Marine Protected Areas off the Coast of Oregon: Legal Framework, Initial Recommendations, and Proposed Oregon Legislation Establishing a Heceta-Stonewall Banks Marine Protected Area

by

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The world we have created today as a result of our thinking thus far has problems which cannot be solved by thinking the way we thought when we created them[*]

Introduction

We have traditionally developed ocean policy under "freedom of the seas," an awe-inspired notion of the ocean and its vastness, where marine life within the waters is inexhaustible and man is pitted against an ever-changing nature, limited only by imagination and skill. Unfortunately, we have had to face several unromantic realities: complex and conflicting

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[*] Albert Einstein, *quoted in* GARY A. KLEE, THE COASTAL ENVIRONMENT: TOWARD INTEGRATED COASTAL AND MARINE SANCTUARY MANAGEMENT 254 (1999).

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administrative jurisdictions and processes have become obstructions to ecological management; biohazard trash from ocean vessels has washed up on our beaches; and large algal blooms, stimulated by nutrient overload from nonpoint source and point source pollution, have caused everything from fish kills due to hypoxia and anoxia to human deaths by paralytic shellfish poisoning and related illnesses. Catastrophic oil spills such as the *Exxon Valdez* in Prince William Sound, Alaska, and the *New Carissa* off the shores of Coos Bay, Oregon, have been viewed across the television sets of the nation, and fish populations worldwide have been overexploited to the brink of extinction. Certain groundfish in Oregon may soon follow the fate of the Atlantic cod and the depleted groundfish populations in the northeastern Atlantic Ocean if strong conservation efforts are not successful in reestablishing fish populations. Traditional fisheries management techniques have not been effective at preventing overexploitation for a variety of reasons, including lack of knowledge about the targeted species from which to construct harvest quotas, inadequate protective measures for non-targeted associated species, and adjustment of harvest levels based on political pressure.

Maintaining the status quo simply will not do; traditional management approaches must be buttressed with a networked system of marine protected areas (MPAs), the water equivalent of land use zoning regulations, as called for in President Bill Clinton's Executive Order 13158 (EO 13158) on MPAs.[1] The National Research Council's (NRC's) Ocean Studies Board has concluded that, based on evidence from existing marine area closures in both temperate and tropical regions, MPAs will be necessary and effective tools for addressing conservation needs as part of integrated coastal and ocean management.[2] With area-based approaches, the focus shifts from agency-specific problem management to interagency cooperation for implementing marine policies that recognize the spatial heterogeneity of marine habitats and the need to preserve the structure of the marine ecosystem.[3] It is essential to the successful establishment of these MPAs to have both top-down and bottom-up management processes that involve stakeholders such as fishermen from the beginning and that integrate the activities of federal, state, and local agencies to manage areas that cross the state and federal water jurisdictional boundaries.[4] MPAs, if established correctly and within a long-term framework allowing for adaptation, will

1. provide an ecologically based platform for ocean resources management by integrating agencies and stakeholders, previously constrained by jurisdictional boundaries not comporting with the fluid and dynamic nature of the ocean environment;

2. serve as fishery conservation tools where habitats and critical life stages of species important to commercial and recreational markets and to the food chain are protected, in both no-take marine reserves and areas employing other fisheries regulations;

3. protect biodiversity so that biological communities may have the genetic pool from which it is necessary to draw for adaptation to a changing oceanic and global environment;

4. provide research opportunities to better understand the ocean and to provide baseline data for the refinement of a particular MPA system and the establishment of new systems;

5. provide for educational outreach opportunities for the public;

6. protect areas of historical and cultural significance (for example, the preservation of shipwrecks); and

7. provide aesthetic benefits for their own sake as well as for the associated income generated from recreation and tourism.

This paper addresses some current federal and state legal authorities that may serve as a framework for establishing transboundary MPAs (MPAs across both federal and state waters) off the Oregon coast, makes some initial recommendations for that process, and contextualizes proposed Oregon legislation establishing a "Heceta-Stonewall Banks Marine Protected Area."

Legal Framework for Marine Protected Areas

Overview of the Coastal Zone Management Act of 1972 and the Oregon Coastal Management Program

Under the Submerged Lands Act of 1953,[5] coastal states were given exclusive sovereign rights to submerged tidal beds and natural resources of the overlying waters from the mean low tide line of the coast to three miles offshore. This three-mile-wide offshore area is called the "state territorial sea," and is also referred to as "state waters." The most significant management authority of the coastal states within this three-mile-wide area is provided by the scheme established in the Coastal Zone Management Act (CZMA) of 1972.[6] Under the CZMA, states have the option to submit coastal management plans for "coastal zones" to the secretary of commerce for approval. Oregon's federally approved coastal management plan defines the boundaries of the coastal zone longitudinally by the state lines of Washington and California and laterally by the crest of the coastal range on the landward side and the three-mile limit on the seaward side.[7] The waters extending beyond the three-mile limit to two hundred miles, however, are "federal waters" or the exclusive economic zone (EEZ), where the federal government has exclusive jurisdiction over fisheries and other natural resources. Unfortunately, these boundaries are ecologically irrelevant and construct a barrier that may keep legitimate local and state interests from being asserted beyond three miles. As one remedy to this problem, the CZMA provides "consistency" provisions, a reverse-preemption provision requiring each federal agency activity "within *or outside* the coastal zone that affects any land or water use or natural resource of the coastal zone" to be consistent with approved state coastal management programs to the "maximum extent practicable."[8] This language seems to give states leverage over federal agency activities within or outside of the coastal zone, but the reality is that the consistency provisions are limited. What if the state coastal management program does not provide particular provisions for an activity proposed by a federal agency, such that there is no standard against which to gauge "consistency"? And even if a relevant provision is in place, exactly how binding are the words "to the maximum extent practicable"?

In 1987, the Oregon State Legislature, prompted by questions such as these and driven by fear of oil and gas development in federal waters off the coast of Oregon under the Reagan administration, created the Oregon Ocean Resources Management Task Force (the Task Force) to prepare an ocean plan; the Task Force published *Oregon's Ocean Resources Management*

Plan (the Ocean Plan) in 1991.[9] Oregon's federally approved coastal zone management plan at that time had mostly focused on comprehensive local plans, but it had neglected the ocean resources in terms of a framework for coordinated, consistent state policy in the state's territorial sea and the waters beyond.[10] In part, the legislature wished to "[a]ssert the interests of [Oregon] as a partner with federal agencies in the sound management of the ocean resources within the United States Exclusive Economic Zone and the continental shelf."[11] The legislature and the Task Force recognized that national and international political and economic forces such as oil, gas, and mineral exploitation; increased tourism and recreation; and global market forces on certain fishing populations found off Oregon are beyond the state's control and "will bring change to Oregon's ocean and shoreline, regardless of how well the state is prepared."[12] The bottom line is that these findings are still as true today as when they were written in 1987. While Oregon state agency employees make their best efforts to protect the Oregon coast on a daily basis, the state and federal agency administrative mechanisms still lack coordination for regional and ecologically based management of ocean resources in the blue-water zone beyond the territorial sea. The interests of the state of Oregon virtually halt twelve miles from shore.

Components of the federally approved Oregon Ocean Resources Management Program, as they currently exist under the umbrella of the Oregon Ocean Resources Management Act, Oregon Revised Statutes section 196.425, are described next.

The Oregon Coastal Management Program

The Oregon Department of Land Conservation and Development (DLCD), a subsidiary branch of the Oregon Land Conservation and Development Commission (LCDC), is the primary agency in charge of administering the Oregon Coastal Management Program. This involves LCDC statewide planning goals and the Oregon Coastal Management Plan.

LCDC Statewide Planning Goals. Local comprehensive plans and state and federal agency activities must be consistent with the requirements of the statewide planning goals promulgated under the authority of the Oregon Land Use Planning Act of 1973, Oregon Revised Statutes section 197.180. Goals 16-19, promulgated in 1976,[13] particularly pertain to coastal resources. All activities in the state must be consistent with these goals.

The Oregon Coastal Management Plan. The last complete plan submitted to the secretary of commerce for approval under the CZMA was the Oregon Coastal Management Program of 1987. Since then, the federal government has approved several amendments, and the state of Oregon has enacted relevant statutes and promulgated state agency programs and policies that apply to coastal and ocean resources. These include *(a)* the Ocean Plan, completed by the Oregon Ocean Resources Management Task Force in 1991; *(b)* the Territorial Sea Plan, completed by the Oregon Ocean Policy Advisory Council (OPAC) in 1994;[14] and *(c)* the Beach Bill.[15]

The Oregon Ocean Policy Advisory Council

Created by recommendation of the Task Force, partially staffed by the DLCD, and established in the Office of the Governor, OPAC gives coordinated policy advice to the governor

and various agencies and writes plans (for example, the Territorial Sea Plan), which, if approved by LCDC, are adopted as part of the Oregon Coastal Management Program.

The Ocean Plan was intended merely as a framework for adopting enforceable policies; later materials, such as the 1994 Territorial Sea Plan, constitute the particularized and enforceable management criteria. The Territorial Sea Plan, however, was really only an "initial Territorial Sea Plan" because, due to the time constraints under which OPAC was working, it focused on only two objectives: (1) rocky shores (the Oregon Rocky Shores Strategy) and (2) administrative procedures for making ocean resource decisions.[16] Thus, the Ocean Plan will continue to serve as the existing policy framework for the state of Oregon for establishing interests beyond the boundary of the territorial sea, except to the extent that the Oregon Rocky Shores Strategy in the Territorial Sea Plan may be expanded into a larger scheme.[17]

The Task Force wrote the Ocean Plan from an ecological perspective, focusing on the "Ocean Stewardship Area"[18] for a blending of ecological, practical, and political sense. The Task Force recognized that on the large scale of ocean currents, the North Pacific and Alaska gyres are interconnected with the dynamic system of ocean and coastal waters, and it suggested that the "northern California Current ecosystem may be an appropriate unit for future regional planning and management."[19] The Ocean Plan states, however, that "management of ocean resources and uses is fragmented and complex. . . . The political and administrative boundaries limiting [the authorities of numerous state and federal agencies] are not related to the fluid dynamic nature of the ocean or its resources."[20] More than ten years later, Oregon planning still has not reached beyond the three-mile boundary of the state's territorial sea, let alone into the Ocean Stewardship Area or the EEZ. MPAs are necessary tools to achieve this identified need for integrated, ecological management of ocean resources.

Authorities for Marine Protected Areas

Executive Order 13158

Currently, federal agencies have a mandate to establish a national system of MPAs, presenting the opportunity to improve regional coordination among marine management agencies; develop an inventory of existing MPA sites; and ensure adequate regulatory authority and funds for enforcement, research, and monitoring.[21] On May 26, 2000, President Clinton signed EO 13158 to "help protect the significant natural and cultural resources within the marine environment for the benefit of present and future generations by strengthening and expanding the Nation's system of marine protected areas. . . ."[22] Section 2 of EO 13158 defines an MPA as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein."

