

OREGON MARINE RESERVE POLICY RECOMMENDATIONS

A REPORT TO THE GOVERNOR, STATE AGENCIES AND LOCAL GOVERNMENTS FROM OPAC

INTRODUCTION

This document was prepared by the Oregon Ocean Policy Advisory Council (OPAC). OPAC approved this document on August 19th, 2008. This document is a policy recommendation only and should not be construed as formal state policy. It is simply a guide for the marine reserves process.

MARINE RESERVE DEFINITION

A **marine reserve*** is an area within **Oregon's Territorial Sea** or adjacent **rocky intertidal** area that is protected from all extractive activities, including the removal or **disturbance** of living and non-living marine resources, except as necessary for monitoring or research to evaluate reserve condition, effectiveness, or impact of stressors.

OVERALL PURPOSE OF OREGON'S MARINE RESERVE SYSTEM

The State of Oregon is considering the establishment of a **system** of fewer than ten marine reserves along its coast as part of an overall strategy in a continuing effort to move towards managing its marine waters and submerged lands using an **ecosystem-based approach**. The overall purpose of marine reserves is to provide an additional tool to help **protect**, sustain, or restore the **nearshore** marine **ecosystem**, its **habitats**, and **species** for the values they represent to present and future generations. Such action complements the collective efforts of Oregon, Washington, and California to manage the California Current in an ecosystem-based manner as expressed in the West Coast Governors' Agreement on Ocean Health (Gregoire, Kulongoski, and Schwarzenegger, 2007).

MARINE RESERVE GOAL

Protect and sustain a system of fewer than ten marine reserves in Oregon's Territorial Sea to **conserve** marine habitats and **biodiversity**; provide a **framework** for scientific research and effectiveness monitoring; and avoid significant adverse **social and economic impacts** on ocean **users** and coastal communities.

A system is a collection of individual sites that are representative of marine habitats and that are **ecologically significant** when taken as a whole.

MARINE RESERVE OBJECTIVES, PRINCIPLES AND GUIDELINES

The following **objectives** apply to the entire marine reserve process. The following principles and guidelines are designed to guide the proposal, selection, implementation and management of marine reserves. The objectives, principles and guidelines are not prioritized.

* Words that are in the definitions section (pages 4-7) are **bolded** the first time they appear in the text.

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Marine Reserve Objectives

1. Protect areas within Oregon's Territorial Sea that are important to the natural diversity and abundance of marine organisms¹, including areas of high biodiversity² and special natural features³.
2. Protect **key types of marine habitat**⁴ in multiple locations along the coast to enhance **resilience** of nearshore ecosystems to natural and human-caused effects.
3. Site fewer than ten marine reserves and design the system in ways that are compatible with the needs of ocean users and coastal communities. These marine reserves, individually or collectively, are to be large enough to allow scientific evaluation of ecological effects, but small enough to avoid significant adverse social and economic impacts on ocean users and coastal communities.
4. Use the marine reserves as **reference areas** for conducting ongoing research and monitoring of reserve condition, effectiveness, and the effects of natural and human-induced stressors. Use the research and monitoring information in support of nearshore resource management and **adaptive management** of marine reserves.
5. Although marine reserves are intended to provide lasting protection, individual sites may, through adaptive management and public process, later be altered, moved, or removed from the system, based on monitoring and reevaluation at least every five years.

Marine Reserve Planning Principles and Guidelines

1. The public, including ocean users, coastal communities and other stakeholders, will be involved in the proposal, selection, regulation, monitoring, compliance and enforcement of marine reserves.
2. Outreach and public engagement will be an ongoing part of the marine reserves planning and implementation process. Available scientific and other information will be made available to the public through outreach and websites.
3. Science and **local knowledge** will be used in the planning process for marine reserves. Such information will also be used to monitor and adaptively manage them into the future.
4. The planning process will encourage coordinated and collaborative marine reserve proposals from communities of place or interest. Communities of place may include coastal counties, cities, and ports; communities of interest may include fishing organizations, fishery/gear groups, governmental and inter-governmental organizations, and non-governmental organizations. Priority consideration will be given to proposals developed by groups comprised of coastal community members, ocean users and other interested parties.
5. The design and siting of marine reserves will take into account the existing regulatory regimes (e.g., fisheries management, **ocean shore** management, watershed management, land use planning, and water quality regulations) along with existing and emerging uses such as buried cables, ocean outfalls, wave energy, and proximity to ports.
6. Size and spacing guidelines developed by the Science and Technical Advisory Committee (STAC) will be used to help understand potential ecological benefits of marine reserve site proposals, rather than dictate minimums or maximums needed. The potential for adverse social and economic impacts will also be a key factor on the size and spacing of reserves recommended by OPAC for further evaluation.

