

the failing health of our living oceans: the case for marine stewardship

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Oregon has earned a national reputation for pioneering land use planning. Our system of statewide planning goals has been widely emulated. We have designated allowed uses for both private and public lands, including our state parks and forests, even our estuaries.

We might expect there to be marine parks as well. The world beneath the waves of Oregon's ocean is teeming with extraordinary geological features and a rich diversity of life, but the state has yet to take such a step—even though fisheries are declining, demands for offshore drilling for oil and natural gas are growing, and new ocean industries, such as wave energy are developing. As for fully protected marine reserves in Oregon's territorial sea, there are none.

Four years ago, the perceived value of marine reserves was so compelling that the diverse membership of the governor's Ocean Policy Advisory Council (OPAC) voted to recommend that Oregon move forward, at least cautiously, with a system of marine reserves.

Now, concern for the failing health of our living ocean resources has many citizens and policy makers advocating for the creation of marine protected areas (MPAs). These protected areas relieve stress on threatened seas by conveying some degree of permanent protection from one or more human activities. The most restrictive form of MPA is a marine reserve which prohibits extractive activities, including fishing and mining—and may include no-go or research-only zones.

Merritt Island National Wildlife Refuge Et Al

The classic example of a successful marine reserve is Merritt Island National Wildlife Refuge in Florida where, in 1962, the federal government banned all access to a large security zone off Cape Canaveral, and added a buffer where no motorized vessels were allowed. Studies in the late 1980s showed that the fish inside this de facto reserve grew bigger and older, and were far more abundant than outside the reserve. The reserve appears to support the ecosystem in proximity to the closed area. At its edges, anglers enjoy catching a disproportionate number of record-breaking fish.

Another of the world's more than 100 no-take marine reserves was established in 1978 at Anacapa Island, California. Monitoring there also demonstrated that key species in these marine parks, such as lobster and California sheephead (a commercially important edible fish that grows up to three feet long), grew in size and in number. At the same time, lobsters (in spite of being a favorite food of the California sheephead) checked the population of purple sea urchins that destroy kelp forests. These forests which now grow dramatically denser, providing crucial refuge for numerous other species.

Increased fish biomass has been documented inside reserves near the islands of Saba and St. Lucia, in the Florida Keys National Marine Sanctuary, and on reefs off Kenya and New Caledonia.

In December, 2005, Governor Ted Kulongoski called for consideration of a unique MPA, more specifically a National Marine

Sanctuary to be designated under the National Marine Sanctuaries Act (NMSA). The governor envisioned the possible development of the largest marine sanctuary in the nation, stretching the length of Oregon's coast and extending seaward an average of 25 miles, to where the continental slope touches the abyssal plane—an area approximately 21,000 square miles comprised of state and federal waters extending from Washington State to California. Currently, 95 percent of this area is controlled by the federal government.

The Governor reasoned that a new sanctuary could precipitate better coordinated ecosystem-based ocean management, draw federal research dollars, and most importantly extend the reach of state influence beyond the three-mile wide territorial sea. The new sanctuary would not be intended to usurp the existing fishery management authority of the Pacific Fishery Management Council and the Oregon Department of Fish and Wildlife—but would prohibit oil and gas exploitation.

Governor Kulongoski has yet to request that Congress begin a sanctuary designation process or explore other MPA possibilities in federal waters off of Oregon.

The Old Growth of Fish Populations

Marine reserves will not stop pollution and invasive species, or reverse climate change. And though they clearly can protect biodiversity and enhance fisheries, they are a magnet for controversy.

Some Oregon fishermen fear that their favored fishing grounds will be targeted for no-take zones. Coastal communities, already suffering loss of jobs and infrastructure from the decline of salmon harvest and the declared disaster of the groundfish fishery, are apprehensive that new area restrictions would further harm their economy.

Counter arguments suggest that marine reserves would support the long-term coastal economy by promoting ecosystem recovery, helping to prevent future fishery collapses. New jobs could develop supporting eco-tourism and non-extractive activities such as diving, sea kayaking, and bird and whale watching.

Recent research indicates that marine reserves may be essential for preserving and rebuilding certain fish populations. The value of older spawners, especially of the long-lived (some exceed 100 years) slow-to-mature Pacific rockfish, has become increasingly evident. The older female rockfish produce exponentially more larvae, with characteristics that give them a better chance to survive. They are, metaphorically, the old growth of the fisheries.

