

# OCEAN ZONING AND SPATIAL ACCESS PRIVILEGES: REWRITING THE TRAGEDY OF THE REGULATED OCEAN

JOSH EAGLE,<sup>\*</sup> JAMES N. SANCHIRICO,<sup>\*\*</sup> AND  
BARTON H. THOMPSON, JR.<sup>\*\*\*</sup>

## INTRODUCTION

For the past thirty years, the Magnuson-Stevens Fishery Conservation and Management Act (the Act) has served as the primary legislative mechanism for conserving fish populations in United States marine waters.<sup>1</sup> At the time Congress passed the Act, many of those populations were in jeopardy, the result of

---

<sup>\*</sup> Assistant Professor, University of South Carolina School of Law.

<sup>\*\*</sup> Associate Professor, Environmental Science and Policy, University of California, Davis and University Fellow, Resources for the Future, Washington D.C.

<sup>\*\*\*</sup> Robert E. Paradise Professor of Natural Resource Law, Stanford Law School, and Perry L. McCarty Director, Woods Institute for the Environment at Stanford University. Conversations with Steve Palumbi were instrumental in helping us refine our ideas. We also appreciate the insightful comments from the seminar participants at the University of Arizona Workshop on Law, Economics, and the Environment (Jan. 2007), the UC Davis Law School (Dec. 2007), the UC Davis Department of Environmental Science and Policy (Nov. 2007), New York University Law School (Oct. 2007), Capitol Hill Oceans Week (Washington, D.C. Apr. 2007), and the U.S. Coral-Reef Task Force meeting (Washington, D.C. March 2007). Funding for this work was generously provided by the Packard Foundation (Sanchirico, Eagle, and Thompson) and Resources for the Future (Sanchirico).

<sup>1</sup> Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801–1883 (2000). Congress has amended what is now known as the Magnuson-Stevens Fishery Conservation and Management Act several times since passing it in 1976. Congress has also twice renamed the law, which was originally known as the Fishery Conservation and Management Act. S. COMM. ON COMMERCE, 94TH CONG., A LEGISLATIVE HISTORY OF THE FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976, (Comm. Print 1976). Later, in recognition of the contributions of Senator Warren Magnuson, Congress renamed the statute the Magnuson Fishery Conservation and Management Act. Pub.L. No. 96-561, 96 Stat. 3275 (1980). In 1996, recognizing the many contributions of Senator Ted Stevens, Congress gave the law its current name. Pub.L. No. 104-208, 110 Stat. 3009 (1996). For purposes of simplicity, we generally refer to the law as the “Magnuson-Stevens Act.”

decades of virtually unregulated industrial-scale fishing.<sup>2</sup> Throughout the first twenty years of its implementation, the Act was highly ineffective in rebuilding stocks and in preventing other stocks from becoming overfished.<sup>3</sup> During this period, implementation of the Act by the eight Regional Fishery Management Councils focused more on maintaining fishing opportunities for fishermen than it did on maintaining healthy fish populations.<sup>4</sup> In those instances when the Councils did attempt to curtail fishing mortality, their focus tended to be on treating the symptoms (e.g., reducing the efficiency of fishing operations) rather than the fundamental causes of overfishing (e.g., incentives stemming from incomplete rights structures).<sup>5</sup>

In response to fishery collapses, to the accompanying economic dislocation of fishermen and fishing communities, and to lobbying by marine conservation groups, Congress amended the Act several times, most notably in 1996 and 2006. These legislative changes have given new directives to the National Marine Fisheries Service (NMFS) and the Councils to emphasize conservation and the economically rational exploitation of fish

---

<sup>2</sup> S. COMM. ON COMMERCE, *supra* note 1, at 1075–96.

<sup>3</sup> See, e.g., MICHAEL L. WEBER, FROM ABUNDANCE TO SCARCITY: A HISTORY OF U.S. MARINE FISHERIES POLICY (2002); Timothy Hennessey & Michael Healey, *Ludwig's Ratchet and the Collapse of New England Groundfish Stocks*, 28 COASTAL MGMT. 187 (2000). As discussed further, *infra* note 8, stocks are overfished when they cannot produce their optimum yield.

<sup>4</sup> WEBER, *supra* note 3, at 173–74. Implementation of the Act is primarily the responsibility of the Regional Fishery Management Councils, although the National Marine Fisheries Service, a sub-agency within the U.S. Department of Commerce, has some role in overseeing councils' decisions. See JOSH EAGLE ET AL., TAKING STOCK OF THE REGIONAL FISHERY MANAGEMENT COUNCILS, 12–19, 32–33 (2003).

<sup>5</sup> Gordon was the first to raise the issues about the divergence between private and social benefits and costs associated with open-access fisheries. H. Scott Gordon, *Economic Theory of a Common Property Resource: The Fishery*, 75 J. OF POL. ECON. 124 (1954). Hardin expanded the analysis to include the discussion of other common pool resources, which are resources where one user reduces the ability of other users to use the resource and where exclusion is difficult, such as groundwater pools, rangelands, etc. Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243 (1968). Sanchirico & Hanna and Wilen have written more recently about the consequences of treating the symptoms rather than the fundamental causes of the ills plaguing commercial fisheries management since the implementation of the Act. James Sanchirico & Susan Hanna, *Navigating U.S. Fishery Policy into the 21st Century*, 19 MARINE RESOURCE ECON. 395 (2004); James E. Wilen, *Why Fisheries Management Fails: Treating Symptoms Rather Than Causes*, 78 BULL. OF MARINE SCI. 529 (2006).

stocks.<sup>6</sup> Although the new language is encouraging, evidence from the post-1996 period suggests that the Act is still far from achieving Congress's goal of sustainable fisheries.<sup>7</sup>

The oft-cited laundry list of continuing problems includes: a significant percentage of overfished fisheries;<sup>8</sup> high rates of overcapitalization;<sup>9</sup> substantial amounts of incidental mortality of

---

<sup>6</sup> For a summary of the changes in the 1996 and 2006 amendments see Josh Eagle, *Domestic Fishery Management*, in OCEAN AND COASTAL LAW AND POLICY 278 (Donald C. Baur, Timothy Eichenberg & Michael Sutton eds., 2008). By "economically rational exploitation of fish stocks," also known as "rationalization," we mean a system of management that maximizes net benefits from fishing. In many U.S. fisheries, for example, the number of active vessels is far more than needed to catch the number of available fish. Such "overcapitalization" results in lower profits for fishermen, lower overall profit in the fishery, higher costs for consumers, and a waste of capital and labor that could be used elsewhere in the economy. *See infra* note 8.

<sup>7</sup> *See infra* notes 8–10 for more explanation. We should note, however, that from 1996 to 2002 a moratorium was placed on the implementation of new individual fishing quota systems in the United States—a tool that has been successful around the world in addressing the causes of overcapitalization. *See, e.g.*, James N. Sanchirico et al., *Catch-Quota Balancing in Multispecies Individual Fishing Quotas*, 30 MARINE POL'Y 767 (2006).