Preliminary Marine Reserve Implementation Principles and Guidelines⁵

1. Marine reserves as a system and each individual marine reserve will have a plan that includes clearly defined objectives, monitoring protocols, compliance and enforcement provisions,

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effective management measures, and a commitment of long-term funding necessary to achieve its goals.

2. Marine reserves will be adequately enforced.
3. Marine reserves will be adequately monitored and evaluated in support of adaptive management. Cooperative and collaborative research will be encouraged as well as utilization of fishing vessels as research platforms. These activities will be compatible with the goal of conserving marine habitats and biodiversity.
4. Education and economic development opportunities that are compatible with the goal of conserving marine habitats and biodiversity will be encouraged.
5. Marine reserves are not intended to prevent marine transit, safe harbor, and beach access.
6. Significant adverse social and economic impacts of marine reserves on ocean users and coastal communities will be avoided and positive social and economic effects will be sought.
7. Adequate baseline data will be collected at each site prior to excluding extractive activities. The types and adequacy of baseline data, and the timing and methods of data collection will be driven by the research and monitoring objectives and sampling designs employed at each site.

NOTES

¹ This includes areas essential to marine organism life histories and behaviors. Examples include areas important for marine species reproduction, including nurseries, spawning areas, egg production sources, recruit aggregation areas, larval dispersal routes, and adult as well as juvenile movement between depths.

² Habitat types based on depth and bottom structure may serve as surrogates for organism community types.

³ Examples of special natural features may include geological formations (such as canyons or pinnacles), seafloor vents, dominant oceanographic fronts, major river plumes, ocean current eddies or jets.

⁴ An individual reserve can contain more than one habitat type. See definitions section.

Key Types of Marine Habitat for Marine Reserves	
Rocky Intertidal	EHTL-ELTL
Rocky Subtidal with Canopy Forming Kelp	ELTL-25 m greater than 25 m depth
Rocky subtidal (without Canopy Forming Kelp)	ELTL-25 m greater than 25 m depth
Soft Bottom Subtidal	ELTL-25 m greater than 25 meters depth

Note: EHTL-extreme high tide line, ELTL-extreme low tide line. 25 m=14 fathoms or 82 feet.

⁵ These implementation guidelines and principles will evolve as the process gets closer to implementation.

DEFINITIONS

Adaptive Management: a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs (BC Forest Service, 2006).

Biodiversity: at its simplest, a term meaning the diversity of life forms and communities that occur in a particular environment. Diversity is a concept that means “variety or multiformity, a condition of being different in character and quality (Patrick, 1983, in Ray, 1988, in OPAC, 1994).” There is no single way to define, measure, or evaluate diversity of life; rather there are at least four interrelated ways:

- *species diversity*, which refers to the variety and abundance of species in an ecosystem;
- *ecological diversity*, which refers to the variety of types of biological communities found on earth;
- *genetic diversity*, which refers to the genetic variation that occurs among members of the same species; and
- *functional diversity*, which refers to the variety of biological processes or functions characteristic of a particular ecosystem(OPAC, 1994).

The United Nations Convention on Biological Diversity defines biological diversity (aka biodiversity) as “the variability among living organisms from all sources, including, ‘inter alia’, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems (UN, 1992).”

Canopy Forming Kelp: a sub-set (or ecotype) of hard bottom (rocky) subtidal habitat. Canopy forming kelp grows on many of Oregon’s shallow rocky reefs, typically in waters between 5 and 25 meters (ODFW, 2006). Generally, this term is used to refer to canopy forming kelp species such as *Nereocystis* and *Macrocystis*.

