resulting implications for resource policy. (see box, p. 20) The presumption, and the reality, of public ownership is that in most instances the future matters above all other considerations. For private owners, the management of renewable natural resources is often the victim of a "faulty telescopic faculty," wherein present needs often take precedence over future concerns.

In general, there is only one entity whose time horizon gives proper account of the future. That entity is the collective authority of government, looking not to the present value of future earnings, but looking instead to the future value of present actions.

STEWARDSHIP AND "DISCOUNTING"

There is an enduring myth in America that private ownership is sufficient to ensure good stewardship of natural resources. The claim is wishful thinking, and economic theory is clear in this regard. It is called the **iron law of the discount rate** [Page, 1977]. Specifically, if the rate of time preference for consumption spending of a private owner is greater than the rate of growth of a living resource—in this case, fish—then the private owner will find it optimal to harvest the resource as fast as possible (and perhaps completely), thereby driving it to extinction [Clark, 1973]. The proceeds from this rapacious behavior could then be spent on consumption items. Or, if interest rates are higher than the rate of growth of the natural resource the private owner will accelerate the harvest and invest the monetary proceeds where they will grow faster than if the resource had been managed conservatively to yield an income over time. The key issue here is the rate of growth of the natural resource compared with the rate at which the private owner wishes to consume now versus delaying consumption into the future.

Exactly What Incentives for Stewardship Do IFQs Offer?

The benefits IFQs offer to fishery management cannot arise from the idea that IFQs, by being property rights, instill good stewardship. IFQs are not property rights, and even if they were this would not be sufficient to induce good stewardship of America's ocean resources. An IFQ permit is simply an opportunity to locate and catch a variable share of a TAC that varies over time. Again, IFQs are not property rights, and IFQ holders can bring remarkably few enforceable claims against other fishing firms or against fishery managers. Most particularly, IFQ holders cannot bring those claims that address the fundamental sources of uncertainty ("externalities," in the fisheries literature). IFQ permit holders remain exposed to the same uncontrolled factors that afflict all fisheries (e.g., stock, mesh, and crowding externalities). The problem here is that IFQ "owners" really don't own much at all, and this has been clearly recognized by the leading advocates of IFQs as rights-based fishing:

> While the above assesses the property-rights quality of the harvesting rights embodied in the quotas, another important issue is the quality of *the property right in what really counts, i.e., the resource itself and its environment.* IQs and ITQs, being extraction rights, form only an indirect property right in these underlying resources. Consequently, they provide the individual quota holders with little control over the fish stocks and the marine environment and equally small protection from the interference of others (quota holders, marine predators and other users of the marine environment such as mining companies, polluters, etc.) in these resources [Árnason, 2000, pp. 23–24, (emphasis added)].

"Little control over the fish stocks" and "equally small protection from the interference of others" are precisely the problems that IFQs-as-property-rights are supposed to address. Obviously, if managers reduce future TAC levels because of excessive harvest, then the value of a share-based quota unit goes down, and conversely, if they increase TAC levels, the value of the quota share goes up. This process is the basis for the contention that IFQ permits are both necessary and sufficient for wise, cautious stewardship of fisheries. That logic, however, is too utopian because no single holder of a permit can control the fishing behavior of other permit holders. Unless managers can assure each vessel owner that all others in a fishery will behave honorably, there is little that one fisher can do to buttress the future value of quota shares. Each IFQ holder's lack of control over the others' behavior means that no permit holder can control (1) the economic value of the quota share; (2) the fish; and (3) the ecosystem(s). To call this "ownership" that will produce stewardship is a contradiction in terms. The hope for good resource husbandry remains only a hope because IFQ permit holders have nothing to husband.

The issue of security arises once again when IFQ advocates identify the lack of long-term security as the essential obstacle to stewardship. As before, IFQ proponents urge policymakers to (1) increase the IFQ holder's security; (2) oppose limited-duration programs; and (3) make IFQs "permanent fishing rights" so as to avoid reducing "the holder's incentive to conserve the fish stocks" (NRC, 1999, p. 201). IFQ proponents seem to want it both ways. They understand that the specter of public compensation for reductions in the TAC (the essence of what it means to have a property right in the United States) would undermine public support for IFQs. At the same time, IFQ advocates are eager to insist that IFQs must be permanent property rights if they are to produce the necessary incentives to good stewardship.

This is an awkward contradiction. It is common for IFQ proponents in the United States to reassure a nervous public that they aren't privatizing anything—they are simply advocating what they consider to be the best management tool. Yet proponents then lapse into justifications for IFQs that are thoroughly predicated upon a logic in which privatization is not only beneficial but also necessary.

It must be recognized that an IFQ permit is not a sufficient policy instrument to prevent overfishing. More important, there is no assurance that the boosting of TACs in an IFQ fishery in response to industry pressure will happen less frequently than it does in an unrestricted-entry fishery, and it may happen even more frequently. Indeed, in this vein there is little reason to believe that behavior in IFQ fisheries will differ from the behavior in all other fisheries with regard to long-term protection of the resource.

Assertion 6:

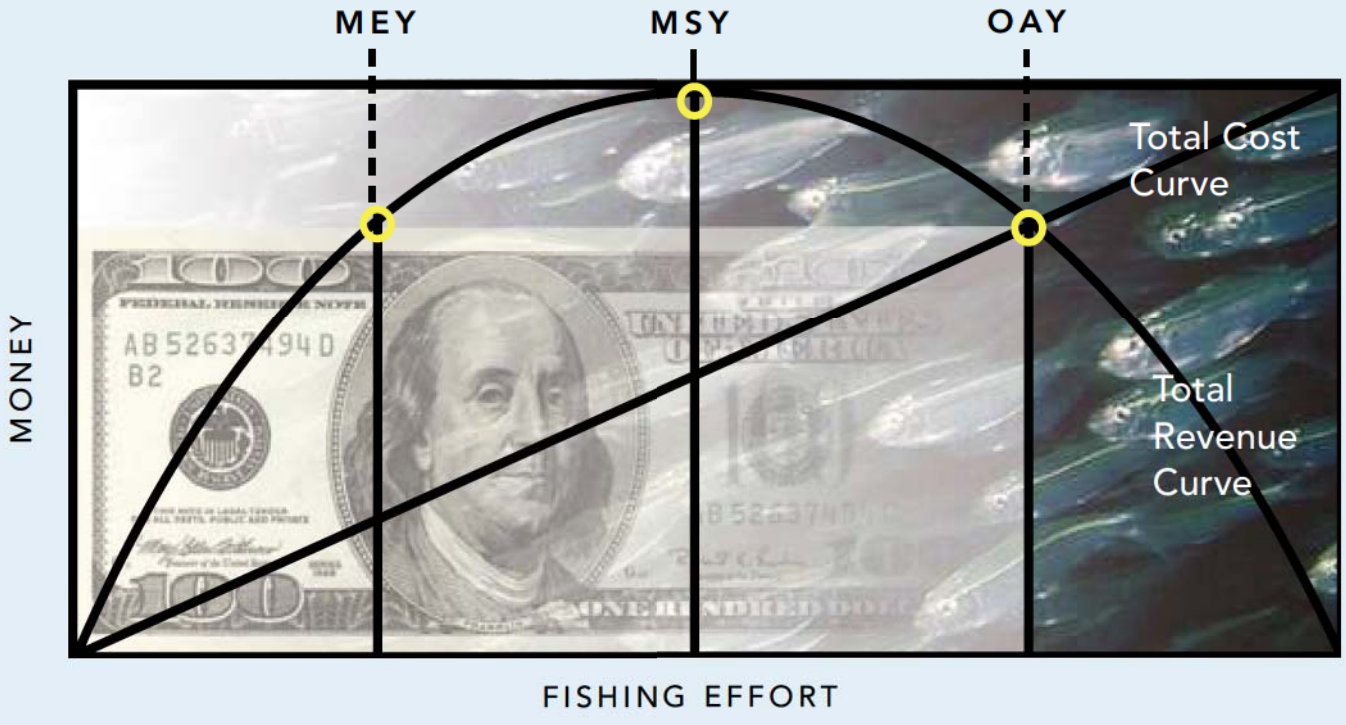
There are too many boats chasing too few fish: no one is making any money and overfishing is the inevitable result.

Reality: Over time, all owners of capital and labor in a fishery are making more money than they could in their next best employment, or they would not be fishing. Economic rents are being earned. Overfishing results from poor management or no management, not the number of boats in a fishery.