<sup>8</sup> The most recent National Marine Fisheries Service report on the status of U.S. stocks reveals that about 28% are either overfished or approaching an overfished condition. NOAA FISHERIES SERV., FISH STOCK SUSTAINABILITY INDEX (2008), available at [http://www.nmfs.noaa.gov/sfa/domes\\_fish/StatusofFisheries/2007/FourthQuarter/Q4-2007-FSSISummaryChanges.pdf](http://www.nmfs.noaa.gov/sfa/domes_fish/StatusofFisheries/2007/FourthQuarter/Q4-2007-FSSISummaryChanges.pdf). When the National Marine Fisheries Service reports that these stocks are overfished, it means that these fish stocks are at levels below the point at which they can produce their maximum annual yield. Maintaining fish stocks below their optimal levels incurs costs to the nation (in terms of the damages from forgone returns from publicly owned "assets"), to fishermen as a whole (in terms of the increased cost of finding fish), to consumers (if the particular species make up a substantial portion of the world market), and if the conditions persist or deteriorate, these costs will also be borne by future generations.

<sup>9</sup> Fishing capacity is defined by the Food and Agricultural Organization of the United Nations (FAO) as "the amount of fish (or fishing effort) that can be produced over a period of time (e.g., a year or a fishing season) by a vessel or a fleet if fully utilized and for a given resource condition." Overcapacity indicates levels of fishing effort (e.g., boats, fishermen, technology) in excess of the amount needed to harvest the available fish stock at minimum cost. For a more detailed discussion of fishing capacity, see FAO FISHERIES & AQUACULTURE DEP'T, DIFFERENT PERSPECTIVES ON FISHING CAPACITY, <http://www.fao.org/fishery/topic/14856/en> (last visited Sept. 26, 2008). Although overcapitalization is widely acknowledged to be a significant problem in a large number of U.S. fisheries, exact data on the amount of overcapitalization and on the number of overcapitalized fisheries is not widely available. *See* NAT'L OCEANIC AND ATMOSPHERIC ADMIN., FEDERAL FISHERIES INVESTMENT TASK FORCE REPORT TO CONGRESS (1999), available at <http://www.nmfs.noaa.gov/sfa/ITF.html>.

non-target species, including marine mammals and birds;<sup>10</sup> and damage to marine habitats caused by fishing gear.<sup>11</sup> One would expect these problems in unregulated fisheries, where the “tragedy of the commons” leads to a divergence between private and social benefits and costs. The continued existence of these divergences under the Act, however, suggests that the Act has not cured the problems but simply moved us to a “tragedy of the regulated ocean” in which the social costs of fishing continue to outweigh the benefits. In some cases, such as overcapitalization, implementation of the Act has actually exacerbated problems that existed prior to regulation.<sup>12</sup> In other cases, the Act has left problems unaddressed.<sup>13</sup> For example, implementation has mostly ignored spillovers across user groups, where non-use or passive values associated with habitat and fish populations, marine mammals, and shorebirds are not accounted for in fishing decisions.<sup>14</sup>

For expositional purposes, we place these problems into two categories: “internal” and “external.” We denote internal problems, such as overfishing and overcapitalization, as those that

---

<sup>10</sup> See J.M. Harrington et al., *Wasted Fishery Resources: Discarded By-Catch in the USA*, 6 FISH & FISHERIES 350 (2005). Harrington et al. estimate that for every ten pounds of fish landed at the dock by commercial fishermen, three pounds are thrown overboard. These data that do not include marine mammals or birds, and do not shed light on the question of whether this amount of bycatch is optimal for society’s perspective. Like pollution, there is an efficient level of bycatch: where the revenue from catching an additional unit of fish equals the social cost of catching an additional unit of bycatch. In the absence of data on the cost of bycatch, it is impossible to say whether 30% is too high or too low.

<sup>11</sup> R. Chuenpagdee et al., *Shifting Gears: Assessing Collateral Impacts of Fishing Methods in U.S. Waters*, 1 FRONTIERS IN ECOLOGY & THE ENV’T 517 (2003).

<sup>12</sup> Frances R. Homans & James E. Wilen, *A Model of Regulated Open Access Resource Use*, 32 J. ENVTL. ECON. & MGMT. 1 (1997).

<sup>13</sup> There are, however, other pieces of national legislation that partially address some of these other issues. For example, these include the Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361–1421 (2000), the Ocean Dumping Ban Act of 1988, 33 U.S.C. 1401–1445 (2000), and the National Marine Sanctuary Act of 1972, 16 U.S.C. §§ 1431–1445 (2000).

<sup>14</sup> The 1996 amendments to the Magnuson-Stevens Act required the councils to minimize bycatch and habitat damage caused by fishing “to the extent practicable.” 16 U.S.C. §§ 1851(a)(9), 1853(a)(7) (2000). The use of the term practicable, which is not defined in the statute, suggests that council decisions should consider only the cost to the fishing industry of bycatch and habitat-harm reduction measures. It does not suggest that Congress intended the councils to include the cost to ecosystems or to other user groups.

relate to the market failures within a particular group or use.<sup>15</sup> These problems can be solved to a significant extent by re-aligning incentives of the users to account for the social benefits and costs of their actions. By contrast, external problems such as the failure to incorporate values associated with healthy oceans cannot be solved by rationalizing exploitation.<sup>16</sup> These inter-group or inter-interest spillovers require reworking the legislative framework so as to ensure representation of values other than resource extraction in decision-making.

Others have suggested a range of approaches for addressing both internal and external problems. As to the former, most suggestions for re-aligning industry incentives revolve around some form of tradable quotas,<sup>17</sup> although some also focus on better integration of fishermen into the management process.<sup>18</sup> Regarding external problems, the two central themes of reform have been “ecosystem-based management”<sup>19</sup> and the increased use

---

<sup>15</sup> The classic “internal externality” is the so-called “stock externality.” The FAO defines a stock externality: “These occur when entry of new vessels reduces stock availability and hence [increases] the harvesting costs of others. Fishers do not consider these costs because they only take into account their private fishing trip costs (internal); ignoring the external costs imposed to [sic] others by stock reduction.” J.C. SEIJO ET AL., FAO FISHERIES & AQUACULTURE DEP’T, FISHERIES BIOECONOMICS: THEORY, MODELING, AND MANAGEMENT (1998), <http://www.fao.org/DOCREP/003/W6914E/W6914E01.htm> (last visited Sept. 26, 2008). One of the first discussions of the stock externality was by A.D. Scott in 1955. ANTHONY SCOTT, NATURAL RESOURCES: THE ECONOMICS OF CONSERVATION (1955).