The executive order recognizes that "[a]n expanded and strengthened comprehensive system of marine protected areas throughout the marine environment would enhance the conservation of our Nation's natural and cultural marine heritage and the ecologically and economically sustainable use of the marine environment for future generations."[23] The Department of Commerce (DOC) and the Department of the Interior (DOI), in consultation with

such federal agencies as the Department of Transportation, the Environmental Protection Agency (EPA), and other federal agencies whose authorities provide for the establishment or management of MPAs, are thus instructed to coordinate information to enhance and expand protection of existing MPAs and establish or recommend new MPAs for a national system.[24] To carry out this requirement, the DOC and the DOI are required to consult with coastal states, regional fishery management councils, and others to "promote coordination of Federal, State, territorial, and tribal actions to establish and manage MPAs."[25] The MPA Federal Advisory Committee and the MPA Center were designed to advise the DOC and the DOI and help establish the framework for a national system of MPAs.[26] The information completed to date is posted on the World Wide Web.[27] In addition, the EPA was directed to propose new science-based regulations based on existing authorities in the Clean Water Act (CWA) and to consult with states and other entities to ensure appropriate levels of protection for the marine environment, including the identification of areas that warrant additional pollution protections and the enhancement of marine water quality standards.[28] This last provision is discussed in more detail below.

The National Marine Sanctuaries Act

The most obvious authority for carrying out the purposes of EO 13158 to designate a national system of MPAs bridging both state and federal waters is the National Marine Sanctuaries Act (part of the Marine Protection, Research, and Sanctuaries Act) as amended.[29] The National Marine Sanctuaries Act, however, is of little present use to Oregon for the designation of an MPA. While California has four national marine sanctuaries (the Monterey Bay National Marine Sanctuary, the Gulf of the Fallarones National Marine Sanctuary, the Cordell Banks National Marine Sanctuary, and the Channel Islands National Marine Sanctuary) and Washington has the Olympic Coast National Marine Sanctuary, there are no national marine sanctuaries off the Oregon coast. Efforts to proceed with the designation of a national marine sanctuary should continue or be revived, partly because of the funding that is potentially available to the National Marine Sanctuaries Program.

National marine sanctuary designation can occur in two ways: (1) by congressional authorization of a designation by the secretary of commerce under the National Marine Sanctuaries Act and (2) by presidential executive order. The designation criteria followed by the secretary of commerce have changed under the National Marine Sanctuaries Amendments Act of 2000.[30] The secretary must find in relevant part that (1) the proposed area is "of special national significance due to . . . its conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or esthetic qualities; . . . the communities of living marine resources it harbors; or . . . its resource or human-use values,"[31] (2) "the area is of a size and nature that will permit comprehensive and coordinated conservation management,"[32] and (3) the "existing State and Federal authorities are inadequate or should be supplemented to ensure coordinated and comprehensive conservation and management of the area. . . ."[33] Oregon's coast seems to be a good candidate for designation.

Unfortunately, in order for an area to receive consideration for designation by the secretary, it must have first gone through several time-consuming processes and received placement on the site evaluation list. At one time, the Heceta-Stonewall Banks complex at the

outer edge of the Oregon continental margin had been identified as a potential sanctuary, but the status of this area in the designation process is an unknown factor in this paper.[34] Even if the Heceta-Stonewall Banks complex was well on its way in the process, there is one final limitation that seems to end this designation option. According to the 2000 amendments, the secretary may not publish designations of new sanctuaries unless "the addition of a new sanctuary will not have a negative impact on the System; and . . . sufficient resources were available in the fiscal year in which the finding is made to . . . effectively implement sanctuary management plans for each sanctuary in the System. . . ."[35] Existing national marine sanctuaries are currently experiencing difficulty with funding, so if any newly appropriated money does become available, it is likely that the funds will be diverted to improving already existing programs. In addition, national marine sanctuaries have been criticized for lack of effectiveness and lax regulations because they were often established for single-purpose, highly politicized reasons and they contain a variety of marine environments that constitute neither a representative system of MPAs nor a network of MPAs as called for in EO 13158.[36] In fact, the National Academy of Public Administration concluded in a 2000 report that more steps, such as regulating and prohibiting fishing or other activities, should be taken to protect marine resources within the boundaries of national marine sanctuaries.[37]

In the interim, Oregon should still proceed with alternative methods to establish an integrated, transboundary MPA. Oregon may be able to surpass the status quo standards for national marine sanctuaries. If national marine sanctuary designation is achieved at a later date, the management framework would already be set and the designation would provide an additional source of governmental funding through the National Marine Sanctuaries Program.

The National Park Service Organic Act

Another option for federal designation and management of MPAs not mentioned in Oregon's existing or proposed framework includes the congressional designation of a national park, monument, or reservation to be administered by the National Park Service under the National Park Service Organic Act.[38] More research on this option needs to be done.

Oregon Legislation

The Oregon legislature may act on the sovereign authority of the state over the territorial sea to designate an MPA directly through enactment. LCDC, an agency intimately tied with the Oregon Coastal Management Program due to its promulgation of statewide planning goals and its authority over the DLCD, may recommend the designation of "areas of critical state concern" to the legislature pursuant to Oregon Revised Statutes section 197.405. More research is needed on whether the designation of areas of critical state concern can be expanded to the MPA context and under what circumstances the provision has been used, but Oregon law[39] appears to grant the type of authority necessary to establish an MPA. Areas of critical state concern are designated "to prevent loss of damage of an area having historical, natural, statewide, and/or national importance"[40] if LCDC finds that the area requires a higher or broader degree of control and management than the local comprehensive plan and the immediate management scheme can provide. The report to the legislature must include boundary descriptions, summaries of existing programs and regulations applicable to the area, justifications for establishment of the area, a

management plan, and standards of permissible use and limitations for permitting purposes.[41] The resulting authorization could be incorporated into the Oregon Coastal Management Program, subsuming the Territorial Sea Plan for a particular area (for the purposes of this paper, the Heceta-Stonewall Banks complex), or it could possibly stand alone as a piece of legislation, designating an MPA and incorporating other necessary plans by reference.

The Coastal Zone Management Act and Related Programs

The CZMA and its related programs appear to be additional vehicles by which state agencies may designate and manage an MPA within state waters. First, section 315 of the CZMA has direct language allowing for the designation of national estuarine research reserves, a localized type of MPA.[42] Oregon has taken advantage of this provision: the National Ocean Service and the Oregon Division of State Lands (DSL) jointly manage the South Slough National Estuarine Research Reserve outside of Coos Bay, Oregon.

Second, a mandatory requirement for the adoption of a state coastal management program under the CZMA includes "*procedures whereby specific areas may be designated* for the purpose of preserving or restoring them for their conservation, recreational, ecological, historical, or esthetic values."[43] The 1990 amendments to the CZMA provide coastal resource improvement program grants for this purpose in section 306A(b)(1).[44]

Third, the 1990 amendments to the CZMA provide coastal zone enhancement grants for "[p]reparing and implementing special area management plans for important coastal areas" in section 309(a)(6).[45] The term "special area management plan" is defined as a "comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone."[46] The 1997-00 Ocean Resources Planning Strategy, part of the Oregon Coastal Management Plan provided to the secretary of commerce for the Ocean-Coastal Management Program's "coastal zone enhancement grant" funding under section 309 of the CZMA, identified two program enhancement objectives: (1) to develop a special management area strategy for nearshore reefs that would result in an amendment to the Territorial Sea Plan and (2) to implement the Territorial Sea Plan's Rocky Shores Strategy, including public education and interpretive information to promote public awareness and personal stewardship of rocky shore areas.[47] The finances generated from this grant were used to fund the Oregon Department of Fish and Wildlife (ODFW) Habitat Project to conduct fieldwork in nearshore rocky reef areas and communities. The work resulted in significant improvement of specific information about the location, structure, habitat, and ecosystem relationships of important reef areas and an increase of capacity within the ODFW to obtain information about reef areas through fieldwork and to conduct assessments. It also revealed significant data gaps and the need for additional work to understand the dimensions of overall nearshore reef ecosystems and their role in the population dynamics of groundfish and other marine species across the entire continental margin.[48] Other research conducted during the same period contributed to an improved understanding of how these nearshore reefs respond to ocean conditions affected by basic-scale processes.[49] In other words, "this work has set the stage for full consideration of marine protected areas as a management tool in the FY01-05 strategy

period."[50] The DLCD and the ODFW are currently seeking additional funding (beyond the section 309 funds) and partners in this effort to apply and expand the experience gained in the rocky reef work to the larger context of MPAs.[51]

State and Federal Agencies

Several small "marine protected areas" have already been designated in Oregon state waters by a variety of agencies whose authorities stem from a variety of acts and purposes. (For a complete inventory of these areas, see the Appendix to this paper.) OPAC, in fact, has recognized that under EO 13158, the entire territorial sea is an MPA.[52] For the purposes of this paper, several important agencies and acts, as they relate to existing designated areas, will be briefly cataloged.[53] Some of these may eventually be included for particular categories or zones within a larger, cooperatively managed and ecologically driven MPA.

The ODFW and its oversight commission have authority over fish and wildlife in the state waters that are not covered under the Pacific Fishery Management Council's (PFMC's) fishery management plans (FMPs). A fisheries conservation zone for the maintenance, preservation, and protection of all coastal species of fish and other marine fisheries resources for mean or high water seaward to a distance of fifty statute miles exists where the ODFW is authorized to study and regulate fish by coordination with the PFMC.[54] Several small marine gardens (tide pools) and research reserves have been designated in the state territorial sea by the Oregon Fish and Wildlife Commission, but the ODFW's authority is limited to regulating the harvest of animals and to closing areas to harvest. The largest closure to date has been the Whale Cove Intertidal Research Reserve, a thirty-acre marine reserve at Whale Cove, Newport. Fishery closure areas one thousand feet in width are maintained around Pyramid Rock and Orford Reef by agreement with local fishermen for the May 1-August 31 season, due to the importance of the area as pupping grounds for the endangered Stellar sea lion.

The Oregon Parks and Recreation Department (OPRD), a division of the State Department of Transportation, is responsible for managing the classic beach area between the vegetation line and the mean high tide line under the Oregon Beach Bill for public access and other purposes. The OPRD has cooperative agreements with the U.S. Fish and Wildlife Service (USFWS) for specific management areas, including a park closure agreement for the North Shell Island of Cape Arago during sea lion, seal, and elephant seal pupping seasons.

