

## Purging the frontier from our mind: Crafting a new fisheries policy<sup>†</sup>

Daniel W. Bromley

University of Wisconsin, 331 Taylor Hall, Henry 427 Lorch St., Madison, WI, 53706, USA (E-mail: dbromley@wisc.edu)

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### Abstract

American fishery policy is imprisoned by mental models that defeat coherence concerning the formulation of promising management futures. The idea of the frontier is at the core of current policy incoherence. Images—and specious accounts—of: (1) unowned fish; (2) IFQs/ITQs as property rights; (3) private ownership as necessary and sufficient for individuals (called owners) to suddenly become far-sighted stewards of nature; and (4) rights-based fisheries combine to defeat innovative thought about how to extricate ourselves from deep conceptual confusion. Until we purge the frontier—with its associated images—from our mind it will be difficult to undertake ecosystem management. More seriously, it will be impossible to rectify existing governance and management arrangements that are responsible for the degraded state of America's fisheries.

### Introduction

My title refers to the *frontier in our mind*. My purpose here is to suggest that U.S. fisheries policy is flawed precisely because we still regard the ocean

and ocean fisheries as part of the last American frontier. It is my working hypothesis that unless we can successfully purge ideas of the frontier from our mind, current flawed diagnoses of the “fishery problem” will lead, *ipso facto*, to policy solutions that themselves are flawed and incoherent.

First, the idea of the frontier shows up in conversations (and analyses) of fisheries as “un-owned” or as “common property,” and of the urgent need therefore to move to a regime of

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“rights-based” fishing. I will challenge the flawed analysis of ownership and associated “rights talk” that continues to undermine clear policy formulation. Second, we see historical echoes of the American frontier in the role of the regional fisheries management councils. As with the early Grazing Advisory Boards of the Bureau of Land Management, and to a lesser extent with Forest Service advisory bodies, we see in the fisheries management councils an unpleasant replay of early efforts in range and forest policy to bring users into management decisions of valuable natural resources. I will argue that this governance structure must be reformed. The third problem to emerge from durable notions of the frontier in our mind is the felt need to introduce a market so that rationality and economic “efficiency” can replace the current free-for all that now results in the continuing plunder of nature. The favorite management tool of those who wish to replace this rush of waste and inefficiency with some bracing market discipline is said to be *individual fishing quotas* (IFQs). Indeed, the Bush Administration responded to the report of the U.S. Commission on Ocean Policy (USCOP) by advocating greater use of a “market-based system for fisheries management Council on Environmental Quality, December 17, 2004, p. 4).” The *U.S. Ocean Action Plan* regards IFQs as an embodiment of what the USCOP previously called *dedicated access privileges*, and the Bush Administration further asserts that IFQs provide fishers an “exclusive, market-based share of the annual harvest quota (generally a percent share) (CEQ, 2004, p. 4).” The claim that IFQ programs offer “market-based” allocations of harvest quota is patently false and I shall here prove the falsity of that claim. Finally, the frontier is present in current attitudes regarding the absence of any plausible fee structure for the private sector’s profitable access to natural resources that are owned by – and allegedly managed for – the benefit of all U.S. citizens. We cannot achieve coherence in fisheries policy until this quaint practice is abandoned.

### Resource ownership

Since the creation of the Fishery Conservation Zone (FCZ) in 1976 – later to become the

Exclusive Economic Zone (EEZ) in 1983 – natural resources in the ocean (out to 200 miles) have been *owned* by the citizens of the United States. They represent what we would (should) refer to as *state property*. It is precisely on the basis of transformed ownership – from open access (no property regime) to state property – that foreign fleets were then prosecuted for entering and extracting *our* fisheries resources. Since this transition happened almost 30 years ago, it is curious that the fisheries literature has failed to acknowledge the flawed presumption that no one owns the fish until they have been captured. Is it possible to make a similar assertion with respect to trees in the National Forests, with respect to vegetation on BLM land, with respect to oil and gas resources in the outer continental shelf (OCS), or with respect to atmospheric radio waves?

To make this point in a different way, imagine two fishers in pursuit of a free swimming tuna in the US EEZ in the western Pacific. When one of them captures this marvelous creature and has it securely on board, he may be excused for assuming that he now “owns” it. Unfortunately for him, all he has is *possession* of it. By having possession of it he may believe it is his, and others probably hold similar thoughts. But when this individual arrives at the dock there is one more essential legal matter to be addressed. Specifically, an agent from some state or federal regulatory body will check that fish against a set of strictures indicating which of *our* tuna may be extracted from the western Pacific, and whether or not this particular creature indeed satisfies requirements as to size and other attributes. When does “ownership” start? It is impossible for ownership to “start” since the fish has been owned all along. The fish on board is now merely in the *possession* of the person who caught it, but that fish is still *owned* by the citizens of the United States. A *transfer* of ownership starts when a government official declares, with all the authority vested in her by the job she holds, that this tuna now “belongs to” the individual in whose possession it resides. Before the government agent has defined this possession as ownership, the fisher had best be very careful indeed with what he does with that tuna on board his vessel. He has only just begun to *own* it – and this legal transformation can often occur a long time after he has *caught* it. Catching is very far from owning.