Discussion: The conventional property rights diagnosis and property rights prescription has been reduced in contemporary IFQ discussions to a mere nine words: "There are too many boats chasing too few fish." The companion to this catchphrase is the ubiquitous idea that boats (and people) must be removed from the fishery via "property rights" (i.e., "rationalization"). Several justifications are put for-

"THE MOST MISUNDERSTOOD MODEL IN THE (FISHING) WORLD"

The diagram below is frequently presented to explain the tragedy of unrestricted-entry fisheries and to support the move to IFQs as "rights-based" fishing. The diagram represents a graphic portrayal of the essence of the "Gordon-Schaefer bio-economic model" (named after two early and independent efforts to explain fisheries from both biological and economic perspectives [Gordon, 1954; Schaefer, 1957, 1959]). The model identifies three key potential outcomes from a commercial fishery: the point of maximum sustainable economic yield (MEY), the point of maximum sustainable physical yield (MSY), and the point of sustainable yield at which an unrestricted entry fishery with no TAC would be expected to be in equilibrium in the long run (the "open access" yield or OAY). Fisheries experts fully understand the model, however popular accounts frequently assert that fishing at the OAY point will eventually destroy the fish stock. In fact, the model indicates that OAY is a sustainable yield as are all points along the Total Revenue curve. The fact that there is no limit on total catch applied from outside the fishery (i.e., a TAC) is also frequently overlooked when the model is invoked to suggest inevitable ruin in the absence of IFQs as property rights.



ward to make this eviction project seem not only necessary but also humane. The first of these rests on beliefs about the inevitability of economic and biological tragedies in the absence of private property rights. These beliefs spring from widespread misunderstanding of one of the early models of a fishery under unrestricted entry with no TAC limit (the so-called Gordon-Schaefer bio-economic model; see box, p. 22). It is important to examine this model in greater detail, not because it is a particularly good abstraction of any actual fishery (it isn't), but because it is so widely and so authoritatively used to explain and promote IFQs.

From the economic perspective, the Gordon-Schaefer model is popularly thought to prove that an unrestricted entry fishery will drive the fleet to financial ruin. Confronted with this prediction, one might logically wonder what the model knows that the fleet does not. The conventional answer (usually given in the form of Garrett Hardin's "tragedy of the commons" parable (Hardin, 1968)) is that an unrestricted entry fishery represents the classic situation in which actions that might appear rational from an individual perspective are collectively irrational. But what does the model actually say about the economic condition of the fleet? An answer to this question requires an understanding of the distinction between "profit" and "rent" as used by economists (see box, right).

In the long run, the Gordon-Schaefer model predicts a situation in which no economic rent is available but all firms are still making normal profits. The standard diagnosis about an unrestricted entry fishery is mistaken if it is used to show or assert that fishers are not making any money. This may be confusing to those not well versed in economic theory. After all, the standard model features a long-run condition in which total revenues just equal total costs, and under these conditions it would seem that profits are zero. This is not the case, however, because of the way "total costs" are figured in economics. All factors of production in an unrestricted-entry fishery are assumed to earn at least what they would earn in their next best alternative—if they are not doing so, they would exit the fishery. In economics, the "cost" of being in any particular business is what you could earn elsewhere. This "opportunity cost" is already incorporated into the total cost curve in the Gordon-Schaefer model. When total revenues just equal total costs, it does

ECONOMIC "RENT" DEMYSTIFIED

The standard story in fishery economics is one of **rent dissipation**—popularly translated into concern that no one is making money in an "open-access" fishery. The confusion lies with the concepts of "normal profits" and "rent" in economics. The concept of normal profits is akin to an average rate of profit across a suite of employment or investment options. People will tend to stay with one employment or investment option so long as the return it provides is greater than what they could obtain elsewhere. If the profitability of the fishery to an individual fishing firm drops below this threshold (the "normal" profit level), then a fisher would leave the fishery to enter his or her next best employment or investment option. Employment and investment options that offer a rate of return higher than the expected rate tend to attract new entrants precisely because of this higher-than-expected (normal) return. In economics this surplus above normal returns is known as economic rent.

The long-term scenario in the Gordon-Schaefer model is one where no economic rent is available *but* all firms are still making normal profits because normal profits are included in the total cost curve. At the "open access" equilibrium (OAY) total revenues just equal total costs (including the normal profit component) and thus revenues are just enough to hold firms in the fishery. Again, fisheries experts know this conclusion well but it does not always seem to be clearly understood by broader audiences in the context of fisheries policy discussions.

not mean that the fleet is earning no money but rather that it is earning just what it could in the next best employment option.

Are all participants in any real fishery making money at any particular time? Certainly not, and the reasons the model departs from this reality are important to grasp. First, the Gordon-Schaefer model is based on a stylized "long-run" situation, but people and firms in a fishery experience short-run realities. Second, the model is based on the assumption of a fleet of identical fishing firms or, alternatively, a sort of representative firm. Thus conclusions drawn from the model apply to the representative firm rather than to any particular firm. To say that the representative firm in the model is making money in the long-run unrestricted-entry fishery is to say that all vessels on average are making money. These are important qualifications to the conclusion that profits are indeed being earned in an unrestricted-entry fishery, but they do not alter the accuracy of that conclusion relative to the Gordon-Schaefer model. The model continues to provide support for IFQs-as-rights-based-fishing, and that support has been built on confusion about what the model says and does not say.

This brings us to "rent." As noted above, the model indicates that in the long run, no rent is available under unrestricted entry conditions. The fisheries literature and IFQ debates thus feature frequent mentions of "rent dissipation." Here it is the model itself that is misleading, not popular interpretations of that model. Rent is indeed being captured in an unrestricted entry fishery. The model is blind to this fact because of the assumption of a representative firm—all boats are assumed to be the same. In reality, fishing, like all other industries, is a heterogeneous mix of fixed capital, managerial skill, and labor quality. Across a fleet of fishing vessels, there is a great diversity of capital, labor, and managerial skills that combine to produce a variety of fish-catching capacities. In economic terms, this variety of fish-catching capacities represents a variety of fish-catching costs. When vessel owners pursue fish, they are stuck with their vessel's average costs, which are determined by the technology on board, the crew's skill, and the captain and crew's knowledge of good and bad fishing grounds. If a vessel owner decides to make an investment in fishing power, this is done to reduce the vessel's average cost of effort. The vessel owner's actions are the same as those of any other business owner—technical change is driven by the desire to reduce costs in order to remain competitive, and to increase chances of survival.

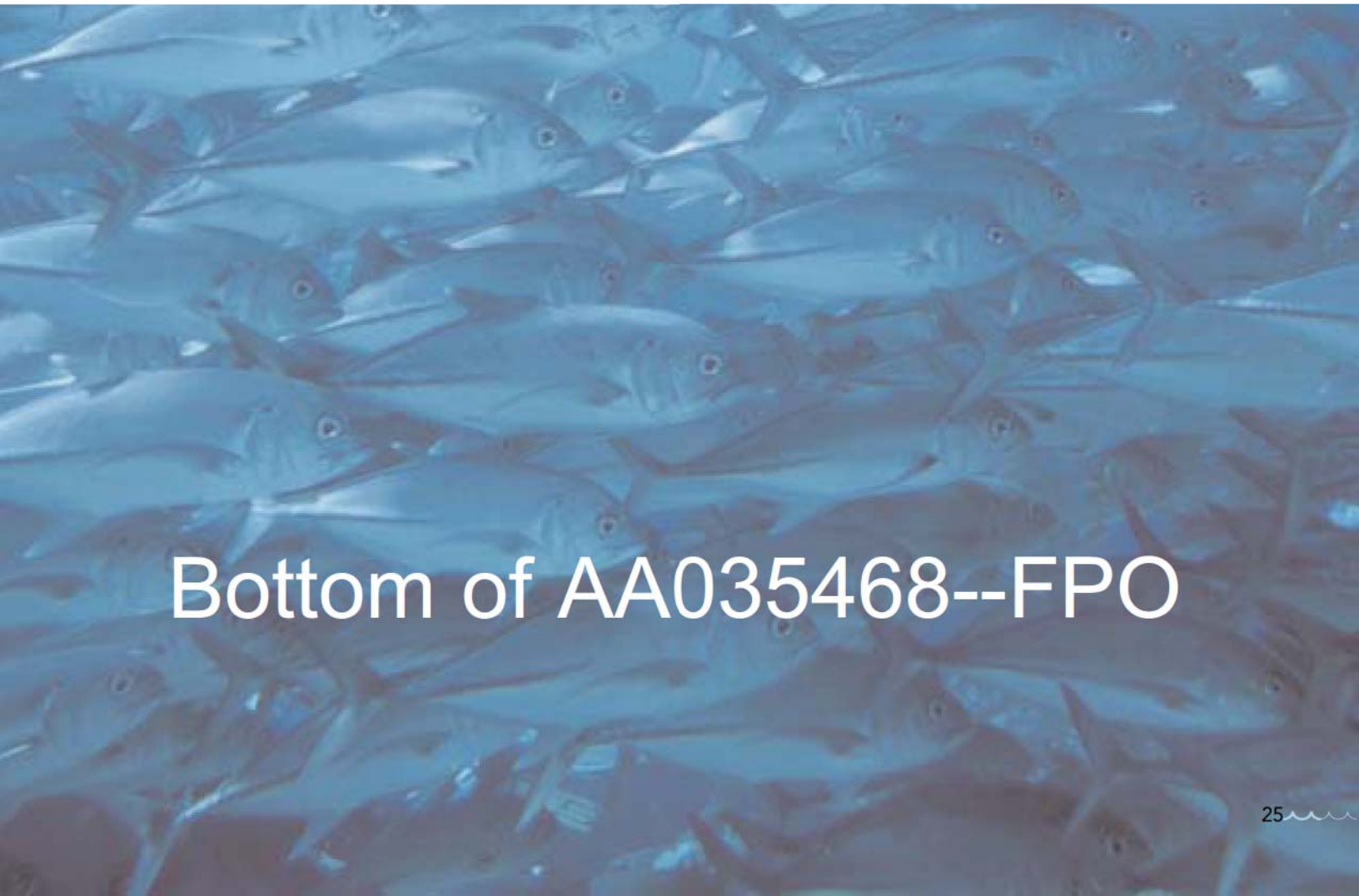
Acknowledging this variety of cost profiles is crucial to understanding and analyzing the economics of unrestricted entry fisheries. The variety of cost profiles means that the vessels in a given fishery will earn a range of profits. Vessels with lower costs will earn revenue in excess of what is needed for the vessel owner to enter and remain in the fishery. In the vocabulary of economics, these vessels are earning *differential rent*—not by owning superior land, but by owning and controlling superior capital free to roam across fishing grounds of varying quality. In land-based activities, differential rent accrues to those fortunate enough to own land of superior quality. In fisheries, differential rent accrues to those fortunate enough to own higher-quality boats and gear—and to possess superior knowledge that helps them find and exploit better fishing grounds.