<sup>16</sup> See *supra*, note 6, for a description of what we mean by “rationalizing exploitation.” As an example, while New Zealand is a world leader in “rights-based” fishery management, which leads to more rational exploitation, that country continues to face “external” challenges from escalating conflicts between recreational and commercial fishing interests and the issues of aquaculture and marine reserve siting. Randall Bess & Michael Harte, *The Role of Property Rights in the Development of New Zealand’s Seafood Industry*, 24 MARINE POL’Y 331 (2000). With better planning and coordination upfront, it might be possible to avoid, or better be able to mitigate, these and other allocation issues that will arise in the future.

<sup>17</sup> See, e.g., NAT’L RESEARCH COUNCIL (NRC), SHARING THE FISH: TOWARD A NATIONAL POLICY ON INDIVIDUAL FISHING QUOTAS (1999); see Sanchirico & Hanna, *supra* note 5; Wilen, *supra* note 5.

<sup>18</sup> See, e.g., THE FISHERIES CO-MANAGEMENT EXPERIENCE: ACCOMPLISHMENTS, CHALLENGES, AND PROSPECTS (Douglas Wilson et al. eds., 2003); Patricia Pinto da Silva & Andrew Kitts, *Collaborative Fisheries Management in the Northeast U.S.: Emerging Initiatives and Future Directions*, 30 MARINE POL’Y 832 (2006); Sevaly Sen & Jesper R. Nielsen, *Fisheries Co-Management: A Comparative Analysis*, 20 MARINE POL’Y 405 (1996).

<sup>19</sup> See, e.g., U.S. OCEAN COMM’N, AN OCEAN BLUEPRINT FOR THE 21ST

of marine reserves or marine protected areas.<sup>20</sup>

In this Article, we describe the ways in which another possible reform—comprehensive ocean zoning—could help mitigate both internal and external problems and, by doing so, remove the logjam that currently plagues ocean management. Under ocean zoning, the government would divide all or some of the ocean under its jurisdiction into a number of different zones or areas and then proscribe what uses of the ocean could be made in each zone. For example, an “ocean park zone” might permit no uses whatsoever. A “recreational zone” might permit low-impact recreational uses of the ocean but no extractive uses. Ocean zoning thus would resemble local land-use zoning in which a zoning ordinance dictates, as an initial matter, what types of land uses can occur in particular areas.

Ocean zoning, in our view, is not a panacea; rather, zoning creates a framework that can facilitate both the re-alignment of industry incentives as well as the attainment of the broader goal of healthier ocean ecosystems. Zoning would re-align intra- and inter-group relations, eliminating the current situation in which the Magnuson-Stevens Act has placed for the most part one interest group—the commercial fishing industry—in the effective position of resource owner while at the same time divesting it of the incentive to act as a rational owner would.<sup>21</sup>

---

CENTURY (2004); Ellen K. Pikitch, et al., *Ecosystem-Based Fishery Management*, 305 SCI. 346 (2004).

<sup>20</sup> See, e.g., NAT'L CTR. FOR ECOLOGICAL ANALYSIS AND SYNTHESIS, SCIENTIFIC CONSENSUS STATEMENT ON MARINE RESERVES AND MARINE PROTECTED AREAS (2001), available at <http://www.nceas.ucsb.edu/consensus/consensus.pdf>; Gary W. Allison et al., *Marine Reserves Are Necessary but Not Sufficient for Marine Conservation*, 8 ECOLOGICAL APPLICATIONS S79 (Supp.1998); Jane Lubchenco et al., *Plugging a Hole in the Ocean: The Emerging Science of Marine Reserves*, 13 ECOLOGICAL APPLICATIONS S3 (Supp. 2003).

<sup>21</sup> The industry is effectively the “owner” of the resources for several reasons. First, fishery management is characterized by a classic concentrated/diffuse political dynamic, in which a highly motivated and thus well-organized interest group is able to dominate other less motivated groups. See MARVER BERNSTEIN, REGULATING BUSINESS BY INDEPENDENT COMMISSION 258–67 (1955); MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION (1971). Second, the Magnuson-Stevens Act came into existence at a time when diffuse interests, such as marine conservation and the recreational fishing industry, were not well-developed. WEBER, *supra* note 3. Thus, the commercial industry was able, through congressional representatives from places like Alaska and Washington where commercial fishing was an important economic driver, to shape the law to serve its interests. Thus, Congress set up the regional councils

Rather than discuss the internal and external problems for all current and potential future users of ocean resources, we use an admittedly oversimplified set of three classes of stakeholders. Commercial Fishers are a group whose main interest is in maximizing the production of marketable resources. Recreational Fishers, in our model, are interested in the catch experience, which includes hooking larger individual fish and pursuing species that are valued in sport fishing, such as swordfish, marlin, and tuna. Recreational Fishers often compete at the allocation table with Commercial Fishers, not only for pieces of the overall quota, but because managing for maximum production is not necessarily consistent with optimizing for greater abundance of higher trophic species. A third group, which we call Conservationists, has an interest in managing the resources such that some parts of the system are as close to “natural systems” as is possible and so that the remainder is managed consistent with principles of “ecosystem-based management.”<sup>22</sup>

Part I of the Article explains the effects that zoning should have on the incentives of group members and groups and how zoning should contribute to solving “internal problems.” Because

---

to be heavily populated with fishing industry representatives, vested those councils with most of the authority to regulate fisheries, and divested NMFS of significant authority over the councils. *EAGLE ET AL.*, *supra* note 4. Although one of the rationales for this institutional design was that fishermen would be motivated to preserve fish stocks, this has not proven true for a variety of reasons. *Id.* at 30 (In a survey of council members, “one observed the ‘original concept of the [Magnuson-Stevens] Act was that fishermen would make the ‘right’ decision because they were (1) most knowledgeable, (2) it was in their best interest to do so.’). Mainly, the Act allowed the councils to use management tools, such as annual quotas, that preserved fishermen’s pre-regulation incentive to compete for fish. Competition, by re-creating the tragedy of the commons within the regulatory scheme of the Magnuson-Stevens Act, has—like the absence of property rights in the commons—vested fishermen with individual incentives to catch fish as quickly as possible, a strategy that is at odds with rational use of the stock as a whole.

<sup>22</sup> The goals of ecosystem-based fisheries management have been defined as to sustain healthy marine ecosystems and the fisheries they support. In particular, EBFM should (i) avoid degradation of ecosystems, as measured by indicators of environmental quality and system status; (ii) minimize the risk of irreversible change to natural assemblages of species and ecosystem processes; (iii) obtain and maintain long-term socioeconomic benefits without compromising the ecosystem; and (iv) generate knowledge of ecosystem processes sufficient to understand the likely consequences of human actions.