The USFWS, an agency of the DOI, manages designated national wildlife refuges for offshore rocks in Oregon's territorial sea that are important for seabird protection. Shoreline marsh habitats are also designated as national wildlife refuges. These areas are designated using some combination of executive orders, the National Wildlife Refuge System Administration Act as amended, the Migratory Bird Conservation Act, and the Migratory Bird Treaty Act.[55] Also, some offshore islands, including two of the offshore national wildlife refuges (the Three Arches Rocks National Wildlife Refuge and the Oregon Islands National Wildlife Refuge) were expanded to form the Oregon Islands Wilderness, presumably by the secretary of the interior acting under the authority of the Wilderness Act of 1964.[56]

The National Marine Fisheries Service (NMFS), an arm of the DOC's National Oceanic and Atmospheric Administration, has designated "critical habitat" areas under the authority of the Endangered Species Act (ESA)[57] for Stellar sea lions at Pyramid Rock and at the Port Orford Reef by designating a three-thousand-foot-wide buffer zone around the rocks in conjunction with the ODFW's fishery closures. NMFS and the PFMC, acting under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act),[58] have also designated a Pacific Whiting Columbia River Salmon Conservation Zone.[59]

The federal Bureau of Land Management (BLM) manages some rocky areas of the shore in conjunction with other state agencies such as the OPRD and the DSL. The United States Forest Service (USFS) co-maintains Cascade Head, a designated International Man and the Biosphere Reserve, with the Nature Conservancy. The EPA manages National Estuary Programs for Tillamook Bay and the Lower Columbia River under the Federal Water Pollution Control Act, commonly known as the Clean Water Act or the CWA.

Proposed But Not-Yet-Implemented Measures: The CWA and the Magnuson-Stevens Act

Proposed but not-yet-implemented measures are also particularly relevant to establishing transboundary MPAs for Oregon in accordance with EO 13158 section 4(f):

> To better protect beaches, coasts, and the marine environment from pollution, the Environmental Protection Agency, relying upon existing Clean Water Act authorities, shall expeditiously propose new science-based regulation, as necessary, to ensure appropriate levels of protection for the marine environment. Such regulations may include the identification of areas that warrant additional pollution protections and the enhancement of marine water quality standards.

On January 19, 2001, EPA Administrator Carol Browner signed the prepublication version of the rulemaking to revise CWA section 403 ocean discharge criteria.[60] However, in accordance with the January 20, 2001, memorandum from the assistant to the president and chief of staff, entitled "Regulatory Review Plan," the EPA withdrew this document from the Office of the Federal Register to give the administrator an opportunity to review it.[61] The CWA,[62] under section 402, established the National Pollutant Discharge Elimination System (NPDES).[63] All direct dischargers of pollutants from point sources to the surface waters of the United States must obtain an NPDES permit before the discharge can take place. While the EPA has approved the Oregon Department of Environmental Quality (DEQ) as the state NPDES permitting authority for the discharge of pollutants within state waters, the EPA is still the relevant NPDES permitting agency within federal waters. Section 403 establishes that guidelines for reviewing NPDES permit applications, as written by the EPA, are mandatory.[64]

If the new section 403 rule were implemented, the requirements for ocean discharge would change for the better and would have immediate and direct bearing on the extension of MPAs into federal waters off the coast of Oregon. First, the proposed rule would establish "healthy ocean waters," baseline water quality standards for federal waters that do not have applicable water quality standards in place.[65] Second, the rule would provide that an ocean discharge permit under section 403 would not be issued unless the applicant can provide enough

information to make determinations necessary to grant the permit. This burden-shifting rule ups the standards from the existing rule, under which permits are granted upon a showing of no expected irreparable harm if there is insufficient information available.[66] Finally, and most importantly, ocean waters of outstanding value, or special ocean sites (SOSs), would be designated by the EPA, either on its own authority or by recommendation from another entity.[67] These SOSs would be regulated by the EPA both in federal and state waters, providing that the governor of the state concurs to the EPA's jurisdiction in the territorial sea. The EPA also intends to work with the states to designate those SOSs under state jurisdiction as no-discharge zones under section 312 of the CWA in order to protect SOSs from the potential impacts associated with sewage discharge from vessels.[68] Within the SOSs, no new discharges would be allowed, and currently existing discharges could not expand beyond 20 percent of the current permit level.[69] It is the EPA's position that SOSs constitute MPAs: "Although areas designated as MPAs under other authorities may not meet the definition of an SOS . . . an SOS established under [the] proposed rule or in a subsequent regulation would meet [EO 13158's] definition of an MPA, and therefore should be considered for inclusion in the national system of MPAs to be established under the Executive Order."[70]

The SOS provision has immediate applicability for the federal waters of Oregon, because the EPA has designated the Gorda Ridge-Blanco Fracture Zone and the Escanaba Trough of the Gorda Ridge off the coast of Oregon as SOSs. Both have hydrothermal vent communities, but the Escanaba Trough also has the necessary physical features to produce polymetallic sulfides important to geological research. The following excerpt is the EPA's justification for designating the Gorda Ridge-Blanco Fracture Zone as an SOS:

> The Gorda Ridge-Blanco Fracture Zone, a sea floor spreading center and fracture zone, is approximately 21,000 [square miles] in size and is located off the coast of Oregon, within the United States Exclusive Economic Zone. The area is characterized by rugged topography, volcanic activity, and crustal movement along the Gorda Ridge Valley and the transform-fault Blanco Fracture Zone. Hydrothermal vents present at the site support unique biological and microbial communities, which include various species of worms, snails, clams and crabs that can only be found in these hydrothermal ecosystems. Hydrothermal vent ecosystems are unique in that they are generally chemosynthetically-based systems. Most ecosystems are photosynthesis-based, which means primary production is driven by sunlight. Hydrothermal vent communities are so deep that sunlight does not penetrate, so the algae and plants that form the base of many marine food-webs are not present. Instead, chemosynthesis from the biological transformation of volcanic minerals by microorganisms forms the basis of these food webs.
>
> Hydrothermal vent communities contain many organisms endemic to these areas and are new to science, and EPA believes that the protection of these unique areas is of great importance, and that SOS status is appropriate.[71]

A prohibition of new discharge in the SOS Gorda Ridge-Blanco Fracture Zone, an area targeted for offshore oil and gas exploration, would give the EPA an effective tool for keeping

oil and gas and mining industries out of federal waters in Oregon's Ocean Stewardship Area, an area over which the state of Oregon has no legal authority. The Oregon Coastal Management Program and Goal 19's renewable resource priority should be adequately protective within the state's territorial sea. In addition, the EPA "believes that areas of the ocean that are designated critical habitat for threatened and endangered species should have SOS status."[72] This proposed rule would place the EPA in a position of being one of the key federal players to involve in establishing transboundary MPAs.

The other proposed but not-yet-implemented authority for the establishment of transboundary MPAs off the coast of Oregon lies in the PFMC's initiative to designate no-take reserves ("marine reserves") for overexploited western groundfish pursuant to its authority under the Magnuson-Stevens Act,[73] under the auspices of the Groundfish Strategic Plan implemented by NMFS.[74] Five PFMC-managed species of groundfish (bocaccio, lingcod, Pacific Ocean perch, cowcod, and canary rockfish) are overfished and are being considered for listing as threatened or endangered under the ESA. Additionally, there are no stock assessments for most of the eighty-three species included in the West Coast groundfish FMP.[75] Even where there are stock assessments in place, many scientists believe that a primary cause of fishery management failure is the inherent uncertainty in stock assessments.[76] "Experience and simulation analysis have shown that stock assessment methods sometimes are prone to errors exceeding 50%, even when costly monitoring programs are in place;" errors tend to be correlated from year to year so that effects are compounded over time. There are also benthic species closely associated with the five overfished species, so it is suspected that many other groundfish populations are in serious decline because the unassessed species are targeted by the same fishing gear and probably experience significant bycatch mortality.[77] Marine reserves are expected to work to rebuild biomass for these species because the species are relatively sedentary, long lived, and slow maturing. Whereas marine reserves may not be a sufficient conservation measure for highly mobile fish such as tuna or Pacific salmon, areas with defined boundaries and prohibited human activities will assist the groundfish to recover and may eventually lead to a long-term increase in the fishery. Marine reserves are discussed further below.

The council's authority for creating marine reserves is limited. It has the authority to recommend regulations for fisheries that take species managed under a council FMP, identify essential fish habitat (EFH), and recommend habitat areas of particular concern.[78] Despite limitations to its authority, the council completed Phase I (Technical Analysis) of its project to consider marine reserves as a fishery management tool, built marine reserves into its October 2001 Groundfish Strategic Plan, and was proceeding until fairly recently with Phase II for the specific designation and implementation of marine reserves. The council then encountered other limitations, including coordination and funding, the two hurdles predicted by the council to be impediments to the implementation of marine reserves.[79] The council submitted a budget proposal for marine reserve development on February 13, 2001, estimating that the process would cost somewhere between $1.5 and $2 million if the council were to take a lead role in developing its own marine reserves for groundfish. There was no indication that federal funds, except for perhaps a small portion, would be supplied. The reality is that, without federal funding, the project is at a standstill and the council's role will have to be one of participation in a larger process.[80] The particular funding issues are beyond the scope of this paper, but it only makes sense that working group relations with other agencies, including other federal, state, and

tribal entities, are crucial not only to establishing ecologically meaningful management, but also to reducing duplication of efforts and increasing pooling of scarce funding resources.

Initial Recommendations

Establishment of an Interagency Team to Designate and Co-manage Transboundary Marine Protected Areas off the Coast of Oregon

Clearly, cooperation is needed on a large scale to jointly designate and manage MPAs: "Integration of management across the array of federal and state agencies will be needed to develop a national system of marine protected areas that effectively and efficiently conserves marine resources and provides equitable representation for the diversity of groups with interests in the sea."[81] The Committee on Marine Area Governance and Management indicated that governance and management often suffer from fragmentation, a lack of accountability, rigidity, a lack of creativity, and conflicts among stakeholders.[82] In January 2000, the state of California issued a report entitled *Improving California's System of Marine Managed Areas*, in which the existing piecemeal system of legislation, regulations, voter processes, and guidelines is simplified for ease of understanding, public enforcement, and implementation (with eighteen different categories of marine managed areas reduced to six).[83] A myriad of single-purpose, overlapping, and uncoordinated laws in an ocean area does not account for the effects of any single activity on other resources or the environment, does not assess cumulative impacts or provide a basis for resolving conflicts, loses opportunities, and squanders both natural and financial resources.[84] On the one hand, a centralized effort is desirable because larger interests can be identified, common standards can be sought, and management can occur across boundaries. On the other hand, a superagency might become insensitive to important regional variations, become bogged down in its own bureaucratic process, and become inflexible to change.[85] Both top-down management and bottom-up management are needed.