Notice that if no-one owned the fish from the EEZ until those fish had been captured then it would be impossible for there to be legal categories called “bycatch” and “prohibited species.” Those categories are defined by the management authority charged with managing *our* ocean resources. It is conceptually and legally impossible for state or federal management agencies to declare certain species as prohibited – off limits, out of season, too small, too scarce, beyond the TAC – and by virtue of that declaration stand ready to impose legal sanctions, if the citizens of the United States were not already the owners of these fish. Contrary to what we read in the abundant literature on this subject, the citizens of the United States own all the fishes in the EEZ – every last one – and we (the owners) authorize federal and state agencies, acting as our agents, to oversee the extraction of a subset of those creatures.

This confusion over ownership dates back five decades when the idea was advanced that fisheries were “common property resources” and thus “un-owned.” It took the better part of three decades for this unfortunate confusion to be rectified. This durable conflation between common property and “un-owned” resources was both historically flawed and conceptually false (Becker, 1977; Macpherson,

1978; Bromley 1989, 1991, 2004, 2006; Christman, 1994; Macinko and Bromley, 2002, 2004). With the creation of the EEZ there is no plausible reason why those contributing to natural resource policy in general, and fisheries policy in particular, can still believe that ocean fishes in the EEZ are un-owned (*res nullius*). I offer descriptions of the broad classes of resource regimes in Table 1.

### Governance issues

I suggest that the creation of the regional fisheries management councils occurred at the very time that this model had been found flawed by the Department of the Interior for the Bureau of Land Management, and by the Department of Agriculture for the Forest Service. In a sense, the regional fisheries councils, and their predecessors, are reflections of two themes in American political history.

One theme is the celebration of localism. Localism is the idea that individuals closest to a particular issue have an inordinate degree of privileged and pertinent knowledge about that issue. Some literature in natural resource management borders on hagiography regarding the wis-

Table 1. Assets and property regimes

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We might usefully think of three general property regimes, and one regime that is not defined in terms of property rights at all.

#### STATE PROPERTY

The political community is the recognized owner of the asset. Individuals in the political community may benefit from the asset but must observe rules of the government agency responsible to the political community.

Examples: national forests and parks, military bases, government office buildings.

#### PRIVATE PROPERTY

Individual members of the political community have a recognized *right* to benefit from the asset, subject to legislative mediation and judicial review. Non-owners have a *duty* to allow owners to behave as above.

Examples: Fee-simple land and buildings, automobiles, personal objects.

#### COMMON PROPERTY

A group of owners holds rights in common, including the *right* to exclude non-owners. Individual owners have specific *rights* and *duties* with respect to their ability to benefit from the asset, subject to legislative mediation and judicial review within the larger political community. Non-owners have a legal *duty* to respect boundaries of the regime.

Examples: Irrigation districts, condominiums, the Swiss alps (pastures).

#### RES NULLIUS

There is no legally recognized group of users or owners. The asset is available to anyone – it is an open-access resource.

Examples: The high seas fishery (outside of national 200-mile limits), the atmosphere (in the absence of pollution laws).

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(Bromley, 1991).

dom and commitment of local people to take good care of nature. The historical record in this regard is, shall we say, mixed. A second problem with localism is that local people come to imagine that natural resources in the immediate vicinity "belong to" those who live there. Fisheries policy is a national issue – and a national problem – precisely because the fish of the West Coast do *not* belong to the residents of Ilwaco, Coos Bay, Newport, Astoria, Fort Bragg, and the communities bordering Monterey Bay. When rent sharing arrangements figure in, the dangers of localism are exacerbated. We see a reminder of this concerning drilling for oil in the Arctic National Wildlife Refuge (ANWR). Whose oil is it, after all? Does that oil belong to the residents of Alaska? Are the rest of us under some moral obligation or political imperative to make available our natural resources to provide construction jobs and extractive resource rents to the residents of particular places? This aspect of localism brings us to the second threatening theme.

We see in the American experience a strain of beneficent optimism (even innocence) about the nature of human nature – at least the American variant of human nature. This optimism is a subset of the larger notion of American exceptionalism that continues to haunt us in foreign relations; whatever the flaws and imperfections of people in other countries, we have none of those defects. This optimistic exceptionalism allows us to deny the existence and corrosive effect of pervasive greed and self interest. The optimistic literature also glosses over profound differential interests and power relationships at the local level. Localities are not homogeneous with respect to any variable that is pertinent to the "getting and spending" that defines capitalism. So-called "logging" communities along the Sierra and Cascade mountains probably contain as many people who wish to use the forests for recreational purposes as wish to cut them down.