Conserve: to manage in a manner which avoids wasteful or destructive uses and provides for future availability (Oregon Statewide Planning Goals and OPAC 1994).

Disturbance: extraction of living organisms and non-living materials, or human induced changes to the environment. Prohibited activities will be established with the management plan for each site or through rulemaking.

Ecologically Significant: contributing to biodiversity, resilience of the system and its populations and ecological communities.

Ecosystem: an ecosystem is a dynamic complex of plant, animal, and microorganism communities and the nonliving environment interacting as a functional unit. Humans are an integral part of ecosystems. Ecosystems vary enormously in size; a temporary pond in a tree hollow and an ocean basin can both be ecosystems (Millennium Assessment, 2005).

Ecosystem-Based Approach: ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from approaches that focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors. Specifically, ecosystem-based management:

- emphasizes the protection of ecosystem structure, functioning, and key processes;
- is place-based in focusing on a specific ecosystem and the range of activities affecting it;

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- explicitly accounts for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species;
- acknowledges interconnectedness among systems, such as between air, land and sea; and
- integrates ecological, social, economic, and institutional perspectives, recognizing their strong interdependences (McLeod et. al., 2005).

Framework: a broad overview or outline composed of ideas or principles that are used to plan or decide something, within which details can be added in the future.

Goal: a clear, concise statement of the intended result or outcome toward which effort is directed; it is what you hope to accomplish or achieve over time. Goals are made operational through more specific objectives or tasks.

Habitat: the environment in which an organism, species, or community lives (OPAC, 1994).

Key Types of Marine Habitat:

- Rocky intertidal (EHTL-ELTL)
- Rocky subtidal
 - With canopy forming kelp (ELTL-25 m and greater than 25 m depth)
 - Without canopy forming kelp (ELTL-25 m and greater than 25 m depth)
- Soft bottom subtidal
 - ELTL-25 meters
 - Greater than 25 m depth

EHTL-extreme high tide line, ELTL-extreme low tide line. 25 m=14 fathoms or 82 feet. See the individual habitat types for definitions.

Local Knowledge:

- *Traditional ecological knowledge* is the knowledge of a localized place that is passed down through time through social and cultural practices (Wedell, 2005).
- *Local fisheries knowledge* is a particular type of local knowledge acquired through experiences and observations made during fishing and related activities. It may include knowledge of: local distribution of fishes and habitats, unique underwater structures, geological features, ecological interactions, local fishing businesses, social dynamics of fishing, fishing communities' territories of use, local economics and networks of regional economies of which communities are a part, and local fishing culture (adapted from Hall-Arber et. al., 2002).
- *Local fisheries knowledge:* "Knowledge about commercial, subsistence, and recreational marine fishing/harvest, including the **marine environment** and species; fishing culture and society; fishing technology and practices; and business and economic aspects of fishing (NMFS, 2004)."
- *Local ecological knowledge:* local knowledge acquired through experiences and observations collected through activities such as bird watching, beach walking, tidepooling, charter boat fishing, whale watching, diving, surfing, and kayaking.

Marine Environment: those areas of coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands thereunder, over which the United States exercises jurisdiction, consistent with international law (Executive Order 13158, May 26, 2000).

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

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for part or all of the natural and cultural resources therein (Executive Order 13158, May 26, 2000).

Marine Reserve: an area within Oregon's Territorial Sea or adjacent rocky intertidal area that is protected from all extractive activities, including the removal or disturbance of living and non-living marine resources, except as necessary for monitoring or research to evaluate reserve condition, effectiveness, or impact of stressors.

Nearshore: the area from the coastal high tide line offshore to the 30-fathom (180 feet or 55 meter) depth contour. However, this does not always stay within the state boundary of 3 miles. For the purposes of the planning process, marine reserves will be within the boundaries of Oregon's Territorial Sea as well as some rocky intertidal areas.

Objective: an action statement designed to help move toward the goal.