The NRC's Ocean Studies Board reported Kelleher and Recchia's 1998 findings that there have been two key lessons learned from establishing MPAs around the world. The first lesson is that local people must be deeply involved from the earliest possible stage in any MPA in order for it to be effective; the second lesson is that socioeconomic considerations determine the success or failure of MPAs.[86] Fishermen, for instance, provide valuable input because they live by the resource; they know it and can help to plan for it when fishery managers and agencies may otherwise lack data. Fishermen are understandably concerned that MPAs are a thinly disguised attempt to put them out of business ("fencing off the oceans") in the interests of environmental groups, or that MPAs will be one more failed attempt at regulating a problem.[87] They will typically distrust scientists and policy makers when losing customary access privileges, and they may perceive some inequity in the system when the activities of certain interest groups are allowed in areas otherwise prohibited to them.[88] Early involvement of fishermen may cause conflicts and disagreements in the beginning, but once these problems are worked out to a tolerable level, the later phases of planning—during which conflicts and costs are greater—will run more smoothly. Giving stakeholders a sense of ownership in MPA planning and management will not only help to implement the process, but also assist in future monitoring and enforcement efforts.[89]

Under Oregon law, the sole relevant interagency cooperation provision may not be adequate for the purpose of establishing true integration in the management of a transboundary MPA. OPAC has the authority to establish "project review panels"—changed to "joint review panels"—to coordinate among federal, state, and local agencies for the more complex decisions on ocean development.[90] This appears to be a good mechanism for coordination within the boundaries of the territorial sea where the state has sovereign rights; the Rocky Shores Strategy, for example, has been hailed as a success because "it is based on sound information, involves all relevant agencies, responds to site-specific situations . . . within an ecosystem context, and involves the public."[91] However, either this framework will need to be modified or a new framework will need to be created in order for federal, state, and local agencies to jointly manage an MPA that bridges both state and federal waters. The language for this purpose needs to be broadened to include something like a "co-management team" (CMT) to comply with the spirit of the state of Oregon's policy statement to "[a]ssert the interests of [the] state *as a partner* with federal agencies in the sound management of the ocean resources within the United States Exclusive Economic Zone and on the continental shelf."[92]

The OPAC membership itself is a good base from which to construct membership for the state's part of the CMT. The list of state agencies represented in OPAC is comprehensive (Oregon Department of Agriculture, DEQ, ODFW, Department of Geology and Mineral Industries, DLCD, OPRD, DSL), with the exception of the Oregon Marine Board, which should be added. The non-agency component of OPAC's membership includes the coastal Indian Tribes, Oregon Sea Grant, and a few members from local communities, environmental groups, commercial and sport fisheries, and the public.[93] Because working relations have already been established between agency and non-agency components of OPAC, the incorporation of OPAC's membership into the CMT might make the transition to a larger process smoother. Relevant federal agencies for the CMT would include, among others, NMFS (both on its own authority and in conjunction with the PFMC), the EPA, the USFWS, the USFS, and the BLM. Further additions to the CMT membership might be needed to include scientists, economists, conservation organizations, and stakeholders (such as more fishermen), but there is also a point at which the CMT could become too large to function adequately. A type of working group process should exist where members of the CMT could act as committee heads to bring recommendations of the working groups back for review to the larger CMT. Many of these working groups are probably already established under OPAC's current Work Plan.[94] At times, an entire working group should be able to convene before the CMT. There should also be mechanisms for dispute resolution and a means by which consensus agreements reached in the CMT could be taken and incorporated into existing state and federal law. The exact processes under which such a CMT and the related working groups would function are beyond the scope of this paper. The process followed by the Channel Islands National Marine Sanctuary Advisory Council may serve as a model: a consensus-based process is incorporated into the advisory council's management, with one working group composed of over three hundred fishermen.[95]

On a final note, the use of the CMT process could begin immediately, even before MPAs and marine reserves are in place. If funding is somehow made available, economic incentives to stakeholders (perhaps with a phaseout program for later years after MPAs and reserves start to replenish the stocks) should be considered. Because monitoring and enforcement programs will probably not succeed without users' voluntary compliance with regulations, and because more

data needs to be gathered than can probably be done by agency scientists, training some fishermen (in an application process) to perform monitoring functions may be worth consideration.

Timing

As already addressed indirectly in this paper, there is ongoing debate about the implementation of MPAs:

> Advocates for marine protected areas and reserves argue that reserves can provide insurance against management failures in marine fisheries resulting from insufficient research or uncertainty intrinsic to complex and poorly understood marine ecosystems. This argument has been challenged by others who view conventional management approaches, if rigorously applied, as both effective and less disruptive to resource users.[96]

Lack of scientific consensus about the placement and efficacy of MPAs and marine reserves is often cited as a reason to delay or indefinitely forestall the implementation of these areas. But in the words of the NRC's Ocean Studies Board, "[t]he extent of current threats to marine resources may justify establishment of MPAs and reserves, despite the lack of experience, using an adaptive management approach to modify the design with increasing knowledge and experience."[97]

This paper takes the position that the best scientific information available must be used in order to make the implementation process effective, both to protect the environment and to extend a cooperative, credible hand to the community of stakeholders. In fact, Oregon's approach to ocean resource policy and management has been to develop a program by which goals, policies, and management measures are developed and applied based on scientific information about the marine environment, the conditions affecting it, and the response of marine ecosystems to the setting and conditions.[98] However, there will come a point at which we *do* know enough to establish initial MPAs and marine reserves and at which we must acknowledge that there are certain things that we will not know until the effort is made and studied: "In terms of certainty, as the level of certainty decreases, the priority of the objective increases. We are most certain to get research and education from marine reserves, and least certain about ability to rebuild stocks. But unless we go ahead with marine reserves, we will not learn much about them as a tool to rebuild stocks and achieve the other objectives."[99] According to the NRC's Ocean Studies Board, recovery of fish stocks will be more rapid and assured when a reserve is established before exploitation essentially removes the entire breeding stock.[100] Again, the Ocean Studies Board says it best:

> Although it may seem less disruptive to rely on the familiar, conventional management tools, there are costs associated with maintaining a status quo that does not meet conservation goals. Hence, our relative inexperience in using marine reserves to manage living resources should not serve as an argument against their use. Rather, it argues that implementation of reserves should be incremental and adaptive, through the design of areas that will not only conserve

> marine resources, but also will help us learn how to manage marine species more effectively. The dual realities that the earth's resources are limited and that demands made on marine resources are increasing, will require some compromise among users to secure greater benefits for the communities as a whole. Properly designed and managed marine reserves and protected areas offer the potential for minimizing short-term sacrifice by current users of the sea and maximizing the long-term health and productivity of the marine environment.[101]

Especially because adaptive management and the precautionary approach are already built into Oregon's Statewide Planning Goal 19 (and would be incorporated into a planning effort such as the proposed CMT), we should go ahead with the implementation of MPAs and marine reserve zoning within them, particularly where studies have already been conducted (as in the cases of Cape Perpetua and the Port Orford Reef). In fact, there is now scientific consensus to support this instigation of action. According to the Communication Partnership for Science and the Sea's (COMPASS's) Scientific Consensus Statement on Marine Reserves and Marine Protected Areas (Scientific Consensus Statement), "*existing scientific information justifies the immediate application of fully protected marine reserves as a central management tool.*"[102] This reasoning corresponds to larger, less prohibitive MPAs as well.

Proposed Oregon Legislation Establishing a Heceta-Stonewall Banks Marine Protected Area

Background Concepts for the Legislation

Zoning

"[Z]oning should be used as a mechanism for designating sites within a marine protected area for each management goal."[103] An MPA, as contemplated in this paper, involves drawing a large-scale, ecologically meaningful boundary within which zoning will be incorporated for different purposes. Once specific goals are matched up with specific zoned areas within the larger MPA, confusion and conflict will be minimized and management, enforcement, and monitoring roles better defined.[104]

The most controversial type of zone is a "no-take" zone (otherwise known as a marine reserve), which quite literally means that no species within the zone may be taken by humans for either commercial or recreational purposes. Whether marine reserves should exist at all is often a subject of hot dispute. Even if that hurdle is passed, the size of marine reserves is of concern to fishermen and other stakeholders, because reserves that are needlessly large in size or number may block off entire areas of the ocean to access. Research in marine reserves is required to further scientific understanding of how closed areas can be most effectively used in fisheries and marine resource management.[105] The proposed legislation presented in this paper uses a network of "smaller" no-take reserves to (1) acknowledge that there exists no current large-scale data with which to justify large no-take reserves that may needlessly displace fisheries and (2) take into account findings of the ODFW Marine Habitat Project off Cape Perpetua.[106] On balance, it seems that the benefits of no-take reserves outweigh the costs.

Despite the short-term opportunity costs of marine reserves for fishermen, such reserves, if designed and placed effectively within the larger MPA, provide long-term benefits. Within reserves, there is often a rapid and long-lasting increase in marine organism abundance, diversity, and productivity due to decreased mortality, habitat destruction, and indirect ecosystem effects that reduce the probability of extinction for the species within the reserves.[107] Outside reserves, there is typically an increase in size and abundance of exploited species due to spillover and larval export effects.[108] In short, more and bigger fish are produced, and once the fish population rebuilds enough for fish to migrate outside of the marine reserve area, those fish are available for harvest. No-take reserves provide environmental variability and insurance against catastrophes and and help dampen year-to-year variability in the yields of exploited species.[109]

Other types of zones include (1) fisheries zones, where partial restrictions such as vertical zoning (gear restriction to a certain depth) could be enforced for species targeted for commercial or recreational harvest, or where areas of high phytoplankton and foodfish productivity could be protected; (2) high biodiversity zones, where kelp forests and the like could be protected; (3) water quality zones, such as the EPA-proposed SOS sites; (4) unique community zones, for the protection of areas such as hydrothermal vent communities and marine mammal haul-out zones; (5) research zones, to serve as experimental controls and as centers for the gathering of baseline data; (6) public recreation zones, for activities such as scuba diving and kayaking; (7) historical and cultural area zones, for the protection of shipwrecks and Native American traditional grounds; and (8) educational zones, where the public could learn about the mysteries of the ocean and the need for further protection. In the open water areas between different kinds of zones within the larger MPA, traditional fisheries management techniques should be maintained.

Networking and Size of Zones

Networking of zones and MPAs is important to insure protection of habitat heterogeneity. For instance, if a fisheries zone were established within an MPA to allow for the conservation of herring, an important foodfish species, networking would call for the establishment of a few zones out in the open water in areas where adults congregate (so that some of the reproductive population is protected) and concurrent designation of nearshore zones (where spawning and rearing activities occur) to protect juveniles. Additionally, zones of connectivity between the nearshore and open water areas might then be needed in order to protect dispersing larvae and juveniles. The proposed legislation outlined below includes provisions for a network of marine reserves.