Pikitch et al., *supra* note 19, at 346.

management decisions, in the context of publicly owned natural resources, are ultimately the product of negotiations among interest groups—constrained and facilitated by legislation and administrative processes—the ways in which groups develop, function, and participate in management decisions are critical to results. Zoning, insofar as it establishes a form of group property rights, can change the dynamic of intra-group relations, providing new incentives for group development and participation.<sup>23</sup>

Part II of the Article explains the effects of zoning on relationships among the interest groups and why it will break the “logjam” that currently prevents the incorporation of broader values into fishery management. Within the existing, agency-mediated negotiation process, interest groups “relate” by competing for allocation of scarce resources; in other words, they rent-seek.<sup>24</sup> By allocating ocean space to groups prior to the on-set of negotiations, zoning can create an entirely different framework for inter-group interactions. Zoning can help strengthen politically weak groups and provide ownership-related incentives to all groups.<sup>25</sup> Furthermore, by endowing all groups with “assets” and the flexibility to trade, zoning can give them the power to negotiate toward a more efficient end.<sup>26</sup>

Part III of the Article contains a brief discussion of some of the issues that will arise in moving from our current system to comprehensive ocean zoning. The Article concludes with

---

<sup>23</sup> We borrow the concept of group property rights from William Fischel, who developed it in order to describe the rights bestowed upon neighborhood residents by municipal zoning. WILLIAM A. FISCHEL, *THE ECONOMICS OF ZONING LAWS* 36–37 (1985).

<sup>24</sup> In fisheries, for example, these rent-seeking activities lead many to argue that the conservation decision (setting the total allowable catch) should be divorced from the allocation decision (which gears get to catch the fish). See, for example, the recommendations in the Pew Ocean Commissions Report. PEW OCEANS COMM’N, *AMERICA’S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE* (2003). For a discussion of rent seeking in fishery management, see J. Karpoff, *Suboptimal Controls in Common Resource Management: The Case of the Fishery*, 95 J. POL. ECON., 179–94 (1987).

<sup>25</sup> In an earlier paper, Eagle describes—based on theories developed by a number of scholars, including Heather Gerken and Brad Karkainen—how giving certain groups priority rights over particular geographical sub-areas can serve to strengthen those groups politically. Josh Eagle, *Regional Ocean Governance: The Perils of Multiple-Use and the Promise of Agency Diversity*, 16 DUKE ENVTL. L. & POL’Y F. 143, 166–74 (2006).

<sup>26</sup> See Eric H. Steele, *Participation and Rules-The Functions of Zoning*, 11 AM. B. FOUND. RES. J. 709 (1986).

recommendations for legislatures interested in moving forward with ocean zoning.

### I. INTRA-GROUP EFFECTS OF ZONING

Consistent with its purpose of physically separating incompatible uses, one of the fundamental building blocks of zoning is the exclusive- or dominant-use zone.<sup>27</sup> In exclusive-use zones, only one potential use of a particular area is permitted, while all other potential uses are banned. So, in the ocean context, one might create an area where only recreational fishing was allowed or a marine reserve where only preservation was allowed. Like exclusive-use zones, dominant-use zones feature a single, priority use. Unlike exclusive-use zone rules, however, dominant-use zones allow zone managers to permit non-priority uses where that use can be conducted in a manner consistent with the overall purpose of the zone.<sup>28</sup> Because of their greater potential to stimulate intra- and inter-group benefits, we focus here on dominant-use zones.

As Fischel first noted in the context of municipal zoning, dominant-use zones create a form of group or “community property right.”<sup>29</sup> Consider a neighborhood zoned for residential use. Although “[n]o zoning law says that the community has a legal right to control undeveloped land,” zoning laws and processes do “provide an effective arsenal to accomplish as much.”<sup>30</sup> Specifically, neighborhood residents’ arsenal contains two weapons. First, the rule that makes residential use the dominant use in the zone is an ordinance that was passed, and can only be changed, by elected officials. Establishing a given use as the legislated *status quo* gives residents an advantage over Developer X, who might seek to use land within the zone for other purposes.<sup>31</sup> Second, if Developer X does press forward, his two

---

<sup>27</sup> “Zoning is the legislative division of a community into areas of which only certain designated uses of land are permitted . . .” E.C. YOKLEY, 1 ZONING LAW AND PRACTICE 2-2 (4th ed. 2000).

<sup>28</sup> Under the National Wildlife Refuge System Improvement Act, for example, those wishing to pursue an activity within a National Wildlife Refuge (a dominant-use wildlife conservation zone) have the burden of proving that the proposed activity is “compatible” with the “major purposes” for which the refuge in question was established. 16 U.S.C. § 668dd(d)(1)(A) (2000).

<sup>29</sup> FISCHEL, *supra* note 23, at 36–37.

<sup>30</sup> *Id.*

<sup>31</sup> Legislation is much more difficult to change than an administrative

options—a change in the ordinance (re-zoning) or an administrative allowance (variance or special exception)—both provide residents with opportunities to participate, object, and delay.<sup>32</sup> According to Fischel, the net effect is that “even though resident homeowners have no vested right to zoning, they appear to have a reliable political entitlement to the status quo in land use.”<sup>33</sup>

Dominant-use zones can be the catalyst for more efficient management of commercial and recreational fisheries through the development of better defined rights, better accountability, and better incentives. These outcomes, however, are not likely to be the product of a top-down policy declaration within each zone, but rather they will be the result of bottom-up dynamics that are facilitated by better-defined rights to places and a greater clarity of who has access rights.

The creation of access and use rights in a setting where these rights are well-defined could set in motion, for example, the formation of place-based clubs within the zones where individuals come together to obtain the mutual benefits from organizing.<sup>34</sup> The economic concept of clubs is characterized by exclusion (membership) and subject to some rivalry in consumption because of factors like congestion.<sup>35</sup> By contrast, open-access fisheries are not exclusionary but rival, that is, the more fish you extract, the less there is for others. Place-based clubs could appeal to broad memberships to capture gains that arise from interactions between sectors within the dominant or exclusive-use zone designation.

An entitlement that comes with dominant-use designation on land not only benefits residents in the municipality, but gives them incentives and responsibilities that they otherwise would not have had. Similar incentives can be generated by “group” property

---

decision or rule. See DAVID SCHOENBROD, *POWER WITHOUT RESPONSIBILITY* 110 (1993).

<sup>32</sup> FISCHEL, *supra* note 23, at 34–37.

<sup>33</sup> *Id.* at 36.

<sup>34</sup> Mutual benefits can arise from individual tastes for associating with each other, exploiting potential economies of scale and scope through vertical and horizontal integration of efforts, and sharing of information and more tangible goods and services. See Todd Sandler & John T. Tschirhart, *Club Theory: Thirty Years Later*, 93 *PUB. CHOICE* 335 (1997). A likely significant reason for why we do not see these clubs now is that the lack of well-defined rights creates significant transactions costs.

<sup>35</sup> *Id.* at 336.

dynamics in the ocean. For example, the economic returns in any given area, which would be the value of membership in the place-based club if one forms, would be a function of the ecosystem services produced in the area, so that club members will have local stewardship incentives. These incentives will derive from the improved ability of managers to hold users within a dominant-use zone accountable for any damages, as well as the ability of the users to have primary access to improved productivity that arises from better stewardship of the local ecology.