Unfortunately, the regional fisheries management councils, founded on the utopian themes of localism and beneficent optimism, have shown themselves incapable of taking care of their first business – the protection of America's fishery resources. There are some notable exceptions, but it is the general case that these councils have been unable to resist local pressures to push the

biological envelope in extracting biomass. There seems to be a tendency to suppose that every last fish (of the allowable biological catch) is there for the taking and great waste and harm will result if any are left in the ocean (or "on the table" as the inside joke goes). The presence on the councils of the "extractive interests" – either directly or by political and economic affiliation – seems a plausible explanation for collective behavior that has not been conducive to fish stewardship and beneficial habitat management (Okey, 2003). Given the composition of the councils, and the understandable political commitment to fishing in the coastal states, it is to expect the impossible to suppose that politicians and the fishing "industry" (both commercial and recreational) would be swayed by pleas for a precautionary approach to annual harvest levels. After all, incomes and jobs are at stake. In fairness to the councils, some regional politicians have shown themselves capable of quite brutish behavior directed at members of the councils, and at regional and national federal fisheries officials. But this should have been anticipated when the councils were – in thrall of localism and beneficent optimism – created.

The only sure way to protect councils and their members (and federal and state regulators) is to make it impossible for politicians and others to bully them into unsound harvest protocols. The governance system must be reformed to remove decisions concerning total landings, "safe" landings, area closures, seasonal closures, etc. from the councils. That is, credible fisheries management for the future requires a sharp distinction between the use of the public's ocean-based wealth to create jobs and income flows now versus protection of fish stocks, and therefore jobs and particular income flows, in the future. Given almost three decades of history, we cannot expect the politicians to side with the fish. The solution to current over-fishing is to make it impossible for politicians (of all types, and at all levels) to become involved in decisions about catch levels. To accomplish this promising outcome there must be a durable "firewall" between decisions concerning the protection of fish stocks, and decisions concerning who among a group of claimants ought to be allowed to pursue the allowable harvest. This is not to deny that the very process of crafting "safe" catch levels – what we like to call "science" – is not

itself embedded in a political climate. But the issue here is to figure out how to stop the most egregious interventions by politicians (and those doing the pleading and prodding of the politicians) into biological processes. This point has recently been emphasized by the U.S. Commission on Ocean Policy (2004).

This is not the place to describe in detail the specifics of this essential protective shield, but its necessity cannot possibly be in doubt. If the politicians cannot help themselves, then structures and processes must be put in place to insulate them from such temptations. Moral fiber is strongest when not threatened by the sharp blade of self interest.

### Free access to the wealth of ocean fisheries

The nature and extent of current fishing capacity could easily have been predicted from quite simple economic models. Several decades of subsidies and incentives to invest in the fishing power of America's commercial fleet could hardly have produced anything else. Small wonder that there is excess capacity in many fisheries. What is curious to observe, however, is the rush now to throw good money after bad. The solution with some political appeal is that now we must undertake yet another subsidy and give away free of charge the enormous wealth of ocean fisheries to all who can prove that they have been part of the problem – racing, over-capitalizing, excessively entering – for some fixed period over the past several decades. Notice that we have subsidized entry and capacity expansion by underwriting – through tax discounts, government funds, and other means – enormous and redundant capital investments.

It is also curious that while some observers express dismay that all this capacity puts untoward pressure on limited fish stocks, there is little said about the fact that it costs virtually nothing for an annual fishing permit. Moreover, there is complete silence on the curious fact that the private sector – the fishing industry – continues to be able to extract valuable publicly owned natural resources without paying anything at all for those resources and the enormous wealth they bestow on private firms. If this were not bad enough, the Bush administration now seems devoted to the idea that

an industry that is twice subsidized should now be rewarded by the free gifting of all future catches through IFQs. As a rough sense of the enormity of this planned giveaway, the total value of commercial landings in 2003 was \$3.36 billion (NOAA/NOS). If this value is a plausible prediction of annual future landings then the present value of this income stream discounted at 3% is approximately \$101 billion dollars. The citizenry must be told the reason(s) why this enormous wealth should be given away free of charge to the private sector. Ironically, this massive wealth transfer to the private sector seems destined to occur as a way to bring “market-based” principles to America's fisheries management programs. As an economist I am interested to learn where, exactly, I might find – in the sacred texts of my discipline – support for the proposition that giving away over \$100 billion to the private sector is bringing the “market” to fisheries policy.

To make the point that such planned giveaways can have the most bizarre implications, consider the current efforts to “rationalize” (the accepted term of art) Alaska's crab fishery. The policy debate in the crab fishery is predicated upon the identification of “pies” – not real pies, but bundles of wealth (the income derivable from the sale of crab). It seems that various segments of the Alaskan crab fishery – those who catch crab and those who process crab – are engaged in a quite curious fight over who can manage to garner the most wealth lying around in the metaphorical “public trough.” In their defense, as long as the federal government seems intent on giving away free of charge billions of dollars in future income (income, by the way, arising from that which *we* own) then who can possibly blame crabbers and processors for quickly getting in line, and for aggressively defending their reasons (justifications) for being there?

Not only are participants in the industry engaged in this quite embarrassing (one would suppose) scramble for free income and wealth, they have managed to create rather bizarre language to hide what they are up to. The essence of the current plan is that those who actually fish for crab will be forced to deliver the bulk of their hard-won catch to *specific* processors. Since it might seem Stalinist to refer to this coerced marketing protocol as one of “forced deliveries,”

those pushing the scheme have managed to come up with the notion of a “two-pie” allocation. They will tell us that there is a *catcher vessel pie* and a *processor pie*. Actually this is nonsense. It turns out that the “pie” caught by the crabbers must then, for the most part, be sold and delivered to *particular* processors. This forced sale to processor is their (the processor’s) “pie.” Suddenly two pies begin to look like one pie – first caught and transported by crabbers, and then handed over to specific processors at a price agreeable to the processors. Where is the second pie in this scheme?