As previously recognized in this paper, there is a fine balance between providing reserves of a biologically sufficient size and providing fair access to the fisheries. The COMPASS Scientific Consensus Statement noted that "increased reserve size results in increased benefits, but even small reserves have positive effects."[110] The PFMC has already modeled several different scenarios using small, medium, and large reserve sizes and analyzing biological efficacy and the effects of the probable resultant shift of effort in the fisheries.[111] The size of marine reserves is a very contentious and evolving issue, so this paper merely defers to the authority of COMPASS and the PFMC and does not otherwise make specific recommendations.

Zoning As Applied to the Legislation: Proposed Categorization

Proposed legislation for a Heceta-Stonewall Banks Marine Protected Area is presented in this paper mostly for the purpose of applying the concept of zoning to Oregon's ocean and coastal resources.[112] Exact coordinates for the theoretical Heceta-Stonewall Banks MPA are not applicable for this cursory exercise; assume that the northern endpoint is Cascade Head and that the southern endpoint is Cape Blanco, with the seaward extension going into the two-hundred-mile-wide EEZ. For the purposes of this exercise, six different categories of regulatory zones with separate goals are established within the Heceta-Stonewall Banks complex: (1) fishery reserves, (2) research and educational areas, (3) seabird and marine mammal areas, (4) biodiversity areas, (5) recreational management areas, and (6) water quality protection areas. (Due to the author's time constraints, the proposed legislation focuses primarily on fishery reserves.) Listed under each of these major categories are suggested subcategories, as they pertain to the ocean and coastal resources of Oregon. Within the subcategories, three types of restrictions are applied: (1) fully protected areas (no-take reserves), (2) partially protected areas, in which some take is allowed with restrictions, and (3) status quo areas.

The Proposed Categories of Regulatory Zones

Category 1. Fishery Reserves[113]

- Critical Habitat Areas: habitats that are important to the biological success of commercially and recreationally caught fish species (for example, areas for spawning, rearing, resting, and feeding)

- Foodfish Areas: habitats that support populations of animals and are important as food or prey species, both regionally and internationally

- Catch Areas: areas that are important to commercial and recreational fishing activities, including (1) high catch areas, for example, areas in which a high total number of pounds is landed and the landed catch is of high dollar value; (2) areas where a few members of the fleet catch a relatively small number of pounds of highly valued fish; and (3) areas that are seasonally important to fishing activities, for example, areas where high catches are limited to certain times of the year or areas that are important migratory routes

- Fleet Areas: areas that are important to commercial and recreational fishing activities for specific individual ports or specific fleets

Category 2. Research and Educational Areas

- Fully Protected, Partially Protected, and Status Quo Fishery Reserves
- Control Areas
- Intertidal and Subtidal Research Reserves of the Oregon Rocky Shores Strategy
- Marine Gardens of the Oregon Rocky Shores Strategy

Category 3. Seabird and Marine Mammal Areas

- National Wildlife Refuges
- Oregon Islands Wilderness
- Habitat Refuges of the Oregon Rocky Shores Strategy

Category 4. Biodiversity Areas

- Hydrothermal Vent Community Reserves
- Kelp Forest Reserves (expected to be mobile)

Category 5. Recreational Management Areas

- Scuba Areas
- Parks and Public Access Areas
- Boats and Other Personal Watercraft Areas

Category 6. Water Quality Protection Areas

- Special Ocean Sites
- No-Discharge Zones
- National Estuary Programs
- National Estuarine Research Reserves

The Proposed Legislation

An Act to Establish the Heceta-Stonewall Banks Marine Protected Area

Be it enacted by the State of Oregon:

Section 1. The State of Oregon and the Oregon Co-management Team (CMT) find and declare that:

(1) The Oregon coast and the Heceta-Stonewall Banks complex are unique and of outstanding ecological significance to the State of Oregon and to the Nation.

(a) Waters above Oregon's continental margin and beyond comprise the ecologically significant ecotone of the northern California Current ecosystem that is home to a mixture of native communities, subarctic communities at the southern edge of their distribution, and California communities at the northern edge of their distribution. Because populations of animals at the edge of their ranges tend to be smaller, more variable annually, and more sensitive to environmental changes than populations in the center or optimum part of their range, the ocean and coastal waters of Oregon warrant particularly protective stewardship.[114]

(b) Hydrothermal vent communities at the north end of the Gorda Ridge-Blanco Fracture Zone are located within the Heceta-Stonewall Banks complex and are comprised of unique, chemosynthetically based organisms that are new to science and warrant particularly protective stewardship.[115]

(c) The Heceta-Stonewall Banks complex and major shoreline features such as Cape Blanco create locally significant oceanographic conditions. Evidence indicates that the Heceta-Stonewall Banks complex diverts southward-flowing water of the California Current away from the north coast, creates a counterclockwise gyre, and delivers water back onshore to the south coast in a reversed, northward-flowing current. Reef structures and associated kelp forests slow and retain these water masses and act as sinks and sources of nutrients, eggs, larvae, and juvenile organisms that contribute to the ecological richness of the nearshore reef communities.[116]

(d) Nutrient-rich, cold water is pushed up from the deep in zones of "upwelling" during the summer when ocean currents are pushed offshore; this upwelling is critical to the food web in international proportions.

(e) Large-scale structural changes in West Coast marine fisheries have resulted in the need to adjust ocean resource policy and management to a more broad-scale, integrative view and to coalesce single-issue problems into a large multi-issue context that considers both state and federal waters.[117]

(A) It is known that fishing activities, especially bottom trawling, but also dredging, fish trapping, and long-lining, can alter and destroy habitat and that many fisheries in the United States and around the world are overfished, including groundfish off the West Coast.[118]

(B) Recently documented depressed conditions of those few groundfish stocks for which we have information raise concern and uncertainty regarding the numerous stocks for which little information is available; the value of implementing marine reserves has increased, in light of the increased uncertainty in traditional assessment of fishery resources.[119]

(f) Several threatened and endangered species are present which warrant additional concern under the Endangered Species Act to prevent illegal section 9 "take" of species. Critical

habitat has been designated for the Aleutian Canada goose, the brown pelican, the bald eagle, the peregrine falcon, the marbeled murrelet, the Stellar sea lion, and the gray whale.[120]

(g) Several marine mammals are present which warrant additional concern under the Marine Mammal Protection Act to prevent illegal "take."

(h) Land-based activities have impacts on estuarine and marine habitat, and watershed management shall be coordinated with the CMT based on Coastal Zone Management Act local comprehensive plans.

(2) The Oregon coast and the Heceta-Stonewall Banks complex are socioeconomically important to the coastal communities of Oregon.

(a) The Heceta-Stonewall Banks complex encompasses traditional fishing grounds that are economically important to the coastal communities of Oregon.

(b) The Heceta-Stonewall Banks complex and shore are important aesthetic resources to the coastal communities of Oregon, not only for their own sake, but also for the economic benefits derived from the recreation and tourist industries.

Section 2. The purpose of this chapter is to provide a means whereby the oceanic ecosystems can be managed by multiple agencies (federal, state, local, and tribal) and multiple, renewable interests can be accounted for in a way that comports with the fluid and dynamic nature of the ocean environment.

Section 3. (1) It is declared to be the policy of the State of Oregon and the CMT to conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social values, both within the state and beyond, and to give clear priority to the proper management and protection of renewable resources over nonrenewable resources.[121]

(a) Nonrenewable resource activities prohibited due to adverse environmental, user-conflict, and aesthetic degradation effects include offshore heavy mineral placer deposit mining, offshore oil and gas activities, and offshore gravel mining.

(A) The adverse environmental effects associated with gravel and heavy mineral placer deposit mining include, but are not limited to, associated creation of mining pits which are hazardous to bottom trawl gear and which fill with fine silt and clay to create conditions of anoxia; removal of benthic organisms including groundfish; removal of nearshore sediments that may cause a drawdown of the beach and an increase of wave energy contributing to shoreline erosion; release of potentially toxic organic and inorganic materials into the water column; increased turbidity which may block essential production of phytoplankton and interfere with fish feeding efficiency due to poor visibility in the water column; increased water pollution and decreased aesthetics associated with onshore processing facilities; and interference with navigation and fishing activities.[122]

(B) The Heceta-Stonewall Banks complex contains the Newport and Coos Bay sedimentary basins where oil may be trapped, and the State of Oregon is unwilling to risk damaging sensitive marine environments or to sacrifice environmental quality to develop offshore oil and gas resources,[123] especially because the fast speeds, multiple directions, high variability, and unpredictability of the currents over the continental margin make the entire continental shelf vulnerable to adverse effects from oil spills and other pollutants, which can move up or down the entire Oregon coast in the matter of a few weeks and could come ashore from a spill anywhere over the continental margin in just a few days.[124]

(2) It is further declared to be the policy of the State of Oregon and the CMT to assure that the CMT shall recruit public involvement and include working groups composed of local fishermen, other stakeholders, conservation groups, scientists, and economists, as well as local, tribal, state, and federal agencies, to insure that marine protected area siting, design, and implementation is done in an integrated, regionally significant, and ecologically based manner that comports with the best available scientific information and also considers the socioeconomic information.

(3) It is further declared to be the policy of the State of Oregon and the CMT that the management measures for ocean resources and uses shall be appropriate to the circumstances and provide flexibility for future actions, including adaptive management and precautionary approaches.[125]

(4) It is further declared to be the policy of the State of Oregon and the CMT that this designation of the Heceta-Stonewall Banks Marine Protected Area represents only the initial beginning of area-based ecosystem management and that the CMT shall make efforts to coordinate future area-based management both regionally and internationally, especially to protect highly migratory and anadromous species.

Section 4. For the purposes of this chapter:

(1) The term "anadromous" refers to fish such as the Pacific salmon (including chinook, sockeye, chum, coho, and pink salmon) and the Pacific lamprey, which spawn inland in freshwater streams and migrate great distances to the ocean where they rear to maturity.

(2) The term "continental shelf" means that portion of the seabed that extends in a bench-like fashion from the coast and harbors the greatest areas of species diversity.

(3) The term "ecosystem" means the linkages between and among the organisms of the sea and the physical elements of the sea that cause a flow of energy from autotrophs (plants which make their own food through photosynthesis and hydrothermal sea vent communities which are chemosynthetically based) to heterotrophs (animals which are unable to manufacture their own food and must rely on autotrophs and other heterotrophs) and cycle inorganic materials from the nonliving environment through the bodies of living creatures and back again.[126]

(4) The term "foodfish" includes market squid, myctophids, northern anchovy, Pacific herring, Pacific saury, and Pacific whiting.[127]

(5) The term "groundfish" includes flatfishes (for example, halibut, sole, flounder), rockfishes (for example, canary rockfish, cowcod, widow rockfish, bocaccio, Pacific Ocean perch, yellowtail rockfish, redtail surfperch, kelp greenling, and cabezon), sablefish, Pacific whiting, Pacific cod, and lingcod.[128]

(6) The term "highly migratory" refers to fish that travel great distances within the global ocean, including albacore tuna, Pacific mackerel, and jack mackerel.