The dominant story in fisheries economics, however, is of rent dissipation, which is often translated into a claim that fishing firms are not making any money (profit). This grim story then quickly becomes the basis for a simplistic policy prescription: some boats and fishers must be forced out of the fishery so that those remaining can begin to earn an income from fishing, and so that those excluded from the fishery can be free to move to other economic pursuits in which their labor and capital will add materially to the net national product. The idea that simply removing fishers will make all parties better off is naïve and flawed.

And What About the Fish?

Popular understanding of the fate of the fish themselves under unrestricted entry as depicted in the Gordon-Schaefer model is similarly unsound. Inevitable ruin—the "tragedy of the commons"—is not supported by the Gordon-Schaefer model. In fact, all points along the total revenue curve (which is merely the sustainable yield/effort curve transformed by an assumed constant fish price), including the long-run unrestricted entry equilibrium, are theoretically sustainable by definition (i.e., by the explicit terms of the model). No doubt this will surprise many readers. The standard model portrays a dreamlike self-equilibrating coupling of nature and commerce. There are good reasons to question the applicability of this management-by-autopilot scenario to real fisheries, and fisheries scientists have long since moved beyond the Gordon-Schaefer model. Many fisheries economists remain committed to it, however, and use it to explain and justify the need for IFQs as rights-based fishing. The interesting point here is that the model used as the principal explanation-cum-rationale for IFQs as rights-based fishing does not in fact show the fish stock being driven to ruin under unrestricted entry.

It must also be understood that the model is TAC-free—there is no externally imposed catch limit anywhere in the model. If one is concerned about where catch levels fall on the total revenue curve, or even if they are *off* the curve, then a management tool such as a TAC is the obvious remedy. As stated earlier, if fishery resources are managed badly under unrestricted entry, the fault does not lie with unrestricted entry and the number of boats in a fishery per se, but rather with flawed management objectives and processes.



Occasionally, IFQ promoters will admit that the link between the push for property rights and the real management issue—the control of fishing mortality—is tenuous. Consider the following strategic goal statement from the National Marine Fisheries Service:

> **Promote and encourage conversion from open access fisheries to controlled access and/or establish "property rights."** Theoretically, this is not required to prevent overfishing, but experience has shown that the common property nature of most fisheries reinforces pressure from industry to overfish.... [NMFS, 1991, p. 12 (emphasis in original)].

The public agency entrusted with managing our public fishery resources (our property) has succumbed to the "it's a lack of property problem" diagnosis, as well as to the assertion that, while not necessary to prevent overfishing, "property rights" are necessary to address a fundamental political problem associated with having "too many boats."

ASSERTION 7:

Too many boats are chasing too few fish; reducing the number of boats will reduce political pressure on fishery managers and liberate a latent political will to manage.

REALITY: Big, concentrated industries know at least as much about wielding political influence as do small, diffuse industries. There is no reason to believe that consolidating the fishing industry will embolden managers to resist political pressure.

DISCUSSION: The perception that an industry composed of numerous small-scale firms is problematic predates the current promotion of IFQs via the "too many boats" catchphrase:

> The fishing industry is highly fragmented. Fishermen consist, for the most part, of small independent fishing vessel operators, more than 90% of which employ less than five people. The fish processing and distribution components likewise consist principally of small establishments. The fragmented nature of the industry leaves little opportunity for capital accumulation and makes achieving coordination among various operators to develop fisheries extremely difficult. [GAO, 1976, p. 119]

From one perspective, it might seem as if the fishing industry has managed, on its own, to attain a marine version of the Jeffersonian ideal of an industry of agrarian yeomen, and one might imagine this outcome to be cause for celebration. From another perspective, however, a government-backed industry development program was needed. Now, a quarter-century of "development" later, we find ourselves with "too many boats," and—oddly enough—the persistent presence of small firms has become a

political and economic problem. Promoters of IFQs as rights-based fishing now argue that too many boats represent a political impediment to sound management in general and to acceptance of TAC-based management in particular.

This political focus is quite different from the standard critique of unrestricted entry reviewed earlier, in which the problem is too much catching effort. Proponents of the political version of the "too many boats" analysis do not focus on effort, nor do they focus on boats. Their focus has become people. The problem has suddenly been twisted so that it is now too many people who exert too much political power against weak bureaucrats who are constantly foiled in their quest for sound management. Managers know what to do and want to do the right thing but are unable to do so because of overwhelming political pressure. The contention here is that people are the source of political power, so fewer people would mean less political power in opposition to sound management. This approach also implies that concentrated industries, which entail fewer people, are less capable of wielding pernicious political power than diffuse, highly populated industries. The solution associated with these assessments is clear—getting rid of fishers will help lead to sustainable fisheries management.

The notion that economic concentration in the industry is the safe and easy path to acceptance of sound management is naïve, strikingly at odds with what experience has shown, and perhaps even dangerous. For example, consolidation of American agriculture—which now engages less than 2 percent of the American population—certainly has not reduced the political influence of that sector, nor has this concentration suddenly shifted the sector's operating style in the direction of ecological sustainability. The consolidationist program comes precariously close to the discredited belief that a sole owner will inevitably —and unavoidably—take good care of nature. As noted before, the iron law of the discount rate applies even to sole owners. Ironically, popular usage of the "too many boats" analysis suggests that evicting people from the fishery will not be enough to secure acceptance of sound management by those that remain. Something more is required to sweeten the pot, as it were.

ASSERTION 8:

Too many boats are chasing too few fish; the only way to get people to accept sound management is to give them a stake in the outcome.

REALITY: Management is a responsibility, not a sacrifice that warrants compensation. Fishers given access to the nation's marine fisheries are not at liberty to decide whether or not they will become willing participants in good management practices.

DISCUSSION: IFQ proponents argue that those fishers remaining in the fishery after the fleet has been culled must be given a stake in the outcome of management—and assurance that if they make sacrifices in the pursuit of sustainability, they will reap the benefits. The form of assurance most often suggested is to grant those remaining in the industry private property rights in the form of IFQs. That is, it is argued that IFQs represent a property-rights-based mechanism to reward people for accepting the supposed deprivations of sustainable management. This view reflects the perception that good management is a sacrifice rather than a responsibility on the part of those allowed to exploit public resources.

ASSERTION 9:

The United States ought to manage fisheries the way it manages other natural resources.