The “justification” for this shell game is yet another deceit – “stranded capital.” To an economist, the idea of stranded capital – as with “market-based” giveaways of the public’s wealth to the private sector – is a bit difficult to understand. In a market economy the only capital that can plausibly be considered “stranded” is that which capitalists were either too slow witted – or too beguiled by the prospect of future giveaways of the public’s wealth in ocean fisheries – to do anything but leave sitting there in the hope of using it to leverage yet another generous policy windfall. In a market economy there are only two plausible explanations for what some wish to call *stranded capital* – and neither explanation can be thought complimentary to those who now claim to be the owners of stranded capital.<sup>1</sup> The first explanation entails being asleep at the wheel, while the second entails betting on the come. The vibrancy and agility of a market economy is found in the ruthless discipline that capitalism imposes on the slow of mind. Nowhere in the doctrines of a market can one find a coherent reference to stranded capital that entails the requirement that one group of entrepreneurs (crabbers) must sell their product to a designated buyer (particular processors) because those policy-privileged buyers suddenly find themselves with “stranded capital.” Ironically, the very same people we might suppose to be full-throated advocates of what they are pleased to call “free markets” would appear to be the same ones who are first in line when a giveaway of assured income streams appears on the horizon.

Talk of stranded capital gives plausible evidence of what we call a moral hazard problem – having watched handouts of all sorts to all manner of fisheries participants in the past, it is only “rational” for others to take their place in line.

Did some owners of capital make a “bad” or unwise investment? If so, is it the responsibility of public policy – through mandating of assured income streams by forced deliveries – to rectify their mistakes?

Indeed, the one asset we most assuredly worry about being stranded is labor. That is, by the way, the rationale for the CDQ program in Alaska (National Research Council, 1999). Capital is highly mobile, labor is not, and so labor gets stranded when capital pulls out.<sup>2</sup> We see graphic reminders of stranded labor when capital has fled in many industrial cities in the northeastern part of the country. We notice the rusted hulks of the factories, but often miss the hollowed-out economic and social prospects of those individuals who once carried lunch pails into those factories. If those who worry about stranded capital (in this case human capital) are serious then let them become aggressive advocates for a community-based allocation scheme modeled on the CDQ program in Alaska. This would focus directly on stranded human capital in Alaska. But to force crabbers to deliver catch to specific processors cannot possibly be justified on economic grounds.

### Flawed economic incentives

If we step back from fisheries we might come to see them as a commercial endeavor whose purpose is to bring a particular commodity to market. Of course, like farming, it will be celebrated as a way of life and with that a number of other ideas will immediately be associated with it. These are legitimate, and nothing I say here should be taken to mean that I do not appreciate this aspect. But the point here is to move beyond the idea of the frontier and to begin to see fishing as part of the food system. When we start there we will notice that other kinds of food production require the control of certain forms of fixed capital such as land and buildings. Land and buildings must be bought or leased, and the funds to undertake these transactions must be borrowed – or if they come from the retained earnings in other pursuits there is an opportunity cost to their use in food production rather than to their next best deployment. All enterprises engaged in food production must pay for their physical capital – their production facilities.

Not only must these production facilities be financed in some manner, these facilities are inevitably taxed by a local jurisdiction. Those who have followed the saga of urban sprawl can tell us about the serious implications for farmers of paying property taxes predicated not on the current use of land (agriculture) but rather paying taxes on the basis of the value of farm land for yet more strip malls and suburbs. The essential point here is that owners of fixed capital must pay taxes on that capital – usually in terms of some share of the present value of expected future income streams emanating there from. We see that land-based food producers have two forms of financial obligation – the acquisition costs of their fixed assets, and the carrying costs of those assets in terms of debt service and property tax obligations.

From an economic perspective this means that land-based food production stands at some disadvantage to food production from the seas. Put another way, there is an artificial financial inducement to produce food from the sea as compared to on land. Because food production from the sea does not require payment for the facilities (the ocean environment and its biomass that feeds the fish we like to eat), nor does the raw material from the sea (what we catch) cost anything to those who catch it, there is an obvious incentive to invest more capital in ocean-based food production. It should be no surprise that with yet another artificial economic inducement at hand, there is excess capacity in most fisheries.

### Toward a new policy regime

The *U.S. Ocean Action Plan* released by the President's Council on Environmental Quality [pp. 18–19] states:

The Administration continues to support and will promote the use, as appropriate, of dedicated access privileges, such as IFQs, for improving fisheries management. An IFQ is a management program that provides individual fishermen an exclusive, market-based share of the annual harvest quota (generally a percent share). Each participant can use his or her share of the quota at any time during the fishing season unless time/area restrictions are in effect. Encouraging market-based incentives

to adjust harvest capacity in a fishery can help end the race for fish, improve product quality, enhance safety at sea, and make fishing operations more efficient, ultimately improving the livelihood of those who depend on them.