(7) The term "marine protected area" means "[a]ny area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment."[129]

(8) The term "marine reserve" means any area zoned within a larger marine protected area from which no human activity or harvest is allowed, except for research conducted in the most nonintrusive way possible so that the efficacy of marine reserves may be evaluated.

(9) The term "special ocean site" means any area designated by the Environmental Protection Agency (EPA), or the state in conjunction with the EPA in the forum of the CMT,

where no new National Pollutant Discharge Elimination System (NPDES) point-source discharge permits shall be allowed and where no existing point-source discharge permits shall be expanded beyond 20 percent of the existing allowance.

Section 5. Fishery reserves shall be established as regulatory zones within the Heceta-Stonewall Banks Marine Protected Area as follows:

Groundfish

(1) A network of fully protected critical habitat areas for groundfish (where no human activity except research shall occur) shall be established and administered in areas of high offshore species abundance, areas of juvenile nearshore rearing habitat, and other important areas of connectivity between juvenile and adult areas to[130]

(a) Rebuild those stocks that are overfished and unaccounted for and maintain them at productive levels;

(b) Enhance long-term productivity;

(c) Achieve long-term economic production for future generations while minimizing short-term negative impacts on all users;

(d) Ensure the protection of the resource, considering both the inherent uncertainty of traditional management techniques (including stock assessments) and the globally changing, naturally variable environment;

(e) Conserve and protect essential fish habitat identified in the Pacific Fisheries Management Council's fishery management plan; and

(f) Provide research and education in untouched areas to serve as controls for assessment of long-term environmental variations without alterations due to fishing and other activities, and to provide baseline data for the refinement of a particular marine protected area system and the establishment of new systems.

(2) Partially protected critical habitat areas shall serve as buffer zones for the fully protected critical habitat areas for groundfish where there shall be gear restrictions at depth.

(3) Status quo critical habitat areas shall be enforced in all other areas beyond the fully and partially protected critical habitat areas where traditional fisheries management tools and regulations shall be in place.

Foodfish

(4) There shall be an effort to include areas of high foodfish diversity in the fully protected groundfish critical habitat reserves to:

(a) Serve as a proxy for protecting zones of upwelling where the source of the autotrophic production at the base of the food chain is high;

(b) Assist in the recovery of the depleted groundfish stocks; and

(c) Protect the food source of the important fisheries from a local, regional, and global perspective.

(5) Some additional fully or partially protected foodfish reserves may be established as needed, including but not limited to those portions of Yaquina Bay such as the kelp beds and rock habitats that are necessary for Pacific herring spawning and rearing to:

(a) Protect the food source of sharks, salmon, lingcod, seabirds, sea lions, whales, and other important marine organisms of the Pacific Coast.[131]

(6) Status quo foodfish areas shall be enforced in all other areas beyond the fully and partially protected foodfish areas where traditional fisheries management tools and regulations shall be in place.

(7) Catch areas and fleet areas shall be established where status quo traditional fisheries management tools and regulations shall occur.

(8) This section may be amended to add major species of concern for which critical habitat areas may not overlap, but the designation of biodiversity areas should also be considered.

Section 6. In addition to the fishery reserves established under section 5 of this Act, the following regulatory zones shall also be established within the Heceta-Stonewall Banks Marine Protected Area:

(1) Research and educational areas[132]

(2) Seabird and marine mammal areas[133]

(3) Biodiversity areas: (a) Hydrothermal vent communities (A few fully protected biodiversity areas shall be established along the Gorda Ridge-Blanco Fracture Zone in order to ensure full protection to the newly discovered and fragile hydrothermal vent communities; and some partially protected biodiversity areas shall restrict fishing to depths above the hydrothermal vent communities of the Gorda Ridge-Blanco Fracture Zone.)

(b) Fish communities (Biodiversity areas should be matched up to the extent possible with fully and partially protected critical habitat areas and foodfish areas.)

(c) Seabird and marine mammal communities (Biodiversity areas should be matched up to the extent possible with fully and partially protected seabird and mammal areas.)

(d) In the event that there is an area of significant biodiversity that is not zoned for proper protection, there may be fully or partially protected biodiverse areas.

(4) Recreational management areas[134]

(5) Water quality protection areas: (a) Those portions of the Heceta-Stonewall Banks Marine Protected Area beyond the state territorial sea shall be managed in conjunction with the EPA's designated special ocean site, the Gorda Ridge-Blanco Fracture Zone.

(b) Those portions of the Heceta-Stonewall Banks Marine Protected Area in the state territorial sea shall be managed as no-discharge zones where no new NPDES permits shall be issued.

(c) No dumping of any kind, including dredge disposal, shall be allowed in or around the Heceta-Stonewall Banks Marine Protected Area.

Section 7. For purposes of public outreach, an exhibit explaining the Heceta-Stonewall Banks Marine Protected Area shall be established at the Oregon Coast Aquarium in Newport, Oregon.

Notes

1. Exec. Order No. 13158, 65 Fed. Reg. 34,909 (May 26, 2000), *reprinted in* 16 U.S.C.A. § 1431 (West 2000) [hereinafter EO 13158].

2. COMM. ON THE EVALUATION, DESIGN & MONITORING OF MARINE RESERVES & PROTECTED AREAS IN THE UNITED STATES, OCEAN STUDIES BD., NAT'L RESEARCH COUNCIL, MARINE PROTECTED AREAS: TOOLS FOR SUSTAINING OCEAN ECOSYSTEMS 2 (2000), *available at* http://search.nap.edu/books/ 0309072867/html [hereinafter MARINE PROTECTED AREAS].

3. *Id.*
4. *See id.* at 55-57.
5. Submerged Lands Act, 43 U.S.C. §§ 1301-1303, 1311-1315 (1994).
6. Coastal Zone Management Act of 1972, Pub. L. No. 92-583, 86 Stat. 1280 (codified as amended at 16 U.S.C. §§ 1451-1465 (1994 & Supp. IV 1998)).
7. OR. DEP'T OF LAND CONSERVATION & DEV., OREGON COASTAL MANAGEMENT PROGRAM 20 (1987). This document supersedes the original Oregon Coastal Management Program, which was written, printed, and approved in 1977. *See also* the map entitled "Oregon's Territorial Sea and Coastal Zone," *in* OR. OCEAN POLICY ADVISORY COUNCIL (OPAC), TERRITORIAL SEA PLAN 13 (1994), *available at* http://www.lcd.state.or.us/coast/offshore/otsptoc.html (click on Part One: Ocean Management Framework. C. Oregon's Territorial Sea; go to page 3) [hereinafter TERRITORIAL SEA PLAN].
8. 16 U.S.C. § 1456(c)(1)(A) (emphasis added).
9. OR. OCEAN RES. MGMT. TASK FORCE, OREGON'S OCEAN RESOURCES MANAGEMENT PLAN 5 (1991) [hereinafter OCEAN PLAN].
10. *Id.*
11. *Id.* at 6; OR. REV. STAT. § 196.420(4) (1999).
12. OCEAN PLAN, *supra* note 9, at 3.
13. OR. ADMIN. R. 660-015-0010 (2000).
14. TERRITORIAL SEA PLAN, *supra* note 7.
15. OR. REV. STAT. §§ 390.605-.770 (1999) (Ocean Shores, State Recreation Areas).
16. *See* TERRITORIAL SEA PLAN, *supra* note 7.
17. The Three Arch Rocks Working Group, put together by OPAC and described in the Territorial Sea Plan, was a particularly excellent small-scale model, integrating agencies into a larger, area-based management working group. *See id.* at 229-247 (Appendix I: Report and Recommendations--Management Measures for Three Arch Rocks).
18. The Ocean Stewardship Area encompasses the entire continental margin off the coast of Oregon. OCEAN PLAN, *supra* note 9, at 46.
19. *Id.* at 17.
20. *Id.* at 11.
21. MARINE PROTECTED AREAS, *supra* note 2, at 6.
22. EO 13158, *supra* note 1, § 1. There had been some concern about the Bush administration's review of EO 13158, but on June 4, 2001, Commerce Secretary Donald Evans stated that "[t]he Administration has decided to retain Executive Order 13158. . . ." Statement by Secretary of Commerce Donald L. Evans Regarding Executive Order 13158, Marine Protected Areas (June 4, 2001), *at* http://www.mpa.gov/frontmatter/sup1_eo.html (last visited Nov. 15, 2001). How the new administration interprets its stewardship responsibility to the oceans has yet to be seen. While recognizing that America's "great marine heritage" is a "national treasure," Evans twice referred to balancing conservation with commercial and recreational activities. *Id.* When combined with the fact that Evans "plan[s] to appoint a Marine Protected Area Advisory Committee comprised of key experts and stakeholders" (*id.*), even though there are undoubtedly some wonderfully qualified and capable people on the Advisory Committee, a skeptic may wonder if offshore oil interests will come to the forefront in the "balancing act."
23. EO 13158, *supra* note 1, § 1.
24. *Id.* §§ 3, 4(a).