REALITY: Indeed, we ought to manage fisheries as we do other natural resources. But this conclusion provides no support at all for the current promotion of IFQs. We do not give other resources away freely, we do not endow particular industries with perpetual entitlements, and we do not call for the introduction of private property rights for other publicly owned resources. Instead, in managing other public resources, we (1) sell limited-duration, specified exploitation opportunities; (2) vigorously maintain public ownership; and (3) struggle on with the difficult task of managing public natural resources in the face of diverse societal assessments of their value and purpose.

DISCUSSION: In contemporary discussions of fisheries policy, declarations that "we ought to manage fisheries like other natural resources" are common and are used to justify IFQs as rights-based fishing. However, while other natural resources, such as forests and rangelands, have been through periods of perceived management crisis—or are arguably still in crises—a call for private property rights is not issued as a possible solution.[8] It is true that private property plays a role in the exploitation of these public resources, but the private property is simply cows and logging equipment (rather like boats and fishing gear), and there can be no doubt that the coveted resources, range grasses and timber, remain publicly owned (Macinko and Raymond, 2001). Despite this uncontested public ownership, neither racing nor excess capital plagues these resource arenas, as is the case with fisheries. Forestry and range management have avoided the outcomes observed in fisheries for a simple reason—these programs give loggers or ranchers individually specified exploitation opportunities. Ranchers are allotted specific numbers of animal-unit-months (AUMs) for specific plots of rangeland, and timber companies bid on specific timber sales (in terms of available board feet) on specific plots of forestland.

Imagine what would happen if the USFS were to offer a timber sale and select the top two, or five, or even 100 bidders rather than selecting the high bidder. The selected firms would be told that at a certain date and time they could begin cutting within a certain plot that featured a certain estimated board feet. But no individual firm would know its specific allocation. A race, or perhaps even mayhem, would be the consequence. Forest and range management avoids the results common in fisheries simply by specifying individual exploitation opportunities.

The grazing permit system established under the Taylor Grazing Act is especially instructive in this regard. As mentioned previously, the law carefully defines grazing permits as mere permits, and despite the best efforts of ranchers to argue that they have property rights in the range, the courts have definitively ruled that they do not. Yet the problems of racing and excess capacity that compelled Congress to enact the Taylor Grazing Act have been largely alleviated.

Analogies regarding the management of other natural resources can, of course, be overemphasized. The only reason to emulate another management arena is if the results are desirable, and forest and range management are not without controversy and are by no means model successes. What forest and range management *do* offer that is instructive to current fishery policy debates, however, is a straightforward demonstration of how specifying exploitation opportunities via permits can address some of the problems of greatest concern in fisheries, and how this can be achieved in a way that reaffirms public ownership and provides a financial return to the public without propelling the policy debate down a path dominated by an ideology of privatization. Unfortunately, many fishery managers in the United States seem to have reached the conclusion that it would be beneficial to privatize the resource rather than manage it as a public resource.

At the Crossroads

Consideration of fishery policy has arrived at an interesting point—the public resource of America's fisheries now seems poised for privatization based on the growing acceptance of a diagnosis that the problem with fisheries management is the absence of property rights. The campaign for IFQs is based on conceptual confusion. Property rights are already in place, and IFQs are not property rights-based fishing, they are catch share-based fishing.

As previously noted, the specification of an individual catch opportunity, not property rights, provides the "magic." Ideologically-infused beliefs have obscured this simple observation for too long and have allowed the rights-based fishing movement to gain widespread currency. Once this conceptual breakthrough is realized, the tool (catch shares) can be liberated from the ideology (private property), and in the process open up the menu of available policy options.

Full liberation of catch shares from the property rights ideology will require abandonment of the term "IFQ," which has become irretrievably contaminated by the "rights-based" dogma. Isolating all vestiges of the rights-based campaign will open up policy options because it will eliminate the application of an ideological litmus test that closes off options.[9] Once free to contemplate catch shares unencumbered by all the conditions imposed by the rights-based campaign (e.g., they must be property rights, they must be permanent, they must be secure…), it is possible to focus on designing a management system that is compatible with the existing property regime.

The starting place in this new national conversation is to ask how catch shares can be used in a way that is consistent with the guiding principles identified earlier. That is:

- How can catch shares be used to assert public ownership?
- How can catch shares be used to provide a financial return to the public owners?
- How can catch shares be used while not impeding the inevitable need to react to dynamic ecosystems and reassessments of our goals and values in the future?

In the next section, we sketch out a proposal to use auctions to address these three questions.

Commercial fisheries are an anomaly in the realm of public natural resource management not because of a lack of property rights but because of the free bestowal of the resource upon industry by the owning public. This free gifting of the wealth of the public's fishery resource is paralleled only by the situation affecting public resources covered under the anachronistic 1872 Mining Act[10] All other natural resource management regimes in this country feature mechanisms for returning an owner's share of the natural resource-based wealth to the owning public. In fact, maintaining control over resource wealth is what owners *do*. The critical step toward addressing our fishery management problems is to begin acting as owners—assertive ownership is fundamental (see Cunningham, 1994). As long as the opportunity to catch fish is freely available, and is augmented by the allure of potentially enormous windfalls, it cannot surprise anyone that there will be "too many boats."

The policy prescription that springs from the above considerations is clear: individually specified catching opportunities (catch shares) should be coupled with a mechanism that prices both access to fishery resources and catch removals. Such a program would be consistent with the guiding principles outlined earlier, and it would address concerns over both racing and excess investment. Those responsible for the nation's fisheries should manage them in a way that generates revenue for the owners of the assets—the American people. This would put our fisheries policies on a comparable footing with those policies that govern other industries exploiting public resources and, at the same time, eliminate some of the most destructive subsidies that lead to excess fishing labor and capital. It must be stressed that this coupling of tools (catch shares plus payments) is not a new idea—at one time it was embraced by the early rights-based school:

> Auctions: A Tool Whose Time Has Come

> Both [licenses and IFQs] must be backed up by a tax system that pushes in the right direction with respect to factor combination and overall input usage, shifts the cost of management from the general tax-payer to the producers and users of fish, and prevents unacceptably large windfall gains [Crutchfield, 1979, p. 749].

Paying to Fish, Bidding for Fish

It is time that those earning money from the public's fishery resource pay for the opportunity to catch fish, and bid for the fish they bring to the dock. The first fee would be a fixed entry price for participating in a particular fishery. This entry payment would not have to be remitted before the season, but it would be due by the time the fish were landed. The second part of the system would be a royalty bid paid on each fish or pound caught. The two components address two distinct problems (McAfee and McMillan, 1987). The entry payment tackles the problem of too many fishers accessing a particular fishery, while the royalty bid component attends concerns about pricing of the product landed. In practice, more or less emphasis might be placed on the entry payment component (or the royalty bid component) depending on local conditions and characteristics of the fishery involved.

Basic Parameters of Auctions in Fisheries

Each fishery need not have only one auction. Indeed, a TAC might be split into various partitions, with each partition subject to a separate auction, in order to reflect local characteristics and concerns.

Auctions would be for limited terms, in direct contrast to the prevailing notion that IFQs are perpetual permits to profit from a fishery. A specified time limit ensures future management flexibility, holds down entry costs, and it reminds both industry and

management alike that the wealth of ocean fisheries is the public's resource. Congress should establish a maximum term for an auction that the regional councils could reduce at their discretion.