- In the 109th Congress, the Administration will propose updated legislation to amend the Magnuson–Stevens Fishery Conservation and Management Act to explicitly allow the use of dedicated access privileges, such as IFQs, as a management tool. The proposed legislation will strike a balance between assuring flexibility in development of IFQ programs and the need to observe certain protections.
- The President also directs NOAA to develop, in consultation with the Regional Fishery Management Councils and interested parties, national guidelines for the development and implementation of IFQ allocations.

We may take some encouragement from the above language by what is *not* there. Notice that the terms “rights” and “property rights” are missing. Instead, the language elaborates on the idea from the USCOP in referring to *dedicated access privileges* (DAPS). If the authors of this document mean what they say (and if they *understand* what they have said) then at last we have moved beyond the flawed legacy of “rights talk” in fisheries – including the frequent yet counterfeit proposition that IFQs represent property rights.

Despite this promising start, linguistic and conceptual problems persist. A close reading of the above language leads one to suppose that market “principles” will now be introduced into American fisheries policy. We see that fishers will receive a “market-based share of the annual harvest quota” to use as they see fit. What exactly is this “market-based” share to be received? How shall it be received? The above language is silent on these two matters. However, there is reason to believe that these shares (IFQs) will be allocated as they have in the five or six existing IFQ programs. This means that quota shares in future annual harvests will be given away *free* to all who can prove some creditable harvest history in particular fisheries over the recent past. How is it possible to say that you are now embracing the market, and then to advocate a program that simply gives away very large income streams (and thus great wealth) to the private sector? If this is a “market-based

allocation” then the term has lost any meaning it might have. This is a *history-based* allocation of quota share, not a *market-based* allocation. The market plays no role whatsoever here.

It is important at this juncture to make a fundamental distinction. The idea of *dedicated access privileges* is laudable, and I agree with the reasons given. I am doubly encouraged to note that there is nothing here of the bizarre idea that IFQs are property rights and thus will bring forth good stewardship on the part of the commercial vessels that might acquire them. IFQs are *not* property rights, and even if they were, the stewardship claims that one sees for them in the literature cannot be believed. I applaud the language of dedicated access privileges, and urge that we start to talk of the implied quota shares as dedicated access *permits* (DAPs). Luckily, the acronym remains unchanged. But my support for the idea of DAPs as permits does not extend to the implied program of initial allocation of those permits, nor to the subsequent entailments of that allocation scheme.

The endorsement of IFQs is of great concern that certain aspects of current (and proposed) IFQ programs will be continued into the future. This is a policy flaw of the first magnitude. I will enumerate those flaws.

First, the very problem being addressed in most fisheries programs is precisely that of excess capacity. This has been prosaically put as “too many boats chasing too few fish.” We might turn this around to become “not enough fish for all the boats.” From this it follows necessarily that when all of the existing vessels with a fishing history have received their quota allocation, very few of them will have enough fish in their received quota to make a living. What are all these vessels to do with all these petty shares? Those who celebrate markets will then reassure us that some form of natural beneficial consolidation will occur. They will say they are letting the “market” sort out winners and loser. This is only partly true because it is a market in duress.

It is a market in duress because the forced consolidation driven by “too few fish per boat” (too limited quota share per vessel) means that the sale price for quota shares will be depressed by so many of them coming on the market at the same time. Those who received plausibly feasible shares

will be eager to acquire shares from others under pressure to sell. This is a setting for artificially depressed prices – it becomes a “buyer’s market.”

The second flaw is that buyers, despite depressed prices, face an unnecessary financial burden. That is, those who seek to acquire additional shares will likely be forced into capital markets in order to acquire the funds to buy those additional shares. These individuals are thus saddled with an unnecessary debt-service obligation. This debt-service obligation is unnecessary because an alternative arrangement does not require any *ex ante* financial commitment.

Third, given the highly stochastic nature of fishing, borrowed funds will carry a risk premium and expose those who must buy quota shares to even higher levels of debt service. That is, credit markets work by incorporating perceptions of risk into the price of that credit. Interest rates are the price of borrowed money and so consolidation purchases are financed at risk-adjusted interest rates.

Fourth, those who borrowed to buy “top-up” quota shares stand seriously exposed to continued stochasticity in annual allowable harvests. If quota buyers bought a number of shares and are now carrying debt-service obligations, they are seriously exposed if fish stocks fail to recover, or if they recover more slowly than initially imagined. When the regulatory agency finds it necessary to reduce annual catch and landings, these holders of DAPs lose both income and the ability to service their debt.

Finally, a small class of highly leveraged fishers, faced with immoderate debt-service obligations, might plausibly represent a non-trivial political barrier to necessary reductions in harvests should regulators deem it necessary to protect fragile fish stocks. We know that regulatory resolve is difficult to maintain under the best of circumstances. If regulators face the political wrath of the fishing industry, as well as the pressure from creditors, the heat may be too much to bear.