25. *Id.* § 4(b).
26. *Id.* §§ 4(c), 4(e).
27. *See id.* § 4(d). The web site, "Marine Protected Areas in the United States," is found at http:// www.mpa.gov (last visited Dec. 12, 2001).
28. EO 13158, *supra* note 1, § 4(f).
29. National Marine Sanctuaries Act, Pub. L. No. 92-532, Title III, 86 Stat. 1061 (1972) (codified as amended at 16 U.S.C. §§ 1431-1445b (1994 & Supp. IV 1998)), as further amended by National Marine Sanctuaries Amendments Act of 2000, Pub. L. No. 106-513, 114 Stat. 2381 (codified at 16 U.S.C.A. §§ 1431 to 1434, 1436, 1437, 1439, 1440 to 1445, 1445a to 1445c (West Supp. 2001)).
30. National Marine Sanctuaries Amendments Act of 2000, Pub. L. No. 106-513, 114 Stat. 2381 (codified at 16 U.S.C.A. §§ 1431 to 1434, 1436, 1437, 1439, 1440 to 1445, 1445a to 1445c (West Supp. 2001)).
31. 16 U.S.C.A. § 1433(a)(2)(A)-(C) (West Supp. 2001).
32. *Id.* § 1433(a)(5).
33. *Id.* § 1433(a)(3).
34. TERRITORIAL SEA PLAN, *supra* note 7, at 21. The author of this paper attempted to determine the current status of the Heceta-Stonewall Banks complex in the national marine sanctuary designation process, by electronically mailing the MPA Center, but received no response.
35. 16 U.S.C.A. § 1434(f)(1) (West Supp. 2001).
36. *See, e.g.,* MARINE PROTECTED AREAS, *supra* note 2, at 128; OCEAN POLICY ADVISORY COUNCIL, MARINE PROTECTED AREAS: A PRIMER FOR THE OREGON OCEAN POLICY ADVISORY COUNCIL 3 (2000).
37. NAT'L ACADEMY OF PUBLIC ADMIN., PROTECTING OUR NATIONAL MARINE SANCTUARIES: A REPORT BY THE CENTER FOR THE ECONOMY AND THE ENVIRONMENT (2000), *available at* http://www.napawash.org/napa/marinesanctuaries.pdf.
38. National Park Service Organic Act, 16 U.S.C. §§ 1 to 4, 22, 43 (1994 & Supp. IV 1998). Jim Seger, of the Pacific Fishery Management Council, suggested that this might be a possible option (telephone conversation with the author (Mar. 25, 2001)). *See* MARINE PROTECTED AREAS, *supra* note 2, at 136.
39. OR. REV. STAT. § 197.405 (1999).
40. OR. DEP'T OF LAND CONSERVATION & DEV., *supra* note 7, at 56.
41. *See* OR. REV. STAT. § 197.405 (1999).
42. 16 U.S.C. § 1461 (1994 & Supp. IV 1998).
43. *Id.* § 1455(d)(9) (1994) (emphasis added).
44. *Id.* § 1455a(b)(1). Unfortunately, the Oregon Coastal Management Program has identified that section 306 funds have been "level-funded" and are increasingly needed to maintain core coastal- and ocean-related activities, so Oregon acting alone is without the financial ability to make the substantial added effort required to address MPAs. OR. OCEAN-COASTAL MGMT. PROGRAM, COASTAL & OCEAN RESOURCES PLANNING IN OREGON: AN ASSESSMENT OF MANAGEMENT CAPABILITIES AND STRATEGIES FOR IMPROVEMENTS 2001-2005 at 43 (Review draft 2001), *available at* http://www.lcd.state.or.us/coastpdf/309assessment.pdf.
45. 16 U.S.C. § 1456b(a)(6) (1994).
46. *Id.* § 1453(17).

47. OR. OCEAN-COASTAL MGMT. PROGRAM, *supra* note 44, at 7.
48. *Id.*
49. *See id.*
50. *Id.* at 8.
51. *Id.* at 34.
52. *Id.* at 33.
53. A helpful diagrammatic inventory, entitled "Agency Programs and Authorities in Oregon's Territorial Sea and Ocean Shore," appears *in* TERRITORIAL SEA PLAN, *supra* note 7, at 31, *available at* http://www.lcd.state.or.us/coast/offshore/otsptoc.html (click on Part One: Ocean Management Framework. E. Ocean Management Agencies; go to page 3).
54. OR. DEP'T OF LAND CONSERVATION & DEV., *supra* note 7, at 38; OR. REV. STAT. § 506.755.
55. National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. §§ 668dd-668ee (1994 & Supp. IV 1998); Migratory Bird Conservation Act, 16 U.S.C. §§ 715-715s (1994 & Supp. IV 1998); Migratory Bird Treaty Act, 16 U.S.C. §§ 703-712 (1994 & Supp. IV 1998). *See* TERRITORIAL SEA PLAN, *supra* note 7, at 21-23.
56. Wilderness Act, 16 U.S.C. §§ 1131-1136 (1994). *See* TERRITORIAL SEA PLAN, *supra* note 7, at 23.
57. Endangered Species Act of 1973, 16 U.S.C. § 1533(b)(2) (1994).
58. Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801-1883 (1994 & Supp. IV 1998). *See* TERRITORIAL SEA PLAN, *supra* note 7, at 20.
59. *See* Marine Protected Areas of the United States, The MPA Inventory, Query the Inventory, *at* http://www2.mpa.gov/mpa/mpaservices/query/query_inv.lasso (select "Pacific Whiting Columbia River Salmon Conservation Zone") (visited Dec. 12, 2001).
60. *See* Oceans & Coastal Protection Div., Envtl. Protection Agency, Protecting Our Beaches, Oceans, and Coasts: Ocean Discharge Criteria, *at* http://www.epa.gov/owow/oceans/protecting_oceans/ (revised Feb. 23, 2001). The prepublication version of Ocean Discharge Criteria: Revisions to Ocean Discharge Criteria Regulations is *at* http://www.epa.gov/owow/oceans/protecting_oceans/cwa403rule.pdf (last visited Dec. 12, 2001) [hereinafter EPA Proposed § 403 Ocean Discharge Rule].
61. Oceans & Coastal Protection Div., Envtl. Protection Agency, *supra* note 60.
62. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387 (1994 & Supp. III 1997).
63. *Id.* § 1342 (1994).
64. *Id.* § 1343.
65. OFFICE OF WATER, ENVTL. PROTECTION AGENCY, FACT SHEET: REVISIONS TO CLEAN WATER ACT OCEAN DISCHARGE CRITERIA REGULATIONS, EPA-842-F-01-001 at 2 (2001), *available at* http://www.epa.gov/owow/oceans/protecting_oceans/403factsheet.pdf [hereinafter EPA § 403 Fact Sheet].
66. *Id.* at 2-3.
67. *Id.* at 2.
68. EPA Proposed § 403 Ocean Discharge Rule, *supra* note 60, at 83.
69. EPA § 403 Fact Sheet, *supra* note 65, at 2.
70. EPA Proposed § 403 Ocean Discharge Rule, *supra* note 60, at 21-22.
71. *Id.* at 74-75.
72. *Id.* at 77.

73. 16 U.S.C. §§ 1801-1883.
74. AD-HOC PAC. GROUNDFISH FISHERY STRATEGIC PLAN DEV. COMM., PAC. FISHERY MGMT. COUNCIL, FINAL GROUNDFISH FISHERY STRATEGIC PLAN (2000), *available at* http://www.pcouncil.org/Groundfish/strategicplan.html. *See* Pac. Fishery Mgmt. Council, Marine Reserves, *at* http://www.pcouncil.org/MarineReserves/marinereserves.html (last visited Dec. 12, 2001).
75. *See* Pac. Fishery Mgmt. Council, Marine Reserves, *supra* note 74.
76. MARINE PROTECTED AREAS, *supra* note 2, at 32.
77. *See, e.g.,* RICHARD PARRISH ET AL., PAC. FISHERY MGMT. COUNCIL, MARINE RESERVES TO SUPPLEMENT MANAGEMENT OF WEST COAST GROUNDFISH RESOURCES: PHASE I TECHNICAL ANALYSIS 1 (Draft July 2000), *available at* http://www.pcouncil.org/MarineReserves/draftes.pdf.
78. *See* Pac. Fishery Mgmt. Council, Marine Reserves, *supra* note 74.
79. *Marine Reserves,* PAC. COUNCIL NEWS (Pac. Fishery Mgmt. Council, Portland, Or.), Fall 2000, at 13 (conclusions of Phase I considerations), *available at* http://www.pcouncil.org/newsletter.html.
80. Seger, *supra* note 38.
81. MARINE PROTECTED AREAS, *supra* note 2, at 6.
82. COMM. ON MARINE AREA GOVERNANCE & MGMT., NAT'L RESEARCH COUNCIL, STRIKING A BALANCE: IMPROVING STEWARDSHIP OF MARINE AREAS 89 (1997) [hereinafter STRIKING A BALANCE].
83. *See* RESOURCES AGENCY OF CAL., IMPROVING CALIFORNIA'S SYSTEM OF MARINE MANAGED AREAS: FINAL REPORT OF THE STATE INTERAGENCY MARINE MANAGED AREA WORKGROUP (2000), *available at* http://www.ceres.ca.gov/cra/ocean/Final_MMAs/ PDF/index.html.
84. *See* STRIKING A BALANCE, *supra* note 82, at 46.
85. *Id.* at 89.
86. MARINE PROTECTED AREAS, *supra* note 2, at 55.
87. *See, e.g.,* Zeke Grader & Glen Spain, *Marine Reserves: Friend or Foe? What Marine Reserves May Mean to You,* FISHERMEN'S NEWS (Pac. Coast Fed'n of Fishermen's Associations, Seattle, Wash.), Feb. 1999, at 18.
88. MARINE PROTECTED AREAS, *supra* note 2, at 12.
89. The socioeconomic data and recommendations are beyond the scope of this paper, but, in a different vein, it deserves mention that several authorities believe that nonconsumptive uses of the ocean, which are traditionally labelled a "public good" or "invaluable," need to have realistic economic values assigned to them so that they are not undervalued in the political process as they have been in the past. Unlike fish catch, public goods are not priced in the marketplace, and "accurate information concerning the economic value of marine resources, functions, and services can support the argument in favor of preservation, conservation, restoration, and enhancement by providing a more complete and accurate picture of short- and long-term cost benefits." STRIKING A BALANCE, *supra* note 82, at 23. *See also* MARINE PROTECTED AREAS, *supra* note 2, at 41-42.
90. TERRITORIAL SEA PLAN, *supra* note 7, at 55; OR. REV. STAT. § 196.453 (1999).
91. STRIKING A BALANCE, *supra* note 82, at 65.
92. OR. REV. STAT. § 196.420(4) (1999).
93. *Id.* § 196.438 (1999).
94. *See, e.g.,* OR. OCEAN-COASTAL MGMT. PROGRAM, *supra* note 44.