In the terrestrial setting, where private property rights enable significant private ordering, some argue that zoning is not necessary.<sup>36</sup> In the ocean, however, where private property rights are absent, private transactions cannot solve market failures, and these failures generate transaction costs that create significant barriers for users who might otherwise seek out beneficial partnerships, negotiations, and collaborations to address conflicts.<sup>37</sup> Dominant-use zoning could open up possibilities for self-organization, private ordering, and other approaches to address market failures. Such social dynamics are also likely to move our oceans closer to a co-management regime, with users working closely with each other, as well as national, state, and local governments, to develop sustainable rules within each zone.<sup>38</sup>

Recreational fishers are one group that likely will benefit from such an arrangement. Currently, private boat anglers, who are the largest segment of recreational fishers and whose numbers are increasing, are one of the hardest sectors to manage and monitor, because the set of anglers is so large and diffuse.<sup>39</sup> For a long time, the conventional wisdom was that recreational fishing from private boats, which includes many day trips of one or two anglers

---

<sup>36</sup> William A. Fischel, *A Property Rights Approach to Municipal Zoning*, 54 LAND ECON. 64, 66–68 (1978).

<sup>37</sup> The certainty of allocating space to offshore aquaculture uses, for example, could reduce transaction costs that currently make negotiations with an offshore oil platform to act as an aquaculture monitoring and management facility too costly.

<sup>38</sup> See GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS OF COLLECTIVE ACTION (ELINOR OSTROM, ed. 1990); Tracy Yandle, *Sharing Natural Resource Management Responsibility: Examining the New Zealand Rock Lobster Co-Management Experience*, 39 POL'Y SCI. 249, 250, 253 (2006).

<sup>39</sup> Felicia C. Coleman, et al., *The Impact of United States Recreational Fisheries on Marine Fish Populations*, 305 SCI. 1958 (2004); Jon G. Sutinen & Robert J. Johnston, *Angling Management Organizations: Integrating the Recreational Sector into Fishery Management*, 27 MARINE POL'Y 471 (2003).

on small motorized craft, did not have an impact on the fish stocks sufficient enough to justify monitoring their adherence to trip and bag limits. A recent article in *Science* debunks this claim and illustrates that in fact the sector as a whole is having a significant impact on the system.<sup>40</sup> Some have proposed angler management organizations (AMOs) to reduce the costs of managing and monitoring associated with regulating private-boat recreational anglers.<sup>41</sup> AMOs would be allocated a share of the recreational catch, be responsible for distributing the recreational share to its members, and be held accountable for violations by its members. An open question, however, is how these clubs would form. Creating a zone for marine recreational fishers could become the catalyst by which such a club develops because of its inherent benefits to members, rather than from a top-down declaration.

Commercial fisheries<sup>42</sup> could form clubs across multiple dimensions, including species or functional groups, gear types, etc. These clubs could take the form of harvesting cooperatives that coordinate harvesting practices, pool incomes, and potentially invest in value-added research. We already have the former in the form of territorial user rights, where rights are allocated for a bundle of species in Chile or Japan.<sup>43</sup> The Pollock fishery in Alaska also includes a cooperative arrangement implemented under the American Fisheries Act of 1996. Quota owner cooperatives formed voluntarily after the adoption of the New Zealand quota management system and invested in value-added research on harvesting, processing, and marketing techniques.<sup>44</sup> A number of groups are also forming off of the Northeast Coast of the Atlantic with the goal of developing decentralized governance regimes.<sup>45</sup> Opportunities, however, are not necessarily constrained

---

<sup>40</sup> Coleman et al., *supra* note 39 at 1958–59.

<sup>41</sup> Sutinen & Johnston, *supra* note 39 at 471–72.

<sup>42</sup> We include the quasi-commercial party boat recreational fishing sector in this group.

<sup>43</sup> José P. Cancino, et al., *TURFs and ITQs: Coordinated Versus Decentralized Decision-Making*, 22 *MARINE RES. ECON.* 391 (2007).

<sup>44</sup> For a description and evaluation of the New Zealand quota management system, see Richard G. Newell et al., *Fishing Quota Markets*, 49(3) *J. OF ENVTL. ECON. & MGMT.* 437 (2005); Yandle, *supra* note 38 and Sanchirico et al., *supra* note 7.

<sup>45</sup> Pinto da Silva & Kitts, *supra* note 18, discuss, for example, the Downeast groundfish fishery, where a consortium of fishery stakeholders have voluntarily formed a “club” and have lobbied for the creation of a spatial allocation, as a means to have more control and input in the stewardship of the localized

by what we currently see in the ocean environment. For example, in the commercial fishing zones, teams of fishers could purchase long-term concessions to a particular resource or a set of resources from the government or other users in the zone. Such a deal could be subject to the purchasers demonstrating that they will have minimal impact on other users within the zone and the environment.

All of these forms of rationalization will reduce the current inefficiencies. In our conceptual model of the zoning process, the choice of form to implement will be determined and tailored by the particular users of the zones and their circumstances. Allowing these to form from the bottom-up will create a system that permits learning about the various approaches and increases buy-in from the local users.

With respect to commercial and recreational zones, flexibility in the types of actions and uses must be subject to environmental reviews to ensure that ecological and biological integrity is not compromised. If, for example, a divergence between private short-term and public long-term economic incentives develops, then the flexibility mechanisms would need to be held in check. This could entail developing approaches to pair responsibilities with rights through contracting.<sup>46</sup> Research on other mechanisms and institutions to strengthen accountability among users is important.<sup>47</sup>

The creation of conservation zones would also change the incentives of conservationists and conservation groups. Under the current regulatory system, there are very few places in the seascape that express the conservationists' interest in wilderness-like, fully protected ocean space. Estimates are that less than 1/10<sup>th</sup> of one percent of U.S. ocean space is currently dedicated to non-use.<sup>48</sup> As a point of comparison, Congress has designated about 15 percent of U.S. public lands as Wilderness Areas, where all extractive and motorized uses are prohibited.<sup>49</sup> The creation of conservation zones in the seascape would likely energize the

---

groundfish resources.

<sup>46</sup> Sanchirico & Hanna, *supra* note 5.

<sup>47</sup> See, e.g., Costello et al. *Natural Resource Use with Limited-Tenure Property Rights*, 55 J. OF ENVTL. ECON. & MGMT. 2 (2008).

<sup>48</sup> Lubchenco et al., *supra* note 20.