The claim (in the *Ocean Action Plan*) that the administration wishes to use the “market” to fix the fishery by giving away IFQs is nothing but misleading rhetoric. There are several other serious flaws as well. It need not be this way. If there is an honest interest in *using the market* to fix what is wrong with fisheries policy then there is a far superior approach available. This alternative



approach: (1) does not give away free of charge \$101 billion in ocean wealth; (2) does not produce losers with petty quota shares that must be sold at depressed prices; (3) does not saddle those who wish to remain in fishing with a debt-service obligation at inflated (risk-adjusted) interest rates; (4) shelters those who remain in the industry from the financial risk of servicing debt on the basis of highly variable rates of recovery of fish stocks; and (5) lessens the chances of unwelcome political pressure focused on regional fisheries management councils and others in the regulatory process.

### The market in fisheries policy

Because the administration's *Ocean Action Plan* asserts that it is now time to bring market principles to fisheries management, I will here discuss exactly what that might entail. As above, we would start by accepting the idea of *permits* called dedicated access permits (DAPs). The differences now to be discussed focus on the initial allocation of those permits, and on the dynamic aspect of allocation and re-allocation of the DAPs over time in a specific fishery.

To illustrate this more honest approach, assume that careful analysis has revealed that a particular fishery now has twice the active capacity (fishing power) as what likely exist under "ideal" circumstances.<sup>3</sup> In other words, one-half of existing capacity could be eliminated from this particular fishery. Let us assume there are 200 equal-sized vessels in the fishery, and 100 would seem to be the "ideal" number.<sup>4</sup> Should the government pick the 100 winners and 100 losers? If we are to reformulate fisheries policy on market principles we must ask the vessel owners themselves to reveal how important it is for them to remain in the fishery. This is, after all, what markets are all about – who among all possible market participants is the most eager to acquire some good or service? That person is the one with the highest willingness to pay for that good or service. The logic transfers immediately to those seeking the newly limited DAPs. And the only way to elicit that information from those 200 vessels is to have them submit sealed bids in an auction for DAPs.<sup>5</sup>

That is, the regulatory agency could declare that starting January 1, 2007, no vessel will be

able to enter a particular fishery without a DAP. At the same time, there could be a stipulation of the TAC for that coming season, and a statement that 100 permits, with each permit entitling the holder to catch and land 1/100 of the TAC, will be available to the 100 highest bidders – one vessel, one winning bid, one permit, 1/100 of the TAC. Those vessels (vessel owners/captains) wishing to fish in the 2007 season would then be able to bid to acquire one DAP representing 1/100 of the TAC. I insist that access to America's fisheries must be allocated to those most willing to pay for the privilege. This principle was recently endorsed by the U.S. Commission on Ocean Policy (2004).<sup>6</sup>

Assume that all 200 current vessels wish to remain active in the future fishery and so submit a bid. Their individual bid would be a legally binding agreement to pay some percentage fee (called a royalty) on the value of all landings in the 2006 season. We might expect these bids to range from, say 5% down very close to 0%. That is, the top bidder indicates a willingness to pay a royalty of 5% on all future landings, and all other bidders rank somewhere below that figure. Notice that this is precisely the market at work, and one could honestly claim that such a fishery is well on the way to being run on market principles. We are not handing out quota shares based on catch history. Nor are we giving away free of charge enormous income streams to the private sector. This is beginning to look like a market. At this point, a number of interesting options present themselves. I will discuss a few of them.

### *The term auction*<sup>7</sup>

With 200 bids in hand the first thing to do would be to rank all 200 from highest to lowest to see which vessels place a high value on remaining in the industry, and which vessels are less committed to a future in fishing. Since we know that capacity must be cut in half, and under the assumption that all 200 vessels are of approximately equal fishing power (capacity), we would start by regarding the top 100 bidders as winners, and the lower 100 bidders as losers. The winners get a DAP and the losers get nothing (at least for now). It is possible to treat the 100 winners differently. For instance, we could reward *some* of the 100 winners for their high bids by giving them DAPs of longer duration

than those who submitted lower winning bids. Assume that we want two classes of permits – those for a period of 10 years, and those for a period of 5 years. We could divide the 100 winners into 2 groups – the top 50 bidders, and the lower 50 bidders. The top 50 bidders could get a 10-year permit, while the lower 50 winners could get a 5-year permit.

In 5 years we see that 50 permits would come back up for re-bidding. We might also expect that some of those with 10-year permits will decide to leave the fishery. Let us assume that in year 5 there are 55 permits available to be auctioned. We would hold an auction as we did at the initial phase and – depending on the state of the fish stock – decide to award 45, or 50 or even 55 permits. As with the initial consolidation auction, the highest 50% of the bidders could get a 10-year permit, while the lower 50% of the bidders would receive a 5-year permit. Notice that after the initial consolidation auction, there are no “losers” – there are only long permits and short permits. Of course if the fish stock continues to languish and not recover, there might be a few losers. But the idea here is that consolidation occurs in the first auction, and from then on it is a matter of staggering permit duration and holding *replenishment auctions*.