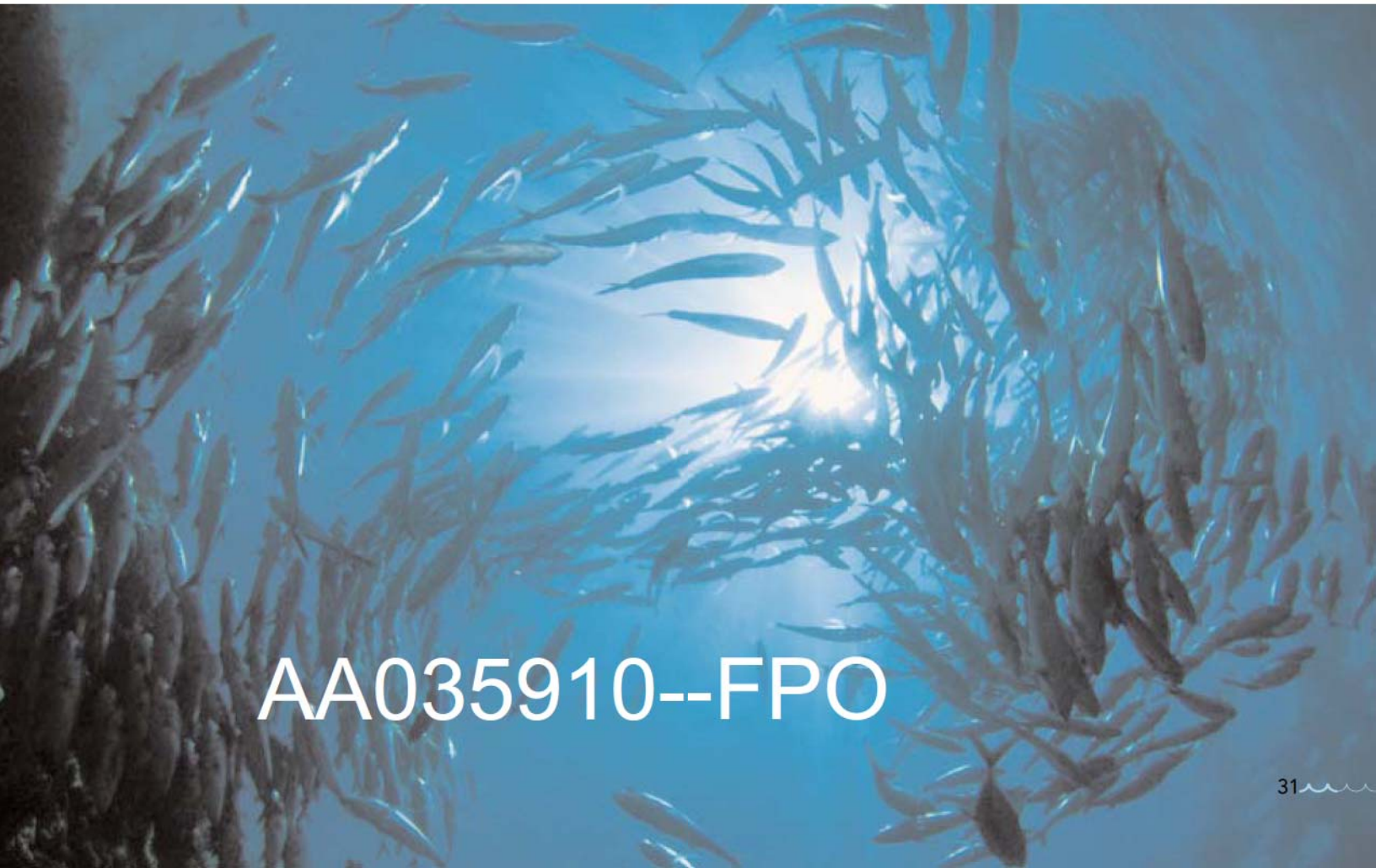
Within any TAC partition, that TAC could be allocated on the basis of the royalty bids evaluated on a per poundage basis in order to allay fears that only "deep pockets" would prevail. Similarly, royalties could be paid as fish are landed, not up front.

The councils could impose consolidation limits, which would restrict the amount of the TAC that any one successful bidder could receive.

Conversion to auction systems should not be instantaneous, but phased in over a number of years, with a growing percentage of the TAC allocated to auctions each successive year until, eventually, the entire TAC falls under the auction program(s). The councils could continue these rolling phases to ensure that an individual's portfolio of successful bids did not all expire in the same year.

During the early years of the transition to auction systems, a portion of the proceeds from the auctions could be used to fund a variety of programs to ease the transition. After the transition, the income should be handled in a manner reflecting the national commitment to federalist principles—revenues could be shared between federal, state, and local levels.

Even at this broad level of detail, it can be seen that auction systems address the first two of our suggested guiding principles—they assert and maintain public ownership, and they provide a financial return to the owning public. What of the third guiding principle: do auction systems provide transitional flexibility now and into the future? Most definitely, as long as the term (the duration) of any particular auction is fixed and relatively short. In the present, transitional flexibility is needed to move from current practices to auctions in a way that is not overly or needlessly dis-



ruptive. As suggested above, auction systems are eminently suited to phased adoption.

Transitional flexibility is needed precisely because today's generation cannot speak for future generations nor know fully the challenges that time will bring. In this regard, auctions present a stark contrast to the current trend toward the institutionalization of existing industry patterns. Doling out "rights" based on contemporary practices and understandings results in impediments to forthcoming transitions.

> What happens when—not if—fisheries management is drawn into a more holistic, ecosystem-based approach demanding different answers to a very different set of questions which quota-management systems cannot answer? How then does one dismantle a system in which very considerable private capital has been invested and in which the public sector has very little stake [Symes, 2000, p. 282]?

In the extreme case of a vastly different future, the periodicity of fixed-term auctions permits outright cancellation of the whole scheme. In addition to this promising flexibility, auction systems present opportunities to build in performance characteristics in the form of bid rebates or bid multipliers. For example, the councils could use these mechanisms to reward selective fishing. As is the case with all mechanisms, the councils would need to use care to avoid establishing contradictory incentives, such as inadvertently encouraging fishers to discard unwanted catch to give the appearance of low bycatch.

Who's Afraid of Auctions?

Some people will be, at least initially, opposed to auctions. Among those in the fishing industry, two distinct groups will likely be threatened by the idea of auctions. First are those who have been speculatively pursuing windfalls—including racing for catch history—and actively contending that they deserve "property rights" as a result of their history of catching the public's fishery resources. The second, and far larger, group includes those who are apprehensive about how auctions might affect the traditional pattern of the U.S fishing industry and unsure about the basic fairness of auctions. These are serious concerns that warrant further comment.

Making Sure "Mom-and-Pops" Don't Necessarily Lose

No doubt much concern will be focused on the potential adverse impacts of auction systems on small-scale operations. The fate of such operations will depend on the precise design of a particular auction system; they do not have to be inherently disadvantaged. The flexibility of auctions allows the TAC to be partitioned, and there could be auctions for each partition. Select partitions could be specifically devised with certain scales of operation in mind, not unlike the partitioning of some existing IFQ programs into vessel-size classes. Similarly, councils might establish partitions for owner-operators (or an owner-operator provision could be applied across all partitions). The point is not to argue for such partitions, but rather to underscore that they are feasible and could be an essential component of any auction system.

National Standards, Local Attention to Detail

National public resources require broad national standards established by Congress. Auction systems are no exception to this general proposition. Congress would need to mandate protection and assertion of public ownership, rent capture on behalf of that owning public, and built-in transitional flexibility through limited terms. But successful auction programs will also require substantial delegation of program design to regional and local expertise. For example, in some fisheries it may be inappropriate to require an entry payment component at all because the "cash up front" aspect would be too prohibitive (of course, as previously mentioned, submission of the entry payment could be deferred until the time of product sale). Conversely, in severely oversubscribed fisheries, managers might weight the entry payment relatively high in order to dissuade entry into the fishery. These design parameters could and arguably should (see Cunningham, 1994) include provisions for conducting the auction system on a community basis. In this regard, constitutional equal protection safeguards would control, but not prohibit, devolution to the community level.

Rationalizing "Rationalization": What's on Offer vs. What Could Be

Concerns over the fairness and distributional impacts of auctions can usefully be assessed by relative comparison to the established patterns under IFQ programs. Such a comparison might begin with how the owners of the resource fare under the two approaches. This isn't much of a contest. IFQ programs under the rights-based fishing model are "systems via which vast amounts of wealth are being transferred to first-round fishermen [Cunningham, 1994]," while there is little if any wealth returned to the owning public. The very premise of an auction system is to capture wealth for

the resource owners. Further, the IFQs-as-property-rights program is fundamentally contrary to existing public ownership, whereas an auction system is easily understood as an endorsement and assertion of public ownership.

From the perspective of the fishing industry, it is useful to compare the prospects for any individual operation, including a "mom-and-pop," under a well-crafted auction program with its prospects under the prevailing pattern of IFQs (or other rights-based "rationalization" efforts) to date. As discussed, pressure for IFQs grows as a result of speculative racing for catch history in anticipation of IFQs. Then the debate over the future IFQ program inevitably gets bogged down in disputes over the choice of the appropriate historical time period to use in establishing qualifying catch history (and in disputes over whether processors have equally deserving qualifying processing history). These debates demand persistent attention by the councils or Congress, or both. When the debate over the catch-history eligibility period is resolved, those most responsible for adding investment into the fishery almost invariably have large qualifying catch histories. Many other participants have qualifying catch histories that bear only scant resemblance to their recent catch levels.

As a result, following the initial allocation of IFQs, many qualifying fishing firms will likely find themselves holding quota shares too meager to ensure a viable fishing business. For firms without the financial assets to buy their way back to their recent level of operation, there is no alternative but to sell their petty quota share. This large number of willing or forced sellers suppresses the sale price, bestowing yet a second windfall on those who received larger quota shares free of charge—and who seek additional shares so that they will eventually control a larger portion of the TAC. Recipients of large initial allocations thus receive a double advantage.