<sup>49</sup> WILDERNESS.NET, FAST FACTS ABOUT AMERICA'S WILDERNESS, <http://www.wilderness.net> (last visited Aug. 26, 2008).

marine conservation community, encouraging greater participation and attracting new members.<sup>50</sup>

The National Parks represent an example of how symbols can help energize conservation communities and increase concern among members of the general public. Runte wrote that, soon after creation of the first national parks, "scenic preservation was now in fact a movement. Initially only a scattering of individuals and interest groups supported the national parks. . . . By 1910, however, nearly twenty distinct organizations directly advocated scenic protection."<sup>51</sup>

By providing new incentives for participation, conservation zones could act to increase the amount of public participation by an interest that has traditionally been under-represented in fishery decision-making.<sup>52</sup> To the extent that Conservationists' interests overlap with societal interests in sustainable management of the entire seascape, enhanced participation should have a beneficial effect on management outcomes. Where Conservationists' interests do not overlap with other interests, enhanced participation will lead to the input of more information on values that are currently absent in decision-making. The incorporation of this information should make decision-makers' calculations about optimal resource use better informed and accurate. For example, decisions about optimal rates of incidental take of non-target species should include the value of those organisms to society,<sup>53</sup> without input from society on that value, decisions will likely overestimate optimal rates.

## II. EFFECTS ON INTER-GROUP RELATIONSHIPS

Other proponents of ocean zoning have argued that separating incompatible uses would reduce costly conflicts among users.<sup>54</sup>

---

<sup>50</sup> Eagle, *supra* note 25, at 172.

<sup>51</sup> ALFRED RUNTE, NATIONAL PARKS: THE AMERICAN EXPERIENCE 84–85 (1979).

<sup>52</sup> See, e.g., Thomas A. Okey, *Membership of the Eight Regional Fishery Management Councils in the United States: Are Special Interests Over-Represented?*, 27 MARINE POL'Y 193 (2003).

<sup>53</sup> It is important to point out that not all species will necessarily have significant value by themselves, but the collective set is likely to have considerable value as expressed in terms of society's preferences for healthy ocean ecosystems.

<sup>54</sup> See, e.g., Elizabeth A. Babcock et al., *A Perspective on the Use of Spatialized Indicators for Ecosystem Based Fishery Management through*

While separating uses represents a potential efficiency gain when the costs of doing so are less than the benefits, some of the greatest efficiency gains will be realized after separation. These gains can be measured as the difference between the net returns to society obtained through zoning-based inter-group negotiation and the net returns obtained through the current allocation “system” of interest-group rent-seeking.

The group property rights created by zoning are not identical to private property rights. In a hypothetical seascape of private property rights, area owners could resolve their differences through the same common-law mechanisms available to private land owners. For example, if owner A’s use of her area substantially interfered with owner B’s use and enjoyment of his area, B could potentially sue A under nuisance law. So, if A fished too intensively on a fish population that migrated between A’s area and B’s area, depriving B of some reasonable amount of use of that population, a court could enjoin A to reduce fishing levels or could grant B some amount of monetary damages to compensate B for his loss of use. In the alternative, A and B could negotiate a private covenant, whereby B would either pay A for reducing her fishing or would otherwise compensate A. Under either of these approaches, assuming low transactions costs, the combined value of A’s and B’s areas should increase.

For a range of reasons, however, full privatization of ocean space is neither desirable nor feasible.<sup>55</sup> Thus, the seascape after ocean zoning would more closely resemble a municipal area where zones constrain the uses available to owners of property within

---

*Spatial Zoning*, 62 ICES J. OF MARINE SCI. 469 (2005); Larry B. Crowder et al., *Resolving Mismatches in U.S. Ocean Governance*, 313 SCI. 617 (2006); James Sanchirico, *Zoning the Oceans*, in NEW APPROACHES ON ENERGY AND THE ENVIRONMENT: POLICY ADVICE FOR THE PRESIDENT (Richard Morgenstern & Paul R. Portney, eds., 2004).

<sup>55</sup> Full privatization would represent a significant departure from historical precedent and would likely face significant public opposition. In addition to facing political obstacles, privatization would also be contrary to hoary legal traditions such as the Public Trust Doctrine, which, among other things, includes the right of public access to ocean areas for fishing and recreation. See Barton H. Thompson, Jr., *The Public Trust Doctrine: A Conservation Reconstruction and Defense*, 15 SE. ENVTL. L. J. 50 (2006); Barton H. Thompson, Jr., *Environmental Policy and State Constitutions: The Potential Role of Substantive Guidance*, 27 Rutgers L.J. 863 (1996) (discussing public access rights, constitutional rights to fish, and the public trust doctrine). But see Steven Edwards, *Ocean Zoning, First Possession and Coasean Contracts*, 32 MARINE POL’Y 46 (2008).

those areas. Like municipal zones, legal title to ocean zones would not be vested in any group or individual; instead, the government would be responsible for administering and enforcing zone rules.

As noted above, though, these zone rules would create group property rights for the users whose interests have been prioritized within each zone.<sup>56</sup> Although this public system does not set up the same type of nuisance and covenant transactions as would be available under a private system, negotiation and trading could still occur.<sup>57</sup>

An example from the municipal context illustrates these kinds of interactions. In a study of Evanston, Illinois, Steele explored the role of variance applications in serving as a focal point for negotiations between neighborhood residents and developers.<sup>58</sup> At the time of the study, Evanston was:

a mixture of exclusive and middle-income residential neighborhoods and denser mixed-use areas, some in transition, many facing the pressures of change, deterioration, and high-density development that typify the healthy older urban cores. Its population [was] heterogeneous in race, ethnic origin, income, and occupation. The municipality [had] low-income areas with serious social and housing problems as well as exclusive upper-middle-class single-family residential areas. It [included] commercial and industrial areas, a fairly dense urban central business district, several major universities and hospitals, and a large concentration of churches, seminaries, and other institutional uses. . . . [I]ts zoning ordinance and the state enabling act under which the ordinance operates [were]

---

<sup>56</sup> Scott in 1955 discussed both the importance of better defined property rights for conservation and the notion that tenure should match both the temporal and spatial dimension:

[W]hen the state desires to conserve resources, and therefore desires individuals to invest effort and materials in, and to abstain from using, the product of certain lands, then the state must reward these individuals by giving them title to the future product of such activities. Indeed, unduly small individual rights, even if they are absolute in the legal sense, may be too small to make conservation a profitable individual activity. Hence tenure must be appropriate to the resource not only in the time-dimension, but also in the spatial-dimension of the site.

SCOTT, *supra* note 15, at 128.

<sup>57</sup> As Fischel noted with respect to zoning, “[n]o law allows the community to sell this property right in the way one might sell his house.” FISCHEL, *supra* note 23, at 36.