I have kept the example simple by having only two classes of permits. We could easily imagine an auction in which winning bids are divided into five groups. The highest 20% of the winning bids would receive permits for a 5-year period. The next highest 20% of the winning bids would receive permits for a 4-year period. The third highest 20% of the winning bids would receive permits for a 3-year period. The fourth highest 20% of the winning bids would receive permits for a 2-year period. The remaining 20% of the winning bids would receive permits for 1 year. Regardless of the exact duration, once the initial consolidation auction has occurred, auctions at any desired interval are possible. Obviously the more frequent the auction the easier it is for a loser (a low bidder) to re-enter the industry. On the other hand, there is some business advantage to permits of a longer duration.

I have not addressed the specifics of the royalty, nor have I addressed the initial group of losers (100 low bidders) in the initial consolidation

auction. I will first discuss the royalty. Recall that the initial consolidation auction produced 100 winners and 100 losers. I then split the winners into the 50 highest bidders who would receive 10-year permits, and the other 50 winners who would receive 5-year permits. It is an administrative nightmare to have each winning bidder pay the exact royalty that he or she bid. To do so would mean that there might be as many as 100 different royalty payments. Such pricing may work in airline seats, but it would be unacceptable in a fishery. But a better reason is that there is no need to do so. We are, in essence, auctioning 100 identical items – access to an equal DAP. This means that 100 bidders will win exactly the same thing, and so therefore why should we charge them differently? The two classes of permit duration in the above example provide some incentive for bidders to reveal to us their true valuation of what a permit means to them, and in that sense there is an incentive for more honest bids. But since the winners all get the same thing, we have here a single-good auction in which there is one winner (100 of them actually), and one loser (100 of them actually).

That being the case, we should charge the winner(s) a single price to acquire the good. Doing so renders this a *single-price* auction. But which price (which royalty bid) would that be? Would it be the highest bid? The economics literature on auctions would warn us against that since doing so has a tendency to suppress all bids. The answer here is what we call a Vickrey (or a second-price) auction. A Vickrey auction awards the coveted good to the highest bidder, but only charges the winner the amount of the second-highest bid (the highest losing bid). In our simple example, all 100 winners would only be obligated to pay the royalty rate specified by the highest losing bidder – the 101st bid. This is the “second price” from the perspective that all 100 losing bidders are, in essence, “one” loser. So in a simple case of 100 winners and 100 losers, the pertinent royalty on the landings of all 100 winners would be the bid submitted by the 101st bidder (who was a loser).

But my earlier example had two permit classes – 5 and 10 years. In this case, the 51st bid becomes the uniform royalty rate for the 50 winners who receive a 10-year DAP, and the 101st bid becomes

the uniform royalty rate for the second 50 winners who get only a 5-year permit. I should add that the royalty rate established at the time of auction would prevail for the duration of the permit.

I must now address the 100 losers in the initial consolidation auction. Notice that the revenue stream produced by royalty payments on all future landings *might* be used to compensate those who bid too low to be allowed to remain in the industry. And here we see yet another advantage to the auction scheme proposed here. Specifically, the allocation of compensation payments to losers could be scaled to the level of their bid. This would serve to induce honest revelations from bidders, and would reward those most who seemed serious about remaining active in the fishery. The scaling could be such that the very highest losing bidders received the bulk of available compensation. Another important dimension of this approach is that the current 200 vessels in the fishery would be very clear that there could be no buy-out funding unless a bid were submitted in the consolidation auction. No bid, no compensation for leaving the fishery.

In addition, some funds from the royalty might be used to ease the economic transition of communities suffering from the decline of regional fisheries.

### *Implications*

Notice several important aspects of this auction program. The allowable catch in each future year will vary depending upon the best evidence of a group of scientists whose assertions about sustainable harvests we believe we can trust. These landings limits would be immune from politically inspired manipulation. Moreover, by being variable, these allowable catch limits put fishers on notice that they have a claim *only* to what fisheries scientists and managers assert that they have. And they are put on notice that if, for reasons of good science, next year's catch must be reduced by some percentage, they may not turn to the courts (or the legislature) seeking compensation from the public purse for their new inability to catch as much as they would like – or as they had grown accustomed to. The new DAPs are most certainly *not* a “property right.” (Bromley, 1993, 1997).

Consider the standard IFQ approach. When quota shares are handed out free, and then when some vessels owners purchase “top-up” shares from other vessels owners, there is an inevitable perception that what has been purchased from others represents some sort of compensable property right. Then, if allowable catch must be reduced to protect fish stocks, those who bought their augmenting (top-up) quota shares will insist that they must be compensated for what they paid to other fishers. We can expect their bankers to testify that they regarded those IFQs as rights or they would not have extended credit to purchase them. This is dangerous political turf.