95. Seger, *supra* note 38. Unfortunately, due to pressure from the fishing industry, one of the options for the Bush administration being discussed to date is the reconsideration of new marine reserve restrictions in the Channel Islands National Marine Sanctuary, which would unravel eighteen months of negotiations of the working group. Kenneth R. Weiss, *U.S. Reviewing Pending Clinton-Era Safeguards for Channel Islands Environment: In Response to Fishing Industry Protests, Officials Are Also Studying Protections for a Hawaiian Coral Reef Reserve*, L.A. TIMES, Apr. 6, 2001, at A3.
96. MARINE PROTECTED AREAS, *supra* note 2, at 11.
97. *Id.*
98. OR. OCEAN-COASTAL MGMT. PROGRAM, *supra* note 44, at 27.
99. Ocean Policy Advisory Council Video Log--Meeting Summary 10 (Hatfield Marine Science Center, Newport, Or.) (Oct. 26-27, 2000) (Jim Seger, Pacific Fishery Management Council, "Marine Reserves ('No-Take Areas') for Groundfish Restoration").
100. MARINE PROTECTED AREAS, *supra* note 2, at 83-84.
101. *Id.* at 9.
102. *Scientific Consensus Statement on Marine Reserves and Marine Protected Areas* (called for at the 1997 annual meeting of the American Association for the Advancement of Science and prepared by a working group convened by the Communication Partnership for Science and the Sea (COMPASS) at the National Center for Ecological Analysis and Synthesis at the University of California, Santa Barbara) (Feb. 17, 2001) (emphasis added), *available at* http://www.compassonline.org/frame.html [hereinafter *COMPASS Scientific Consensus Statement*]. Conclusions from this working group will be published in a special issue of the journal *Ecological Applications* (in press).
103. MARINE PROTECTED AREAS, *supra* note 2, at 5.
104. The GIS Ocean Atlas system being developed by the DLCD, along with the research being conducted by other scientific organizations, including the ODFW Habitat Survey and the Pacific Northwest Coastal Ecosystems Regional Study, should prove valuable tools in implementing this process.
105. MARINE PROTECTED AREAS, *supra* note 2, at 7. *See also COMPASS Scientific Consensus Statement, supra* note 102.
106. *See* DAVID FOX ET AL., MARINE PROGRAM, OR. DEP'T OF FISH & WILDLIFE, COASTAL ZONE MANAGEMENT SECTION 309 GRANT: 2000 NEARSHORE ROCKY REEF ASSESSMENT (2000), *available at* http://www.hmsc.orst.edu/odfw/habitat/reports/2000kelp_reef_report.pdf. The use of this statement should not be taken out of context; the author of this paper recognizes that these are just initial findings, which may not be applicable to the entire coast, but in the interests of coming up with suggestions and modeling an effort, some statements and data from the ODFW Marine Habitat Project have been used, however scientifically proper or improper that might be. It may certainly be found necessary to set aside much larger areas for proper fish and habitat conservation.
107. *COMPASS Scientific Consensus Statement, supra* note 102.
108. *Id.*
109. Ocean Policy Advisory Council Video Log--Meeting Summary 8 (Hatfield Marine Science Center, Newport, Or.) (Oct. 26-27, 2000) (Heather Leslie, Dep't of Zoology, Oregon State Univ., "The Science of Marine Protected Areas: An Introduction"). *See also COMPASS Scientific Consensus Statement, supra* note 102.

110. *COMPASS Scientific Consensus Statement*, *supra* note 102.

111. *See* PARRISH ET AL., *supra* note 77.

112. In reality, these categories would probably create too much of a mosaic for management. Again, the International Union for Conservation of Nature and Natural Resources (IUCN's) categories or some other authority should be used.

113. These are "Important Fishery Areas," as discussed in OCEAN PLAN, *supra* note 9, at 78-79.

114. *Id.* at 24.

115. *See* EPA Proposed § 403 Ocean Discharge Rule, *supra* note 60. According to the NRC Ocean Studies Board, "[f]ormal establishment of reserves at hydrothermal vent sites by governmental agencies has commenced. In 1998, the Canadian government established the first pilot MPA at a hydrothermal vent site in the northeastern Pacific, the Endeavor Hot Vents Area, which is part of the Juan de Fuca Ridge System. . . ." MARINE PROTECTED AREAS, *supra* note 2, at 111.

116. OR. OCEAN-COASTAL MGMT. PROGRAM, *supra* note 44, at 28-29.

117. *Id.* at 30.

118. *See* MARINE PROTECTED AREAS, *supra* note 2, at 11.

119. PARRISH ET AL., *supra* note 77, at ES-5.

120. TERRITORIAL SEA PLAN, *supra* note 7, at 75.

121. *See* OR. REV. STAT. § 196.420(1) (1999); OR. ADMIN. R. 660-015-0010(4) (2000) (Goal 19).

122. JAMES W. GOOD ET AL., OREGON TERRITORIAL SEA MANAGEMENT STUDY: FINAL REPORT TO THE OREGON DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT 3-19 to 3-23 (1987).

123. OR. REV. STAT. § 196.410 (1999).

124. OCEAN PLAN, *supra* note 9, at 21.

125. *See* OR. ADMIN. R. 660-015-0010(4) (2000) (Goal 19).

126. TISH PARMENTER & ROBERT BAILEY, THE OREGON OCEANBOOK: AN INTRODUCTION TO THE PACIFIC OCEAN OFF OREGON INCLUDING ITS PHYSICAL SETTING AND LIVING MARINE RESOURCES 7 (1985).

127. *Id.* at 46-51.

128. *Id.* at 46.

129. IUCN Resolution 17.38, adopted by 17th General Assembly of IUCN (1988), *reprinted in* Graeme Kelleher & Richard Kenchington, GUIDELINES FOR ESTABLISHING MARINE PROTECTED AREAS 46, 47 (1992).

130. PARRISH ET AL., *supra* note 77.

131. PARMENTER & BAILEY, *supra* note 126, at 48.

132. Not addressed in this paper.

133. Not addressed in this paper, but the Oregon Rocky Shores Strategy (in TERRITORIAL SEA PLAN, *supra* note 7, at 65-172) is a good start.

134. Not addressed in this paper.

Appendix

Inventory of Oregon's Areas of Special Management[a]

Name	Managing Agency or Agencies	Restrictions
National Estuarine Research Reserves (NERRs)		
South Slough NERR	Oregon Division of State Lands, National Ocean Service	Recreational clamming and bait gathering allowed; commercial oyster culture limited to 100 acres as provided in the Office of Coastal Zone Management (OCZM) grant
National Estuary Programs (NEPs)		
Lower Columbia River NEP (Washington/Oregon)		No fisheries-specific regulations
Tillamook Bay NEP		No fisheries-specific regulations
National Wildlife Refuges (NWRs)		
Bando Marsh NWR	U.S. Fish and Wildlife Service	
Cape Meares NWR	U.S. Fish and Wildlife Service	
Lewis & Clark NWR	U.S. Fish and Wildlife Service	
Nestucca Bay NWR	U.S. Fish and Wildlife Service	
North Cove/Shell Island at Cape Arago	U.S. Fish and Wildlife Service, Oregon Parks and Recreation Dept.	State park closure during pupping season
Oregon Islands NWR	U.S. Fish and Wildlife Service	
Siletz Bay NWR	U.S. Fish and Wildlife Service	
Three Arch Rocks NWR	U.S. Fish and Wildlife Service, Oregon Dept. of Fish and Wildlife, Oregon Marine Board	Closed to boats within 500 feet around main rocks May 1-Sept 1
Intertidal and Subtidal Research Reserves and Shellfish Reserves – Oregon Rocky Shores Strategy		
Boiler Bay Intertidal Research Reserve		Closed to taking of shellfish and marine inverts except abalone, clams, Dungeness crab, red rock crab, mussels, paddocks, scallops, and shrimp may be taken
Brookings Intertidal Research Reserve		Closed to taking of shellfish and marine inverts except abalone, clams, Dungeness crab, red rock crab, mussels, paddocks, scallops, and shrimp may be taken
Cape Arago Intertidal Research Reserve		Closed to taking of shellfish and marine inverts except abalone, clams, Dungeness crab, red rock crab, mussels, paddocks, scallops, and shrimp may be taken
Cape Blanco Research Reserve		
Gregory Point Subtidal Research Reserve		Closed to taking of shellfish and marine inverts
Humbug Mountain/Lookout Rock Research Reserve		
Middle Cove Research Reserve		
Nellie's Cove		

Neptune State Park Intertidal Research Reserve		Closed to taking of shellfish and marine inverts except abalone, clams, Dungeness crab, red rock crab, mussels, paddocks, scallops, and shrimp may be taken
Netarts Bay Shellfish Reserve	Oregon Dept. of Fish and Wildlife	Closed to taking of clams
Pirates Cove Subtidal Research Reserve		Closed to taking of shellfish and marine inverts
Whale Cove Intertidal Research Reserve near Newport, OR	Oregon Dept. of Fish and Wildlife	Closed to harvest of fish and shellfish to maintain baseline research area, long-term study of success of planted red abalone
Yaquina Bay Shellfish Reserve	Oregon Dept. of Fish and Wildlife	Closed to taking of clams
Marine Gardens – Oregon Rocky Shores Strategy		
Cape Arago (South Cove) Marine Garden		
Cape Kiwanda Marine Garden		
Cape Perpetua Marine Garden		
Harris Beach Marine Garden		
Haystack Rock Marine Garden		
Otter Rock Marine Garden		
Sunset Bay Marine Garden		
Yachats Marine Garden		
Yaquina Head Marine Garden/Natural Area		
Priority Rock/Reef Management – Oregon Rocky Shores Strategy		
Ecola Point/Sea Lion Rock		
Gull Rock		
Port Orford Reef (Long Brown and Seal Rocks)	Oregon Dept. of Fish and Wildlife, National Marine Fisheries Service, fishermen	
Pyramid Rock at Rogue Reef	Oregon Dept. of Fish and Wildlife, National Marine Fisheries Service	Closed to taking of marine fish, shellfish, inverts from 1000 feet around and including Pyramid Rock May 1-Aug 31
Redfish Rocks/Island Rock		
Rogue Reef		
Simpson Reef/Shell Island, North Cove at Cape Arago (also a habitat refuge)		
Twin Rocks/Goat Island		
Habitat Refuges – Oregon Rocky Shores Strategy		
Blacklock Point (not yet designated)		
Cape Falcon (not yet designated)		
Cape Ferrelo		
Cape Lookout (southside)		
Cascade Head (Cliff Cove Creek)		
Crook Point/Mack Reef		
Heceta Head (not yet designated)		
Hooskanaden Creek		
Neptune State Park (not yet designated)		
Nesika Head to Otter Point (not yet designated)		
Rocks off Coquille Point		
Seal Rock (not yet designated)		

Simpson Reef/Shell Island, North Cove at Cape Arago (also priority rock/reef)		
Sisters Rock/Devil's Backbone (not yet designated)		
South Sam Boardman State Park		
Three Arch Rocks (also NWR)		
Tillamook Head		
Whale Cove (also research reserve)		
De Facto Reserves		
Japan and Bandon TPC-5 near Bandon		
North Pacific Cable (NPC) near Pacific City		
BLM Holdings		
Cape Blanco Lighthouse Reserve		
Coos Head (Cape Gregory) Lighthouse Reserve		
New River Area of Critical Environmental Concern		
North Sisters Rock		
Squaw Island		
Zwagg Island		
Fishery Conservation Zones		
Pacific Whiting Columbia River Salmon Conservation Zone	Pacific Fishery Management Council, National Marine Fisheries Service	

[a] *Sources:* AL J. DIDIER, JR., PACIFIC STATES MARINE FISHERIES COMM'N, MARINE PROTECTED AREAS OF WASHINGTON, OREGON, AND CALIFORNIA (conducted under Contract No. 98-08 from the Pacific Fishery Management Council) (Dec. 1998), *available at* http://www.psmfc.org/publications.html; OR. OCEAN POLICY ADVISORY COUNCIL (OPAC), TERRITORIAL SEA PLAN (1994).