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Rights-based fisheries management: an environmentalist perspective

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Abstract

Fisheries management regimes take many forms, but most fail to designate shares of the catch. This failure creates strong incentives for individuals to maximize their share without regard to long-term sustainability, because the benefits of conservation actions do not accrue to individuals. The competition to maximize catch usually entails excessive capital investments in fishing vessels and gear and intense fishing pressure, resulting in overfishing, high bycatch rates, and the use of large, efficient types of gear that can harm habitat. Managers respond by increasing regulations, but this often exacerbates perverse incentives. In addition, many fisheries could be producing more value than the current system permits, i.e. large quantities of fish are landed during short seasons, forcing fishermen to sell for low prices. Conservation and economic problems facing fisheries can be addressed in an integrated way, by designating access privileges (specifying shares of the catch) to individuals, harvest cooperatives, fishing sectors, communities, or other appropriate entities. Designated Access Privilege (DAP) systems demonstrably end the competition to maximize catch and often result in better conservation and financial performance. The cost of implementing these systems can be relatively high and has been a barrier to better management. However, this doesn't have to be so. Fisheries could accept investments from a variety of sources and use a portion of the increased financial performance to repay recoverable grants and loans. The key to protecting fish stocks, habitats, and the communities that depend on them will be to implement DAPs that are appropriate for each fishery or community, making investments in sustainability, and creating financing mechanisms that are themselves sustainable, drawing on the increased value that DAP fisheries can produce.

What if environmentalists had been present when settlers started to clear the forests of New England some 300 years ago? What would a strong and organized environmental community have done to prevent the depletion of buffalo herds or flocks of passenger pigeons? There are myriad factors that contributed to the eradication of these species, but their management as a common resource was paramount in their destruction. Unfortunately, while we have mourned the disappearance of many species, we have not applied these lessons from the land to the sea. Fisheries are one of the last resources to be managed as a commons, and they too are affected by the fundamental problem of the

commons, the competition to maximize catch. To alleviate the ecological and economic symptoms associated with this competition, environmentalists would do well to support fisheries management approaches that align economic incentives with sustainability. By tackling the source of the problem and clarifying how much fish an individual, cooperative, or community can catch through assigning catch shares, such approaches can alleviate the undesirable symptoms associated with unfettered competition to maximize catch.

When forests, plains, rivers, pastures, and other familiar environments are treated as commons, people race to maximize their share of the resources. Because no one knows how much he or she can have, people apply technological innovation, capital investments, and their ingenuity to, for example, the pursuit of liquidating forests and wild animals, or grazing as many animals as possible on the common pasture. This is rational behavior in a commons, in which resources left behind for conservation can be exploited by others. The benefits of an individual's conservation actions do not accrue to that individual, so no one has a stake in conservation. However, even the most conservation-oriented individuals have a big stake in depleting resources as quickly as possible.

The ocean and the atmosphere are the planet's last great commons, and exhibit all of the classic problems of a commons. While air pollution and global warming are symptoms in the atmosphere, overfishing, bycatch, and habitat degradation clearly threaten the integrity of ocean ecosystems and the rich diversity of ocean life. The environmental community's general response to such threats has been to demand better science, more stringent and precautionary allowable catch levels, caps on bycatch, and marine protected areas or closed areas to reduce adverse impacts on habitat. However, the incentives to maximize catch persist. These incentives result in the deployment of more fishing vessels, bigger and more destructive gear, and more sophisticated fish-finding technology in order to "win" the race for fish. These are all entirely rational responses to the management of the oceans as a commons, but run against conservation measures. The solution is a management system that changes the incentives and aligns economics with ecological goals.

In the ocean commons, some fishermen prosper but most are impoverished and barely scraping together a living. Therefore, it is logical that conservation measures, as traditionally employed, are perceived as threats to livelihood and fishing cultures, and are strenuously opposed in many cases. According to the report of the U.S. Commission on Ocean Policy (2004; p. 233), the incentives created by commons governance result in a "cat-and-mouse" game between fishermen and managers: "...if managers limited the length of the boat, fishermen increased its width to hold more catch. If managers then limited the width, fishermen installed bigger motors to allow them to get back and forth from fishing grounds faster. If managers limited engine horsepower, fishermen used secondary boats to offload their catch while they kept on fishing." More stringent Total Allowable Catch levels, smaller trip limits, and closed areas – in short, all of the tools that managers now use – exacerbate the race for fish and perverse incentives created by commons governance. Not to mention that these attempts to regulate often put fishermen, managers, and environmentalists at odds with each other. The results are shorter seasons, high-risk-fishing as fishermen go to sea in all kinds of weather, lost gear, sloppy fishing, high bycatch, discards, and habitat damage, as well as supply gluts, low prices, and financial ruin.