Second, the auction approach addresses the looming problems associated with capacity creep. That is, if IFQs are freely allocated to all with some plausible catch history, and then trades are undertaken to effect consolidation, we will end up with a fleet of IFQ holders but without the ability to address the inevitable expansion of fishing power except to keep reducing, across the board, the allowable harvest associated with each quota share. Each vessel may still land 1/100 of the allowable TAC, but with capacity creep that share might soon be landed with 30 days of effort rather than the current 55 days of effort. Can it be long until we find ourselves right back where we are now – too much fishing power chasing too few fish? The advocates for IFQs will suggest that tradable permits will simply allow consolidation to continue as it is needed (and as “the market”) dictates. But this is a flawed suggestion. It is flawed because the only way that the policy process – and fisheries regulators – can keep control of the pressure for consolidation is for the permits (DAPs) to revert to the government at the end of their term. Only in this way will regulators be able to balance certain capacity creep and uncertain fish stocks in the future.

A third advantage is that no fishing firm holding a DAP will be required to make a prior financial commitment to acquire additional quota shares from those who wish to leave the fishery. As I mentioned previously, this liberates firms from the need to arrange for financing to acquire petty shares placed on the market. Instead, the 100 successful bidders simply proceed with the fishing season and the uniform royalty rate is deducted from their ex vessel proceed at the

dock. If landings in a particular season are low, so too will be the royalty. In the extreme, no fish, no fee.

And, in the consolidation auction, funds are available from the royalty for vessel buy outs and for possible contributions to hard-it fishing communities.

### Conclusions

The approach outlined here guarantees that the American people will begin to earn a financial return from the capture and sale of their fisheries resources. Second, the regional fishery management councils would lose their ability to set catch and season parameters – their role would be limited to allocating TAC to those who would then bid for quota shares. For example, some share of TAC might be put up for bidding by communities in a program reminiscent of the Alaska CDQ program. As another example, some share of TAC might be made available to conservation groups to purchase. And of course since most fisheries have a fleet of various sizes and fishing power, the councils could allocate the share of auctioned DAPs that would go to vessel owners into different size classes (tiers). Annual determinations of total allowable catch (TAC) would be the exclusive province of a science-based process that would be insulated from the political and economic pressures associated with the councils.

A firm and binding TAC for each fishery, and the auctioning of Dedicated Access Permits, would accomplish much of what needs fixing in America's fisheries. And this brings me to the matter of what we shall call such a fishery. It cannot possibly be called a "rights-based" fishery for the obvious reason that there are no rights involved. And it is not *based on* anything at all except the prior declaration by the management authorities that the allowable harvest next year shall be  $X$ , and the  $n$  holders of Dedicated Access Permits will be able to bring forth some fraction of the fish allocated among those  $n$  permit holders. We see that holders of DAPs would have *specified and assigned shares of a variable allowable catch*. If it is thought necessary to offer up language suggesting that this new management scheme is *based on* something, then I propose that we consider two alternatives: (1) quota-based fishery; or (2) share-based fishery.

Some nations use the quite agreeable term "quota-management system."

The approach advocated here corrects the flawed incentives that now plague America's fishery policy. And the approach is consistent with the suggestion of the *U.S. Ocean Action Plan* that the market ought to play a greater role in fisheries policy. Most importantly, my approach avoids the bizarre claim of that same report that we are using *market* principles when we give away free over \$100 billion of our assets to the private sector. The frontier in our mind would be banished forever.

### Notes

1. Some may suggest that government-induced policy changes create "stranded capital." This argument is credible only if we assume that owners of capital are innocent of the policy changes that might give rise to capital being "stranded." I find this argument implausible. Public policy rarely happens quickly but is, instead, the result of a multi-year process in which the general parameters are obvious (and malleable) to most all with a financial stake in a particular sector. Indeed, I suggest that complaints of so-called stranded capital are plausible evidence that owners of capital are intimately involved in the policy process and, having been unable to push it in a more favorable direction, resort to this claim in the expectation of compensation.
2. We need to be clear about capital. Of course factories and some machinery may be left behind, but there is an important difference between such physical facilities and the economic asset those facilities represent. If the facilities have been fully depreciated by the ownership interest there is, technically, no "capital" to be stranded.
3. I ignore here the difficult economic and biological grounds for making that determination.
4. The assumption of equal-sized vessels is merely to simplify the exposition.
5. I have developed an early prototype auction model (Auc-Sim) that allows us to simulate plausible bidding scenarios. More work is required to further develop this model, and to calibrate it to specific fisheries.
6. This idea is not really so very new. See Pearse (1982), and DeVoretz and Schwindt (1985). Equally important, the U.S. Forest Service auctions timber, the U.S. Department of the Interior auctions oil and gas extraction from the Outer Continental Shelf, and the Federal Communications Commission auctions access to the radio waves. Indeed the state of Washington's Department of Natural Resources earns approximately \$1 million annually from a Geoduck auction. In one recent year (2002) the total value of the harvest (including the nearly \$1 million in bids payable to the state) was \$2,553,012. [Personal correspon-

dence from Ms. Leigh Espey, Washington State Department of Natural Resources, Olympia (March 21, 2002).]

7. For excellent sources on auctions see: French and McCormick (1984), Hansen (1985), Klemperer (2002, 2004), Laffont, et al. (1995), Latacz-Lohmann and Van der Hamsvoort (1997), McAfee and McMillan (1987), McAfee and Vincent (1992), Maskin and Riley (2000), Milgrom (2004), Pesendorfer (2000), and Wilson (1979).

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