

**FROM SOUND ECONOMICS TO SOUND MANAGEMENT:
Practical Solutions to Small-Scale Fisheries Governance in the Developing World**

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Introduction

Daniel Bromley's spirited effort to debunk spurious assumptions about the economic drivers of the crisis in ocean governance is welcome, particularly his core argument that by undervaluing marine fisheries as a public asset governments have set incentives for gross overexploitation. His core policy prescription in support of an auction system to assign individual transferable quotas based on shares of total allowable catch merits careful attention in advanced economies where the scientific and administrative infrastructure makes such an approach feasible. New Zealand's successful reorganization of its scallop fishery is a case in point, notable because the revenue generated by the auction system is reinvested largely in research and management institutions aimed at protecting the long-term sustainability of the resource (Arbuckle and Drummond 2000).

Yet, particularly in his concluding remarks, Bromley makes clear that his sights are set much more broadly than the commercial fisheries of New Zealand, Norway, or Newfoundland. 'Of course nature is important, but so too are they whose very survival depends on nature,' Bromley writes. In this respect, attention must turn to small-scale fisheries of the developing world, which employ more than ninety percent of the total number of fishers globally (FAO 2007a). In this context, the underlying economic principles that Bromley expounds remain sound, but the policy prescription he derives is wholly impractical. Worse still, if applied indiscriminately, it could severely undermine the food and livelihood security role that small-scale fisheries play in so many developing countries.

In this commentary, we elaborate three unstated assumptions – factors that should be understood as preconditions for the application of an auction system based on shares of total allowable catch. These are: adequate scientific information on the fishery ecology; adequate administrative capacity; and sufficiently transparent governance mechanisms, with avenues of recourse to deter elite resource capture. Where these preconditions do not exist, which is the case in nearly all developing country small-scale fisheries, a much more varied range of management tools needs to be considered, built in response to locally-defined management goals. Protected areas, when conceived and managed as a means of

sustaining fisheries productivity and livelihoods, often *do* have an important role to play in this mix of management tools.

The Context of Developing Country, Small-Scale Fisheries

Bromley is correct in pointing out that policy responses to the failures of fisheries management need to fundamentally shift incentives that motivate individual actors, not merely appeal to the virtue of conservation. Indeed, the historical push to maximize extraction from off-shore, commercial fisheries that Bromley describes in the us certainly has been mirrored in many developing countries and in some instances continues to this day. But small-scale fishers, typically confined to near-shore coastal and inland waters, operate under a much more complex set of incentives that often have little to do with any explicit policy to maximize production, and much more to do with conditions of vulnerability and insecurity (Allison and Horemans 2006).

The first obstacle to applying an auction system allocating shares of total allowable catch in this context is inadequate scientific information on the biological and ecological characteristics of the fishery. Even in single-species commercial fisheries with reliable, long-term monitoring data available, getting agreement on the type of information required to calculate TAC values is the focus of considerable debate (Batstone and Sharp 2003). In practice, the science has tended to be overrun by commercial and political interests (Masood 1997; del Valle and Astorkiza 2007). Yet in developing country, small-scale fisheries, the biological information required is often missing, and the highly dynamic, multi-gear, multi-species nature of these fisheries make collecting such information impractical. Even if sufficient data were available, such fisheries are rarely profitable enough to afford the assessment costs (Hilborn et al. 2004).

Second, the administrative capacity required to introduce, monitor, and enforce catch-based quotas on individual small-scale fishing vessels is far beyond what most developing country governments can reasonably hope to provide. In many countries, the majority of small-scale vessels are not even registered; even where they are, landing sites are often very dispersed and easily avoided. With individual vessels bringing in a wide range of species in minor quantities, the complexity of administering quotas rises just as the marginal value of the effort dwindles.

Third, the assumption that an auction system will indeed result in lease values that reflect the economic value of the resource assumes a transparent mechanism for allocating access rights with safeguards to protect against corruption and elite resource capture. An illustrative case in this regard is Cambodia, a rare instance of a developing country where fishing access rights are allocated by auction on a substantial scale, in this case in inland waters. Cambodia's fishing lots are allocated not as a share of catch but rather as 'a geographically defined river location, stretch of river, river beach, or temporary flooded land,' for which concession holders are given exclusive access during a defined fishing season (Degen and Nao Thuok 2000; Touch and Todd 2003). As recently as 2000, the total area

of the fishing lots covered 8,500 square kilometers, including many of the most productive freshwater fishing grounds in the country. A major reform introduced the following year saw the overall coverage of fishing lots reduced by more than half, a shift motivated in large part by public mobilization against the perceived injustices of the lot system (Ratner 2006). Concerns focused on widespread and sometimes violent conflicts between lot operators and local communities, and, especially pertinent to the argument at hand, evidence that auctions were routinely rigged, functioning as a shadowy extension of a political patronage system that channeled public assets for private gain (Degen et al. 2000). The factors that facilitate such elite rent capture, including the marginalization of poor fishers from resource allocation decisions and the lack of an impartial judicial system to ensure legal recourse, are unfortunately common in many of the same countries where the rights of poor fishers are most at risk (FAO 2007b; ICSF 2007).

Solutions That Fit the Local Context

Appreciating such obstacles, however, should not dissuade us from seeking solutions to improve the management of small-scale fisheries. Just as Bromley calls for 'redefining the purpose of oceans', reinventing the business of small-scale fisheries management in the developing world requires that local stakeholders – with poor fisherfolk principally among them – define locally-specific goals of management based on locally-defined needs (Andrew et al. 2007). Typically, this means taking into account a host of priorities beyond economic efficiency, which include food security and nutritional well-being, the distribution of benefits from a fishery that accrue to different social and economic groups, and cultural values associated with the identity of people who have traditionally derived their livelihoods from fishing.

Thankfully, many other mechanisms to restrict overharvesting and provide incentives for sustainable management do exist, which in small-scale fisheries are also technically and administratively more feasible to implement than auctioning shares of total allowable catch. These include spatial, temporal, and gear restrictions, which can be monitored and enforced by local communities themselves, by state authorities, or by a combination of both – an increasingly common choice under fisheries co-management regimes (Arthur 2005).

In the context of such goal-setting, protected areas can make sense, not as a blunt tool of conservationists to reduce fishing effort, but as a means of sustaining the productivity of the fishery to support local livelihoods. By preserving habitats that provide fish refuges, ensure migration routes, or protect fish stocks at critical stages of their reproductive lifecycles, marine and freshwater protected areas alike can increase fishing yields and buffer against uncertainty (Bohnsack 1996; Mangel 2000; Hastings and Botsford 2003). Where locals believe there is a strong link between protection and fisheries productivity, demand for protected areas and willingness to invest in their enforcement can be quite remarkable (for example, Baird and Flaherty 2005).

Ultimately, defending the interests of those ‘whose very survival depends on nature’ requires much more than sustaining the productivity of the resource alone, though this is essential. And it requires more than getting our economic principles right and gathering the political will to implement change. Important too is a readiness to engage in open-eyed analysis of what livelihood goals people are trying to achieve, what range of uses the ecosystem can reasonably sustain, and what management tools can be practically applied to achieve a balance.

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