In this way, IFQs are an exercise in consolidation under duress and simultaneously bestow fantastic endowments on a portion of the initial recipients. Naturally, this process gives rise to rather strong concerns about the fairness and equity of the entire venture. In fact, it has recently been forcefully argued that it is precisely when concerns over fairness and equity are strongest that fee-based systems should be preferred to IFQs (Weitzman, 2002). The "duress" under a carefully designed auction system should be less than that meted out in prevailing rights-based approaches to "rationalization."

There is yet another problem with the initial gifting of IFQs. Children of the original recipients—or others who may wish to enter—find themselves saddled with the prospect of enormous entry costs to buy out the original recipients, the "transitional gains" trap (Copes 1986). Auctions allow the purchase of relatively short duration, and thus less expensive, catch opportunities rather than the much higher cost of an IFQ in perpetuity.

Auctions will also get the government out of the business of "picking winners," as occurs under the initial allocation of IFQs. Fishing operations of all scales can benefit from a program wherein bids could be tendered at one's local town hall. Even at this early stage of thinking about auction systems, it is possible to envision a day when fish are caught primarily on the water, not in hotel meeting rooms and the corridors of Congress.

Conclusion: Auctions—Acting as Owners

Fisheries policy options have been constrained by profound conceptual confusion over "property rights" and "rights-based fishing." There is perhaps no greater example of this unfortunate diversion than the present debates over IFQ allocations between catching and processing segments of the industry. Amid all the assertions that investments equal property rights, what has been lost is the realization that the fight is over the specter of enormous windfalls and economic rents in perpetuity—a specter that would not exist were public ownership of fishery resources properly asserted.

Limited-term auctions of catch shares can put the guiding principles enumerated at the start of this paper into effect. It must be understood, however, that auction systems will not be a panacea. Fisheries management, like the management of any exploited natural resource, will remain an evolving practice. Structural adjustments and processes, such as auction systems, can only augment, not replace, reliance on human skill and judgment in the real-time process of managing human activities. Ultimately, the key to the success of auctions lies with Congress, the councils, and local-level bodies working together to get the details of auction systems right. In particular, great care will need to be taken to fashion a compassionate and fair transition. To acknowledge this does not alter the fundamental point that auction systems offer more promising possibilities for an uncertain future than does the current quagmire of so-called rights-based prescriptions.

APPENDIX: U.S. Commercial Fisheries and Their Management

Commercial Fisheries

Fisheries—the direct catch of living marine resources by humans—are divided into four types, according to their primary purpose: commercial, recreational, subsistence, or ceremonial. All four types occur in the United States, and there can be significant overlap and crossover among categories (particularly among the first three). Most of the perceived crises in fisheries management are focused on commercial fisheries.

U.S. commercial fishing ranges from being the source of a hardscrabble existence to being a lucrative alternative to Wall Street investments, capable of producing millions of dollars of annual returns for foreign and domestic investors. This range in scale and style of business is found both within single regions and across the country. These diverse firms catch an equally diverse array of fishery resources. Commercial fisheries target finfish (e.g., tuna, cod, haddock, flounder, pollock, swordfish, mackerel, rockfish), shellfish (e.g., crabs, lobsters, clams, sea urchins), and sharks; in some fisheries, the primary target is not the fish itself but fish eggs (roe). The life histories of these species vary widely in terms of longevity, fecundity, distribution, migratory patterns, and essential habitats.

Fishing Gear

The means commercial fishers use to catch fish are as diverse as the fish targeted. Fishing methods (referred to by the type of fishing "gear" deployed) include:

- **trawling** – towing nets through the water (pelagic trawling) or along the sea bottom (bottom trawling) and overcoming fish swimming in front of the net;
- **purse seining** – setting a net that encircles a school of fish
- **gill netting** – setting a net that ensnares fish striking the net;
- **trolling** – dragging a baited hook through the water;
- **long-lining** – setting out a line of baited hooks and retrieving it after letting it "soak";
- **trap or pot fishing** – catching fish or shellfish in baited pots or traps set on the sea bottom;
- **jigging** – hook-and-line setups agitated by hand or by machine and reeled in when a fish strikes the hook;
- **dredging** – using steel-mesh nets dragged through the surface layer of the sea bottom; and
- **diving** – direct capture of marine organisms from the sea bottom.

Differences in scale within a single gear type compound the diversity in gear. For example, fishers can use long-lining on almost an artisanal level—a single person in a small open boat retrieving the line by hand or with the aid of a small motorized line-hauler. Larger operations pursue long-lining on an industrial scale on boats over 100 feet in length and capable of working around the clock and processing their catch at sea. Often this range in scale is present within the same management area. Other extreme ranges in scale are manifest across regions. For example, bay shrimping—a form of trawling in the Gulf of Mexico—uses boats and supports a type of existence distinctly different from the factory trawlers fishing off the coast of Alaska. Gear types can divide and define participants in commercial fishing. Perhaps the most classic differentiation is between fixed gear, such as long-lines and pots, and mobile gear, such as trawling. Clashes between fixed and mobile gear operators are enduring and at times violent.

The people involved in commercial fishing in the United States are as diverse as the gear used and the species sought. People with a graduate education fish alongside people who did not finish high school. Individuals who have only recently turned to fishing as an occupation join those who represent a seventh generation of commercial fishing in their families. In some regions, large numbers of immigrants have successfully entered the fisheries. Some fisheries attract college students looking for summer jobs, while others are frequently referred to as employment options of last resort. Some people continue to combine commercial fishing with a proverbial "bit of this and bit of that" in an annual pattern that produces an adaptive livelihood. Others who "fish" never go to sea at all, but provide investment capital and financial management skills.

U.S. Fisheries Management

U.S. fishery managers have responded to the challenges presented by this multilayered diversity in the fishing industry with an equally diverse set of management approaches. In 1976, the United States extended national jurisdiction over fisheries resources out to 200 nautical miles, a move that would significantly impact fishery management. Congress retained traditional state management jurisdiction from 0 to 3 nautical miles[11] and established federal jurisdiction in the 3- to 200-mile zone now known as the exclusive economic zone (EEZ). The U.S. claims sovereign rights over the fishery resources within the EEZ, and these resources are public national natural resources, much like others such as public rangelands and national forests. Most fishery resources are mobile, however, and thus the jurisdictional transition at the 3-mile line poses some distinct challenges to coordinated and consistent management. Much of the present concern over fisheries management is directed toward the federal management system.

Federal Fishery Management System

In the Fishery Conservation and Management Act of 1976 (now the Magnuson-Stevens Fishery Conservation and Management Act), Congress reacted to the extreme diversity within commercial fisheries by deliberately opting for a decentralized model of management authority. It accomplished the devolution of authority by creating eight Regional Fishery Management Councils (New England, Mid-Atlantic, South Atlantic, Caribbean, Gulf of Mexico, Pacific, North Pacific, and Western Pacific). Congress charged the councils with the development of fishery management plans for the fisheries within their jurisdictions. Congress also prescribed the voting membership of the councils—in a manner that made it possible for industry, both commercial and recreational, to have more representation than state or federal fishery management agencies. Some view this direct industry involvement in management as the root of the problem. Cries of "foxes guarding the henhouse" and "regulatory capture" reflect this viewpoint. For others, Congress did not go far enough toward building in true "co-management" between "stakeholders" and government managers.

Notably, Congress built in a check on the power of the councils into the overall management system by defining the councils as advisory bodies to the Secretary of Commerce. Acting through the National Marine Fisheries Service (NMFS), the Secretary has final authority to approve or disapprove council recommendations and is charged with implementation and enforcement of fishery management regulations in the EEZ. The authoritative role assigned to Commerce/NMFS by Congress has been interpreted by some as a safety mechanism for the deliberate involvement of industry and as a means for science to check politics (Young, 1982). At the same time, vesting this exclusive authority with the business-promotion arm of the federal government is also a source of great concern to those who worry about the broader marine ecosystem and its living resources.

Fishery Management Tools

The councils and NMFS have a wide array of management tools available to regulate catch levels. Examples include the following:

- Gear regulations, some of which may limit the catching power or characteristics of fishing gear (e.g., specify the maximum length of a net, and require that the net mesh opening be of a certain size), while others may prohibit certain gear types altogether;
- Time and area closures, which proscribe certain times or areas for fishing
- Total allowable catch (TAC), which regulates total catches in a fishery—the fishery is closed once the TAC is reached by the relevant fishing fleet;
- Effort limits, which limit the permissible days at sea of either an entire fleet or individual vessels.

Some forms of regulation control or limit access to a fishery. Two such tools are license limitation, which involves

regulating the number of vessels in a fleet by issuing a limited number of mandatory licenses individual fishing quotas (IFQs), which partition the TAC into quotas that can be assigned to individual vessels, either by direct gift from the federal government or by subsequent market transactions.