<sup>58</sup> Steele, *supra* note 26.

typical in basic structure of those in most parts of the United States.<sup>59</sup>

The zoning ordinance in Evanston, as is typical of such ordinances in the United States, allowed those seeking to use land in ways inconsistent with the dominant use in a zone to apply to the city's Zoning Board of Appeals for either a "variance" or a "special use."<sup>60</sup> The granting of a variance required a finding of significant hardship should the application be denied: "Special uses are granted to allow the use of specific property for one of a number of purposes specifically enumerated in the ordinance as not allowed as right in a particular type of zone, but permissible if the use would be consistent with the surrounding uses and not injurious to the character of the area."<sup>61</sup> As noted by Steele, "[t]he standards for granting special uses are less stringent than the standard of hardship [associated with the granting of a variance]."<sup>62</sup>

Steele's study examined the results of variance and special use applications over a 35-year period.<sup>63</sup> Steele found that while the zoning board granted 40 percent of applications and denied 26 percent, it "conditionally or partially granted" 35 percent.<sup>64</sup> The percentage of conditionally or partially granted applications was much higher (43 percent) in the context of special use applications.<sup>65</sup> Steele explained these high numbers in terms of the brokering function of the zoning board and the negotiating opportunities created by zoning processes:

The ZBA [Zoning Board of Appeals], like many other legal institutions, has taken on a mediating or problem-solving role, even though doing so is not strictly speaking within its mandate. Faced with an application for a variance or special use, the ZBA requires a strong case to be made for varying the zoning code; when there is vocal community opposition to a proposal, the ZBA often tries to negotiate a compromise

---

<sup>59</sup> *Id.* at 716.

<sup>60</sup> *Id.* at 717. "Variances are granted to specific parties in interest allowing them to construct or use a particular piece of property or structure in violation of provisions of the zoning ordinance." *Id.* at 717, n.17.

<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> *Id.* at 717, n.18.

<sup>64</sup> *Id.* at 723.

<sup>65</sup> *Id.*

solution that will serve all interests.<sup>66</sup>

\*\*\*

In most cases, such an outcome indicated that a compromise had been negotiated between the applicant and the community—represented both by the ZBA members' own conceptions of the community's interests and by direct community participation in the ZBA process. . . . Almost half of the applications involving institutions, businesses, and mixed-use developments resulted in such mediated outcomes to ameliorate specific impacts perceived as threats by the community.<sup>67</sup>

There are three key points to be made with respect to ocean zoning. First, group property rights will give certain interest groups *new* power to prevent or negotiate impacts that affect their interests within the ocean environment. Whereas such groups might not have been able to protect those interests under a rent-seeking system, due to their inability to organize and compete, the zone endowment provides such groups with a powerful form of leverage. Such an approach will further legitimize the role of these groups and their interests in ocean management. Furthermore, insofar as conservation interests are one of these groups, we expect that non-use values will be better and more thoroughly represented at the allocation table.

In addition, the stewardship incentives enabled by the group property rights will not only help to improve management within the ocean realm but will also create incentives for rights-holders to address the impacts. For example, it is conceivable that dive operators who are granted concessions to particular dive sites will have incentives to negotiate with farmers upstream to reduce runoff that is impacting the quality of their reef habitat. More generally, groups in charge of coastal zones will have similar incentives, especially since many critical habitats occur in this area.

Second, the initial creation of group property rights need not end the allocation of use rights; instead, it could open up the possibility that groups will engage one another in negotiations. This kind of inter-group negotiations is not possible, or is far more difficult and costly, under a rent-seeking system. We could, for example, expect to see recreational fishing groups negotiating with

---

<sup>66</sup> *Id.* at 724.

<sup>67</sup> *Id.*

the commercial fishing users to reduce fishing on the larger individuals of the populations (maximum size limits or seasonal closures around spawning aggregations). The currency for such negotiations could be access to recreational zones during parts of the year. Another possible negotiation could occur between the conservation zones where certain fishers and gear types would be permitted in exchange for more conservation in the commercial fishing zones.<sup>68</sup> Unlike the rent-seeking approach, which typically resembles a zero-sum contest for resources, a negotiated approach seems more likely to result in nuanced results that “ameliorate specific impacts perceived as threats.”<sup>69</sup>

Allowing the groups the right to negotiate and trade uses over space and time is important for the continued refinement of the zone boundaries. It also would reduce the pressure to match the scale of the zones with the ecosystem scale—something that is not likely for the different types of marine resources. That is, mismatches would be addressed when the benefits to the users of doing so outweigh the costs.<sup>70</sup> A top-down centrally planned zoning system that did not include the rights to negotiate would be too inflexible for the ocean environment where the conditions are subject to both short and long term oceanographic changes.<sup>71</sup>

---

<sup>68</sup> For example, the cod closures off of the Northeast coast of the United States have been opened up to scallop fishermen. Because these openings have occurred by regulatory rent-seeking rather than group property right negotiations, there are no direct reciprocal agreements to reduce scallop dredging in other areas. See Press Release, Nat’l Oceanic and Atmospheric Admin., Commerce Secretary Announces More Sea Scallops Available to North Atlantic Fishermen: Sea Scallops Expand Into More Closed Areas Off New England (June 14, 2000), available at <http://www.publicaffairs.noaa.gov/releases2000/jun00/noaa00r122.html>.

<sup>69</sup> Steele, *supra* note 26, at 724.

<sup>70</sup> This is a very different proposition from the argument that the failure of ocean management is due to the mismatch between governance, ecosystem, and socioeconomic scales. See, e.g., Crowder et al., *supra* note 54. For a discussion of the costs of mismatching the ecosystem scale and policy scope, see James N. Sanchirico & James E. Wilen, *Optimal Spatial Management of Renewable Resources: Matching Policy Scope to Ecosystem Scale*, 50(1) J. OF ENVTL. ECON. & MGMT. 23 (2005).

<sup>71</sup> A critique of drawing lines in the water is that ocean institutions need to be flexible and adaptive because many species in the ocean environment move over large areas, such as bluefin tuna and sharks, and El Nino and La Nina events shift ocean temperatures and species distributions across space. To address these issues, we specifically include a greater degree of flexibility and rights within our zones than is present in other discussions regarding ocean zoning. See, e.g., Crowder et al., *supra* note 54. This additional flexibility is a way to resolve

Finally, by establishing a framework of rights and negotiation, zoning could allow for better measurement of the values each group attaches to specific ocean uses. While the current system encourages grandstanding and exaggeration of claims, a negotiation approach—couched in the understanding that the process is iterative—could provide groups with an incentive to avoid such behavior.

### III. DISCUSSION

While we have outlined some of the benefits likely to accrue from the application of comprehensive zoning to U.S. ocean space, there are a wide range of issues arising in the implementation of such a plan that are beyond the scope of this paper and ripe for further research. Key questions include:

#### 1. *Who Should Be Responsible for Drafting and Approving the Zoning Plan?*

Zoning requires enabling legislation. This enabling legislation circumscribes the process by which the zoning ordinance is drafted, informed by public participation, and ultimately approved. Municipal zoning ordinances are drafted by planning commissions and approved by elected city or county council members. This is similar to the model used by the Australian Parliament in implementing the largest existent ocean zoning plan, that for the Great Barrier Reef.<sup>72</sup> On the other hand, it would be possible for the enabling legislation to authorize a state or federal agency to draft and approve zoning rules.<sup>73</sup>

#### 2. *What Substantive Principles Should Guide the Initial Allocation of Ocean Space?*

In an enabling act, the relevant legislature would have to lay out principles to guide those who are drafting the initial plan. There are a wide range of criteria that could be used to guide the initial allocation of space. For example, areas could be designated based on their historic use: if an area had been used primarily by commercial fishermen for an extended period of time, then it would be allocated to commercial fishing. On the other hand,

---

short-term shifts in species distributions.