Conventional management measures are based on the theory that increased regulation will result in sustainable fisheries. Unfortunately, experience with this approach has not always achieved the desired result. A more effective approach, based on the obvious shortcomings of these management measures, is to allow individual fishermen to use secure shares of our public trust fish. This can be achieved by assigning dedicated access privileges to fish to specific entities, using appropriate methods for various cultural and economic conditions. For example, communities with strong coherence and other attributes conducive to co-management could be assigned Community Development Quotas; individuals could be assigned Individual Fishing Quotas (IFQs); and groups of fishermen could be granted area quotas, Territorial Use Rights for Fishing (TURFs) or sector allocations.

Assigning catch shares in any of these ways encloses the ocean commons and replaces incentives to maximize catch into incentives to maximize value. This typically results in better compliance with conservation measures, because fishermen have a stake in the future of the fishery. For example, fisheries managed by IFQs tend to have increased compliance with Total Allowable Catch levels because fishermen are held accountable to their IFQs, and the values of their IFQs increase as fish populations become more abundant. Compliance with bycatch standards also often increases, since individuals can purchase bycatch quota to cover their catches when species mixes vary, providing much greater flexibility than a trip limit which would force discard.

In addition to increased conservation, profits generally increase under catch share systems. Fisheries become more efficient as fishermen tailor investments to their share of the fish, thereby reducing costs, rather than over-investing to compete in the race for fish. Fishermen can alter their fishing behavior to avoid bycatch and produce high quality fish, as seasons lengthen due to reduced overall fishing capacity. Often, overall catches decline when access privileges are dedicated because the profit-maximizing levels of catch (maximum economic yield) are lower than maximum sustainable yield, the conventional target of fisheries management. When more fish are left in the water to fulfill their ecological roles, this is a win for the environment and a win for the fishing industry.

The increased profits associated with catch shares management indicate that the nation's public trust resources are being used more efficiently, and to greater benefit. Increased profits under catch shares management also create the potential to apply financial tools to create sustainable financing of conservation and management. In many fisheries under conventional management, even the inadequate levels of research, management, and enforcement that are currently obtained are too costly to bear due to the relatively small revenues that are generated. In some cases, management costs exceed the revenues altogether. Like companies that have good fundamentals but flawed management, investments–tied to stringent conservation goals as part of a social contract – can be made to intelligently restructure fisheries. The result will be more profitable fisheries and better conservation. As profitability increases, the fishing industry could pay more of the costs of management, research, and enforcement activities, freeing up state and federal funds for other conservation and management efforts.

Entities that provide capital to fund the process necessary for a transition – meetings, analysis, and incubation costs – for the nascent restructured fishery would be paid back out of the future (larger) earnings of the fishery. Such entities could be diverse, including state or federal government agencies (which could employ revolving loan funds to provide such financing to leverage their investments), banks, mutual funds, or private individuals, among others. Financial instruments (e.g., securities, bonds) could be developed so as to engage the enormous quantities of capital that roam the world looking for investment opportunities. These new sources of capital would require appropriate controls to protect desirable characteristics of fisheries that would otherwise be overwhelmed by excessive focus on only one bottom line, but they could provide sources of funding commensurate with the scale of fishery problems.

There is also a relationship between profitability and conservation on the water. When fishermen are impoverished by conservation measures, as is often the case under conventional management, they quite understandably oppose them. When fishermen are better off financially and can increase profits by behaving in a way consistent with conservation measures (typically the case for catch shares fisheries), opposition to conservation is reduced and compliance increases in many cases. Pressure for unsustainable catches can arise if the balance of power between fishermen, processors, managers, and environmentalists shifts toward catch share holders as a result of inadequate controls on accumulation of catch shares or other problems. Catch share programs must be intelligently structured to protect non-market values and prevent undesirable shifts in bargaining and political power due to the accumulation of wealth and a sense of entitlement that can arise with catch shares. Constant reminders that the fish are public trust resources and checks on political power will be needed to prevent these problems. However, the problems are no different under conventional open access/limited access management; in fact, they are worse because fishermen's financial interests are at

odds with conservation. Under catch shares management, financial interests can be aligned with management and conservation interests. With the former, conservation is akin to pushing a boulder uphill; it requires constant energetic activity to overcome gravity. Conservationists would do well to tilt the field toward environmental protection, and align conservation with the natural forces of human motivation instead of against them. Management systems like catch shares can accommodate the needs and interests of fishermen within the constraints of stringent conservation and social standards. If they designed well, that are much more likely to result in good conservation, management, and economic performance than approaches that ignore human needs and interests.

Imagine if we had employed these types of approaches to passenger pigeons or buffalo herds. Would these species be extinct or would they be thriving under a more appropriate management system? If we do not want to see our marine resources and related communities, cultures, and jobs disappear, then we would do well to learn from our past lessons. Catch share management creates the incentives that increase the value of our resources today and in the future; the environmental community should advocate for catch share management, with a strong social contract: habitat protection and sustainable fishing in exchange for valuable privileges to access the public's fish for private gain.

Reference

U.S. Commission on Ocean Policy (2004) An Ocean Blueprint for the 21st Century, Final Report. Washington, D.C.