In practice, all of these tools have problems. Gear regulations attempt to inhibit catching success, which results in a management program of regulated inefficiency. Time and area closures may be essential to protect stocks during critical times (e.g., spawning) but may be difficult to enforce because of the level of surveillance required. On their own, time and area closures do nothing to control the overall level of catch. Imposition of a TAC, which requires specific information about the fish stocks that can be difficult and costly to obtain as well as imprecise under the best of circumstances, can lead to "racing" among fishers, as individuals try to outcompete each other for personal shares of the overall TAC, as well as discarding of caught fish that would otherwise take the catch total beyond the TAC (thus closing the fishery).

License limitation programs require often-contentious decisions about who should be the initial recipients of the licenses, raise further questions about the equity of bestowing a windfall of profits on initial recipients and requiring successive generations to pay high entry costs, and—if tied to TAC management—can exhibit the same competitive racing for individual catches mentioned above. IFQs, while ameliorating racing under most conditions, provoke equity questions similar to those raised by license limitation, raise concerns about the apparently irreversible nature of such programs, can lead to increased "high-grading" (selective discarding to ensure that the catch retained and counted against one's individual limit brings the maximum market price), and can magnify the cost and precision problems associated with TACs by taking monitoring and enforcement down to the individual vessel level.

One universal feature of fisheries management by proscriptive regulation is that the regulations focus the evasive actions of unscrupulous segments of industry seeking competitive advantage over regulation-abiding segments. Gear regulations lead to ingenious efforts to use noncompliant gear, and catch limits lead to efforts to foul management's assessment of catch levels. In practice, fishery managers do not rely on a single regulatory tool. For example, it is common to see gear restrictions, time and area closures, TACs, and limited licenses woven together in an overall management program.

Notes

1. In earlier literature (e.g. Rettig and Ginter, 1978; Neher et al., 1989) licenses are clearly part of the rights-based toolkit. More recent accounts, however, portray licenses as part of the "traditional" tool kit and reserve the "rights-based" label for IFQs and "other" approaches (not always specified but sometimes mentioned are community quotas, territorial use rights, and fishing cooperatives; see e.g., Sutinen, 2001).

2. Challenges to this interpretation stand out by virtue of their rarity. Cunningham (1994) noted the conflation of a tool (catch shares) with an ideology (private property). More recently, Weitzman was moved to observe: "Actually, I would have to go much further in saying that I was shocked at learning the degree to which the regulatory agenda in this area had already been captured by some fisheries economists with an extreme "property rights" interpretation of harvesting quotas, which essentially preempts a serious consideration of Pigovian-style landing fees from the discussion table [Weitzman, 2002, p. 326, footnote 2]."

3. It is important to emphasize the lack of attention to the legal meaning of the terms. There are vast amounts of commentary using the terms in the economic literature generally but little consistency in how the terms are understood (and used) in legal settings: "Unwary readers may be misled into thinking that economists' definitions [of property rights] reflect

legal reality or, at least, the understanding of legal scholars, when they do not [Cole and Grossman, in press]."

4. The reader may be tempted to conclude that we are too hard on those who use "rights talk" in fishery management. But consider the following examples from the rights-based fishing literature:"In the fishing context, the term rights refers to an interest that a person or a collective can claim to have in terms of access to a fish stock or to the harvest from it. [Neher et al., 1989, p. 5, emphasis in original." In contrast, Cole and Grossman note that "lawyers, legal scholars, and judges seem to have little difficulty, within the margins, distinguishing rights from other kinds of interests such as licenses, privileges, or mere uses" and admonish economists to "avoid conflating property rights with mere uses or claims of right [Cole and Grossman, In Press]." Interests (or claimed rights) may be ubiquitous but relatively few are indeed rights (claims honored by the courts) and even fewer are property rights.

5. Even programs that have specific prohibitions on leasing, such as the halibut/sablefish IFQ program in Alaska, allow leasing or restricted leasing in specific segments of the fleet.

6. We note that similar results (i.e., no racing across a range of lease arrangements) occur in the Community Development Quota program in Alaska, wherein village corporations frequently lease their catch share allocations to industrial partners and the terms of the leases are often quite short.

7. The "legacy of Yellowstone" with regard to indigenous populations and protected areas is another matter altogether (Stevens, 1997).

8. With the exception of the libertarian literature that advocates so-called "free-market" environmentalism.

9. For example, Scott (1988, p. 22) notes that fee-based approaches "can stand alone" as regulatory tools but omits such approaches from further discussion because "they are the negation of rights based fishing." Weitzman (2002) has also remarked on the preemptive narrowing of policy options by the rights-based school (see note 2 above).

10. "Grazing, along with hard-rock mining, represents the last bastion of government-subsidized extraction of commodities from public lands. The American taxpayer deserves a viable alternative *The Economist*, March 9th, 2002, p. 39)." What is inappropriate for our public lands is inappropriate for our public oceans.

11. State jurisdiction off Texas and the west coast of Florida extends to 9 nautical miles, a legacy of Spanish land grants.

Notes for Map (pages 4-5):

Data for New England, Middle Atlantic, South Atlantic, Gulf, and Pacific regions was compiled from state data obtained from personal communication with the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, Maryland.

Data for Western Pacific region were compiled from state data for Hawaii obtained from personal communication with the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, Maryland, combined with territorial data for Guam, American Samoa, and the Northern Marianas Islands provided in Fisheries of the United States—2000, National Marine Fisheries Service, Office of Science and Technology, Fisheries Statistics and Economics Division, Silver Spring, Maryland, August 2001.

Data for the Caribbean region reflects landings in Puerto Rico provided in Fisheries of the United States—2000 National Marine Fisheries Service, Office of Science and Technology, Fisheries Statistics and Economics Division, Silver Spring, Maryland, August 2001.

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About the Authors

Seth Macinko is a member of the faculty of the department of marine affairs at the University of Rhode Island, where his research and teaching interests are broadly focused on fisheries management and fishing communities. He currently serves on science advisory committees for both the New England and the North Pacific fishery management councils. Prior to joining URI, Dr. Macinko worked for the Alaska Department of Fish and Game in Juneau as a social and economic policy analyst during the period in which the halibut/sablefish individual fishing quota program, the community development quota program, and fishing cooperatives under the American Fisheries Act were all implemented in the North Pacific. Many years ago, he fished commercially off Alaska.

Daniel W. Bromley is Anderson-Bascom Professor of applied economics at the University of Wisconsin, Madison. Professor Bromley has published extensively on the institutional foundations of the economy, the legal and philosophical dimensions of property rights, the economics of natural resources and the environment, and economic development. He has been editor of the journal *Land Economics* since 1974.

Dr. Bromley has been a consultant to the Global Environment Facility; the World Bank; the Ford Foundation; the U.S. Agency for International Development; the Asian Development Bank; the Organization for Economic Cooperation and Development; and the Ministry for the Environment in New Zealand. He has worked and lectured in Russia, Finland, Norway, Sweden, France, Germany, England, South Africa, Pakistan, Indonesia, the Dominican Republic, the Philippines, New Zealand, Thailand, Haiti, India, and Sudan. Professor Bromley has written and edited eleven books, the most recent of which are: *Sustaining Development: Environmental Resources in Developing Countries* (Elgar, 1999), and *Economics, Ethics, and Environmental Policy* (Blackwell, 2002), with Jouni Päävola.

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Coastside Fishing Club
PO Box 1422, El Granada CA 94018

4 P.M. Public Comment 2
March 2004

14 February, 2004

Don Hansen, Chair PFMC

As you know there has been widespread concern regarding the accuracy of the recreational catch estimates generated by the MRFSS process. Consequently, California is replacing that process with its own CRFS methodology. While the Coastside Fishing Club is optimistic about this change, this new system is too new to be a proven estimator of recreational fishing catch. At the November PFMC meeting in San Diego, the Coastside Fishing Club presented an alternate methodology that resulted in significantly lower estimates of recreational catch. However, the Coastside methodology had not been reviewed and approved by the SSC, and therefore California and the PFMC were unable to utilize its estimate in making the 2003 in-season adjustments. We continue improving our process as we prepare to make recreational catch estimates for 2004.

Until the new California CRFS system demonstrates a track record of accurate estimates of recreational catch, the Coastside Fishing Club and the rest of the recreational community will continue to be concerned. In order to develop confidence in the CRFS methodology, the Coastside Fishing Club continues to develop our independent assessment of recreational catch, which may then be compared with the CRFS estimates. Having an independent estimate to compare with the CRFS estimates, can be a powerful tool in the process of validating the CRFS methodology.