Large older fish are nearly always the ones removed first as a fishery develops. To preserve some of these pivotal fish for the benefit of both the fish population and the fishery, there are three choices: dramatically reduce the allowable catch, which may render the fishery uneconomical; impose a slot size limit, which in the case of rockfish is difficult because most die from the trauma of their swim bladder bursting as they're pulled from the sea; or create marine reserves of adequate size to contain a portion of these large adults.

Networks of Protected Marine Reserves

A twist in rockfish science has come to the surface as geneticists and other marine researchers have explored the life cycle and movement of these fish. Some species appear to have multiple, geographically-isolated populations. Generally, rockfish and other groundfish of the west coast are managed as single populations on a coast-wide basis. Biologically, however, management on this scale appears to be flawed. One study shows four distinct subdivisions of black-rockfish between southern Oregon and central Washington. Another shows three population subdivisions of darkblotched-rockfish along the west coast.

One implication of these studies is that a disproportionate amount of the allowable catch could be concentrated on an isolated population of these ground fish. Marine reserves may be needed within each smaller bio-geographic area to protect a portion of the older fish of each distinct population (*Fisheries Sustainability via Protection of Age Structure and Spatial Distribution of Fish Populations*, Drs. Steven Berkeley, Mark Hixon, Ralph Larson and Milton Love).

Marine Stewardship

OPAC is not expected to deal with protecting the ocean's old-growth structure or the distribution of specific species such as rockfish. While nearly all marine reserves worldwide are either intended to replenish fisheries or preserve biodiversity, the recent discussion at OPAC has centered on recommending the establishment of several small "research" reserves. Scientists would monitor aspects of the ecosystem within the reserves and make comparisons with similar open areas. However, it is estimated that OPAC will take approximately two years to provide the Governor with any specific recommendations.

Concurrent with OPAC's deliberations, the larger discussion of MPAs, marine reserves, and ocean zoning continues. Effective federal fishery management may demand fully protected marine reserves that cross state and federal jurisdiction to achieve goals such as the protection of some of the big old fecund fish. The Oregon Fish and Wildlife Commission has the authority to restrict fishing gear, such as bottom trawls, from damaging sensitive or slow-to-recover seafloor habitat, and could zone areas accordingly. The Commission could also use no-fishing zones as tools for nearshore fishery management. The Department of State Lands, with vested responsibility for submerged public lands, may choose to embark on a zoning-like process to make better sense of marine demands. Coastal communities may develop reserve proposals that complement their local vision of marine stewardship.

In June 2006, the federal government designated Oregon's rocky reefs and canopy kelp as Habitat Areas of Particular Concern, recognizing their ecological importance to marine life. However, these areas have received no special protection. I believe Oregon must rise to the challenge to appropriately manage these and other habitats that comprise the ecosystem of our territorial sea.

Oregon has the opportunity to define a unique path in molding the state's future, this time in the realm of ocean-use planning. MPAs of various types will play a role. Developed with respect for those dependent on renewable ocean resources, and with their participation, MPAs can bring ecological benefits while helping to sustain the coastal economy. ☞



mini glossary

Marine Protected Area (MPA)

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.

Marine Reserve

Areas in which some or all extractive activities are prohibited. Marine reserves are a special category of marine MPA

Marine Sanctuary

As defined by the U.S. government: Multiple-use marine protected areas, protected under the National Marine Sanctuaries Act (NMSA), that may include breeding and feeding grounds of whales, sea lions, sharks, and sea turtles; significant coral reefs and kelp forest habitats. Some sanctuaries are zoned to include no-take areas. Sanctuaries may also protect historically significant shipwrecks and artifacts. There are currently 13 national marine sanctuaries designated under the NMSA.

No-Take Zones

Areas in which all extractive activities are prohibited.

Ocean Stewardship Area

The Ocean Stewardship Area is Oregon's area of direct concern and responsibility for ocean resource management. It was established in the Oregon Ocean Resources Management Plan (1990), and includes the entire continental margin from mean high water, across the continental shelf, and down to the bottom of the continental slope. The stewardship area covers approximately 21,000 square miles.

From <http://mpa.gov/glossary.html> and Oregon Coast National Marine Sanctuary Proposal: Status Report, Oregon Ocean Policy Advisory Council December 15, 2006.

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On behalf of the Board of Directors, staff, and readers of the magazine, we want to thank David for his vision and years of hard work.

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