<sup>72</sup> Eagle, *supra* note 25.

<sup>73</sup> *Id.*

areas could be designated based on their highest and best use. If a particular area included a distinctive and important ecological system, or subsystem, then the area would be allocated to conservation. Without some guidance from the legislature in the enabling act, or some elaboration of its goals in passing the act, the initial allocation is likely to be very difficult.

It is important to point out, however, that this allocation process already happens under the current logjam via rent seeking and that zoning does not make these problems go away.<sup>74</sup> Zoning and the process to create the zones will expand the set of mechanisms for addressing these conflicts. These same conflicts exist today and the only means for resolution is the regulatory process, which is very costly and inefficient.

### *3. What Types of Variance and Exception Provisions Should Be Mandated in Order to Accommodate Both the Stability of the Zones and the Flexibility of the System?*

For reasons described above, variance and exception provisions are critical to the success of the zoning regime. These provisions can be written so as to preclude most exceptional uses or to allow exceptional uses on a more regular basis. The right balance between stability and flexibility is a delicate one. On the one hand, stability is a systemic feature that distinguishes dominant-use zoning from multiple-use management, and it provides groups with incentives to invest in organization and enterprise. On the other hand, an entirely stable system will not allow for the trades necessary to maximize the overall efficient use of ocean space. For these reasons, this is one area where we would expect the rules to change and adapt over time as ocean planners learn about the benefit and costs of the current design of an ocean zoning regime.

### *4. Who Should Manage the Zones That Are Created?*

After zoning, there will continue to be important decisions

---

<sup>74</sup> Conflicts and allocation disputes will not disappear with zoning. For example, during the rezoning process in the Great Barrier Reef, there were 31,540 public submissions of comments—one for every 25 members of the local population. JAMES INNES ET AL., *MANAGING, ANALYSING AND PRESENTING PUBLIC SUBMISSIONS TO ACHIEVE MARINE PARK PLANNING OUTCOMES: AN EXAMPLE FROM THE GREAT BARRIER REEF MARINE PARK* (2004), available at [www.planning.org.au/gld/events/conference/papers/2004/innes.pdf](http://www.planning.org.au/gld/events/conference/papers/2004/innes.pdf).

that must be made. Within fishing zones, management measures will have to be developed, implemented, and enforced. Within all zones, managers will have to make determinations on applications for variances or exceptions. There are multiple options for how the zones should be managed. On one end of the spectrum, all zones could be managed by one central agency. At the other end of the spectrum, the zones could be managed by citizen advisory boards similar to the Regional Fishery Management Councils, but composed of members of the relevant interest group as defined by the designated zones. In between, one could imagine a system that resembles that used on the federal lands, where different kinds of zones are managed by different agencies.<sup>75</sup>

### CONCLUSION

Although we have focused in this paper on a small subset of ocean interests, we believe that zoning has the potential to improve the efficient use of all living and non-living marine resources. A truly comprehensive zoning plan would incorporate all desirable ocean uses and non-uses, including not only commercial and recreational fishing, but also oil and gas development, seabed mining, and navigation.

Moving forward on ocean zoning requires legislative action. Congress, or a state legislature, would need to pass a statute that explicitly authorizes the spatial division of marine areas into dominant-use zones.<sup>76</sup> This authorization would be required as a legal matter, in order to eliminate confusion regarding existing agency jurisdiction. Perhaps just as important, the enabling act would provide the political capital necessary to support the difficult decisions involved in crafting a zoning plan.

The necessary legislation would not need to be complex. Federal or state ocean zoning laws could easily be modeled on

---

<sup>75</sup> Eagle, *supra* note 25.

<sup>76</sup> On May 15, 2008, the Massachusetts' legislature passed The Massachusetts Ocean Act, which is the first ocean zoning legislation in the United States. The Act "would authorize the state energy and environmental affairs secretary to write an ocean management plan by the end of next year, with assistance from a 17-member task force and a science advisory council." Beth Daily, *Lawmakers Agree on Ocean Zoning Plan*, THE BOSTON GLOBE, May 15, 2008, [http://www.boston.com/news/local/articles/2008/05/15/lawmakers\\_agree\\_on\\_ocean\\_zoning\\_plan/](http://www.boston.com/news/local/articles/2008/05/15/lawmakers_agree_on_ocean_zoning_plan/). As noted above, *supra* at III.1, the use of an agency to draft the zoning plan may not be the most effective approach to zoning. See also Eagle, *supra* note 25.

statutes previously enacted in other countries. For example, Australia's Great Barrier Reef Marine Park Act lays out an effective template for the implementation of marine zoning.<sup>77</sup> In that law, Australia's Parliament set forth broad objectives and acceptable rationales for creating zones within the boundaries of the park.<sup>78</sup> The law then instructed the agency responsible for managing the park to develop a zoning plan, using science and after taking the public's views into consideration.<sup>79</sup> Once completed, the agency was to submit the proposed plan to a cabinet-level official, the Minister for Environment and Water Resources, for approval.<sup>80</sup> Following his or her approval, the minister was required to submit the plan to the Australian Parliament for final approval.<sup>81</sup> This part of the legislation was designed so that the parliament could only approve or disapprove the plan; in other words, the parliament drafted the statute so that its members would not have the opportunity to seek end-of-process modifications to the plan.<sup>82</sup>

In comparison with Congress's recent experience with ocean laws, the new zoning legislation would likely be more similar—in terms of complexity, length, and structure—to the Oceans Act of 2000<sup>83</sup> than to the Magnuson-Stevens Fishery Conservation and Management Act. The Oceans Act of 2000, as a new zoning law would, delegated the difficult research and planning work to a high-level commission,<sup>84</sup> while importantly retaining in Congress the ultimate power to act on the commission's recommendations.

---

<sup>77</sup> Great Barrier Reef Marine Park Act, 1975.

<sup>78</sup> *Id.* § 32(7).

<sup>79</sup> *Id.* § 32(2).

<sup>80</sup> *Id.* § 32(10).

<sup>81</sup> *Id.* § 33(1).

<sup>82</sup> *Id.* §§ 33(2), (5).

<sup>83</sup> Pub. L. No. 106-256, 114 Stat. 644 (2000).

<sup>84</sup> The composition of this commission could be similar to that of the U.S. Ocean Commission, which was created by the Oceans Act of 2000. In other words, it could consist of state and federal government officials and of stakeholders representing a range of interests, including commercial and recreational fishing, oil and gas, aquaculture, mining, navigation, and marine conservation.