Furthermore, having more than one "approved" method of recreational catch estimation would enable the California Department of Fish and Game to evaluate, and adjust for, anomalous variations in any single process. Had this dual capability been available, last year's wave three MRFSS anomaly could potentially have been discarded, and replaced with catch estimates that better represented the actual catch. Or, should both estimates indicate an anomalous high (or low) catch estimate, then confidence in that anomaly would be established.

However, in order to serve as a validation methodology, or as an anomaly check, both methodologies need to be peer reviewed and found to be credible. Consequently, the Coastside Fishing Club requests the PFMC, in particular the SSC, review our process, and either approve its use for these purposes, or suggest changes that would make it acceptable for these purposes.

At the November meeting in San Diego, the Council did in fact ask the SSC to review the Coastside methodology. However the Coastside Fishing Club was unsure how to follow up with this direction. Consequently we contacted Tom Barnes, who directed us to Dan Waldeck. Discussions with Dan clarified that we should make a formal request for

Coastside Fishing Club
PO Box 1422, El Granada CA 94018

review via the Chair of the PFMC, consequently this letter to you. In addition, because of the need to validate the untried CRFS process, it is imperative that the Coastside methodology be reviewed at the earliest possible date in order that it be available for use during calendar year 2004.

To that end, please contact Dan Wolford of the Coastside Fishing Club, for information concerning the revised Coastside estimation methodology and data. He can be reached at the following.

Phone	408 356-2465
FAX	408 356-4325
Email	danwolford@earthlink.net
Mail	16171 Jasmine Way Los Gatos, CA 95032

Please let him know the nature of the information required by the SSC for their evaluation of the process, and to determine an appropriate time and place for discussions with the SSC.

Sincerely,

orig /s/ Dan Wolford

Dan Wolford, director
Coastside Fishing Club

Copies to Bob Franko
Darrell Ticehurst
Tom Barnes
Dan Waldeck

Fax

RECEIVED
MAR 1 2004
PFMC

Name: Dr. Donal McIsaac
Fax: Sp. #6
From: Robert D. Alverson
(206) 284-4720
Date: March 1, 2004
Re: Proposal
Pages: 3

Comments:

If you need a formal proposal to discuss options to the 300 lbs. daily trip limit fishery, consider this resubmitted for Council consideration, on behalf of Eric Olsen.

Robert D. Alverson

from the desk of.....
Robert D. Alverson, Manager
Fishing Vessel Owners' Association
4005 - 20th Ave. West,
Room 232, West Wall Bldg.,
Seattle, WA 98199-1290
Phone: (206) 284-4720/283-7735
Fax: (206) 283-3341
E-Mail: robertalverson@msn.com

February 27, 2004

Dr. Donald McIsaac, Executive Director
Pacific Fishery Management Council
7700 N.E. Ambassador Place, Suite 200
Portland, OR 97220-1384

RECEIVED
MAR 1 2004
PFMC

RE: **Proposed Groundfish Amendments**

Dear Dr. McIsaac:

The following groundfish amendments would be compatible with the Rationalization Committee's recommendations for fixed-gear operations. The proposed action would affect fixed- gear limited-entry sablefish-endorsed and non-endorsed operations that participate in the 300-pound daily trip-limit fishery.

Currently, 12 percent of the limited-entry fixed-gear quota is set aside to be accessed by limited-entry fixed-gear vessels both endorsed and unendorsed for sablefish. This proposal would eliminate this fishery and add a fourth tier endorsement for those permit holders that are not endorsed for the tiered fishery.

Proposal #1: End the daily trip-limit fishery for sablefish endorsed fixed-gear limited-entry permit holders. Make a determination of what percent of the 15% set-aside has been caught by this group the last two years and add an equal amount to each of the existing tiers. The remaining portion of the set-aside would belong to the unendorsed fixed-gear license holders. Allocate the remainder equally among this group as a new tier 4.

OR

Proposal #2: For the endorsed permit holders who participated during the last two years in the 300 lb. set-aside fishery, allocate equally their collective share of the 15% set-aside. Add this amount to their existing tier. The remaining portion of the 15% set-aside would belong to the unendorsed fixed-gear license holders. Allocate the remainder equally among those who participated from this group as a new tier 4.

This action would be an amendment to the current tiered program and thereby, would not be a new IFQ program.

Some of the supporting reasons for this are:

(1) The current daily trip limit fishery generates more high grading of sablefish at a time of resource decline. This proposed action would tend to force a person to fish the allocated 4th tier in a rational-like basis more probably in one trip rather than many small costly trips.

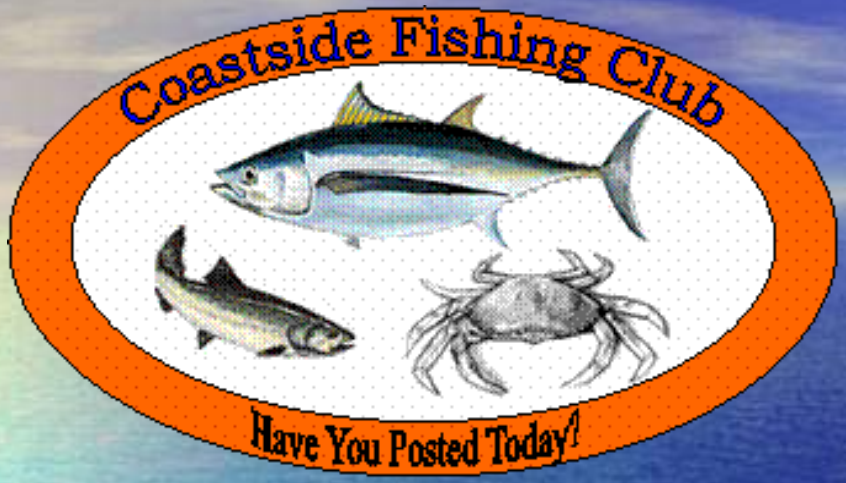
(2) The original intent of the 300 lbs. daily trip limit was to allow a bycatch of sablefish with the directed rock fish catchers. The new restriction on rock fish basically eliminates most directed rock fish operations by hook and line vessels. Hence, there is no need for the bycatch allowance.

(3) The current tiered amounts will be reduced by 38 percent for the 2002 season due to needed cuts in quota. Eliminating the 300-pound daily trip limit allows a more rational harvest of quota. The 300 pound trip limit encourages more trips on the water at increased costs and potentially, more bycatch of rock fish. Allowing for a new tier and consolidation of the 12% set-aside could reduce rock fish retention as the fleet would more probably target deeper water for their sablefish.

Sincerely,

Eric Olsen
President

cmb



Coastside Rockfish Initiatives

Coastside Fishing Club

March 2004

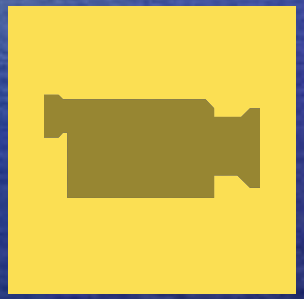
Two Initiatives

- Rockfish Re-Compression Device (RCD)
  - Investigate ability to release rockfish with low mortality
- Independent Catch Assessment
  - Support validation of CRFS
  - Provide alternate source of recreational catch estimates

Rockfish RCD

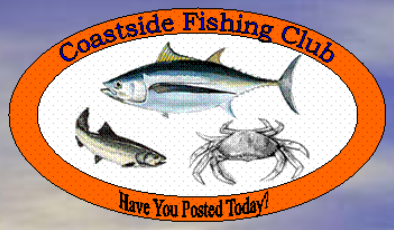
- Video that demonstrates ability to “revive” released by-catch
- Avoid infections resulting from needle deflation
- Initiating a formal study to investigate long term efficacy
  - Applying for permits
  - Developing partnership with academic Fish and Wildlife graduate program
    - Experimental design and procedures
    - Reporting

Rockfish RCD Video



Enhanced Coastside Recreational Rockfish Catch Estimation

- More thorough contact with launch points from Morro Bay north to the Oregon Boarder
- Treat each launch point as an independent calculation point
  - Allows for unique attributes
    - Number of fishermen per boat, CPUE, % target rockfish, catch size
- Can treat the shallow nearshore as an identifiable catch group



Enhanced Computation Methodology

- Actual launch data is collected and incorporated into an Excel spreadsheet
  - As reported by each harbor
    - Launch receipts, trailer counts, best estimates
- Fishing attributes for each site are entered
  - Can vary by site and by month
- Catch computation combines the monthly catch from each site

Coastside Involvement

- Our Rockfish initiatives are intended to improve the recreational rockfish experience, the fishery, and fishery management