Ocean Shore Recreation Area: "Ocean shore" means the land lying between extreme low tide of the Pacific Ocean and the statutory vegetation line as described by ORS 390.770 or the line of established upland shore vegetation, whichever is farther inland. "Ocean shore" does not include an estuary as defined in ORS 196.800. "State recreation area" means a land or water area, or combination thereof, under the jurisdiction of the State Parks and Recreation Department used by the public for recreational purposes.

Oregon Territorial Sea: the waters and seabed between the coastal baseline of Mean Lower Low Water seaward to the three nautical mile (3.45 statute miles) limit of state jurisdiction (OPAC, 1994; Christie and Hildreth, 1999; ORS 196.405). The inner boundary that separates the territorial sea from internal waters is called the "baseline" and baselines are drawn across river mouths, along outer points of complex coastlines and offshore islands (Frohnmyer, 1986; Christie and Hildreth, 1999; Kalo et. al., 1999).

Protect: save or shield from loss, destruction, or injury or for future intended use (Oregon Statewide Planning Goals and OPAC, 1994).

Reference Area: an area that provides a baseline to compare with non-reserve areas, specifically to evaluate changes in habitat, species abundance, and species composition due to natural changes, fishing and other human effects.

Resilience: the amount of natural or manmade disturbance an ecosystem can absorb while retaining the same function, structure, and feedbacks (Walker and Salt, 2006).

Rocky Intertidal: hard substrates that fall between the extreme low tide and extreme high tide along the coastline that are alternately exposed and covered by tides (Fox et. al., 1994, ODFW, 2007). Oregon's coastline has approximately 82 linear miles (21%) of rocky intertidal habitat (ODFW, 2006).

Rocky Subtidal: (aka hard subtidal) habitat includes all hard substrate areas of the ocean bottom that are never exposed at low tides. They often are referred to as reefs, rocky reefs, rocky banks, pinnacles or hard bottom. Rocky subtidal habitats can exist anywhere in the subtidal region from just beyond the limit of the area exposed by tides (intertidal) out to the westward boundary of the Territorial Sea. Some rocky subtidal areas are extensions of rocky shoreline features such as headlands, cliffs or rocky intertidal, while others exist as isolated regions of rock surrounded by sandy substrate habitat. Some of these habitat areas are contained entirely within the Territorial Sea, while others extend westward into deeper water habitat. Rocky reefs may have relatively low topography barely raised above the surrounding seafloor, or may rise from the seafloor many meters, often with exposed rocks, seastacks or small islands (ODFW, 2006).

Social and economic (socioeconomic) impact: Scope and content to be determined.

Soft Bottom Subtidal: soft bottom subtidal habitat is defined as extending from the lowest reaches of the intertidal west to the outer extent of the Territorial Sea. Subtidal soft bottom

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habitats are diverse, as a result of distinct organism assemblages that are influenced by differences in substrate type (sand vs. mud), organic content and bottom depth. The Oregon coast primarily is an exposed, high energy environment, so most soft bottom subtidal areas are sandy. Mud can be a more pronounced bottom type in areas receiving less energy from water movement (e.g., isolated and sheltered embayments) and in deeper waters toward the outer edge of the Territorial Sea (ODFW, 2006).

Species: one of the basic units of biological classification and a taxonomic rank. A species is often defined as a group of organisms capable of interbreeding and producing fertile offspring. While in many cases this definition is adequate, a more precise or differing measures are often used, such as based on similarity of DNA or morphology. Presence of specific locally adapted traits may further subdivide species into subspecies.

System: a collection of individual sites that are representative of marine habitats and that are ecologically significant when taken as a whole.

Topographical Relief: the three-dimensional complexity of the seafloor. In general, soft-bottom (mud and sand) seafloors have the least topographical relief, followed increasingly by pebbles, cobbles, boulders, rock ridges, and rock pinnacles. At larger spatial scales, submarine canyons and seamounts have high topographical relief.

User: an individual, group or entity that makes use of the territorial sea and adjacent rocky intertidal, whether it is for traditional, recreational, educational, commercial or other purposes.

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