

Oregon Marine Reserve Policy Guidance

Introduction

This document was prepared by the Oregon Ocean Policy Advisory Council (OPAC). The current language in this document is based on changes made by OPAC at their meeting on January 8th 2008. Until OPAC completes reviewing and gives final approval to this document, all content is subject to changes, additions or deletions, including those resulting from implementation and completion of outreach. Until final approval is given by OPAC, this document is a working draft only.

Marine Reserve Definition: A **marine reserve**¹ 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 such as climate change.

Marine reserves are intended to provide lasting protection. However, based on monitoring and evaluation, individual sites may later be altered, moved, or removed from the **limited system** in order to meet prescribed **goals** and **objectives**.

Overall Purpose of Oregon's Marine Reserve System: The State of Oregon is establishing a limited system of less than ten marine reserves along our coast as part of an overall strategy to manage 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 **heritage 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.

Marine Reserve Goal: Protect and sustain a limited system of **ecologically-special** places in Oregon's Territorial Sea to **conserve** marine habitats and **biodiversity**; provide a **framework** for scientific research and effectiveness monitoring; and avoid, to the extent practicable, potential adverse social and economic effects on **ocean users** and ocean-dependent communities.

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

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¹ Words that are in the definitions section (pages 4-8) are bolded the first time they appear in the text.

Marine Reserve Objectives, Principles and Guidelines

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

Marine Reserve Objectives:

1. Protect areas within each **biogeographic region**¹ of Oregon's Territorial Sea that are important to the natural diversity and abundance of marine organisms², including areas of high biodiversity³ and special natural features⁴.
2. Protect key types of marine habitat⁵ in multiple locations along the coast to enhance **resilience** of nearshore ecosystems to natural and human-caused effects.
3. Site marine reserves and design the limited system of reserves in ways that are compatible with the needs of coastal communities by avoiding, to the extent practicable, potential adverse social and economic effects.
4. Use the marine reserves as **ecological reference areas** by 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 **adaptive management**.

Marine Reserve Planning Principles and Guidelines:

1. The public, including ocean users, ocean-dependent communities and other stakeholders will be involved in marine reserve nomination, selection, regulation, and monitoring of marine reserves.
2. Science and **local knowledge** will be used in the selection process for marine reserves. Such information will also be used to monitor and adaptively manage them into the future.
3. The nomination process will encourage coordinated and collaborative marine reserve proposals from communities of place or interest. Communities of place may include cities, towns, and ports; communities of interest may include fishing organizations, fishery/gear groups, governmental and inter-governmental organizations, and non-governmental organizations.
4. 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 and wave energy.
5. The limited system of marine reserves will contain sites of sufficient size and spacing⁶ to protect and sustain ecologically special places in Oregon's Territorial Sea and to conserve marine habitats and biodiversity while avoiding, to the extent practicable, potential adverse social and economic effects.

Preliminary⁷ Marine Reserve Implementation Guidelines and Principles:

1. **Ecosystem based management** will be used as a guiding principle.
2. The marine reserve system as a whole and each individual marine reserve will have a plan that includes clearly defined objectives, monitoring protocols, enforcement provisions, effective management measures, and a commitment of long-term funding necessary to achieve its goals.
3. Marine reserves will be adequately enforced.
4. Marine reserves will be adequately monitored and evaluated in support of adaptive management. These activities will be compatible with the goal of conserving marine habitats and biodiversity.
5. Educational, recreational and **ecotourism** activities that are compatible with the goal of conserving marine habitats and biodiversity will be provided for.

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6. The potential adverse social and economic effects⁸ of marine reserves on ocean users and ocean-dependent communities will be avoided, to the extent practicable, and positive social and economic effects will be sought.

Notes

¹ This does not imply there needs to be an equal number of reserves in each region.

² 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.

³ Habitat types based on depth and bottom structure may serve as surrogates for organism community types.

⁴ 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.

⁵ An individual reserve can contain more than one habitat type. See definitions section.

Key Types of Marine Habitat for Marine Reserves	
Rocky intertidal	
Soft bottom subtidal	0-25 meters
	greater than 25 meters depth
Hard bottom subtidal	Low topographical relief (0-25 m)
	High topographical relief (0-25 m)
	Low topographical relief (over 25 m depth)
	High topographical relief (over 25 m depth)
	Kelp forest

Note: "0" is defined as the coastal baseline of Oregon's Territorial Sea (see definitions).

⁶ Size and spacing guidelines will be developed after a focused workshop organized by OPAC's Science and Technical Advisory Committee (STAC).

⁷ These implementation guidelines and principles are very preliminary during this planning stage. Actual implementation guidelines and principles will evolve as the process gets closer to implementation.

⁸ The scope and content of an economic impact analysis is to be determined.

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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)

Biogeographic region: a geographical region containing a distinctive assemblage of species and/or habitats. Physical and biological science supports the idea of dividing the Oregon coast into regions, due to differences in primary bottom types and current patterns that influence the dispersal and retention of larval fishes and invertebrates. It is important to have multiple reserves for each region and habitat type to enhance resiliency and for statistical replication. Cape Blanco is a well-documented "break" in coastal ocean physical and biological properties. A biogeographic region designated south of Cape Blanco would extend into Northern California. Economic and social data should be gathered and organized on a biogeographic region basis as much as possible to aid all participants in the reserve nomination and designation processes.

Coastal Biodiversity: at its simplest, a term meaning the diversity of life forms and communities that occur in the coastal zone, including nearshore ocean waters. 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. This may be the most important way of referring to biodiversity in a coastal management sense (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)."

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 that cause mortality of organisms.

Examples of disturbances may include:

- Dredging
- Dumping/Disposal
- Harvest of marine organisms
- Energy development
- Pipeline/conduit/cable placement
- Pollution discharge, point-source and non-point pollution
- Mining

Allowed 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.

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Ecologically-special: representative of unique habitat-types, species, or ecological processes.

Ecological 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.

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 Management: 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;
- 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).

Ecotourism: a form of tourism that focus on local culture, flora and fauna.

Evaluation Criteria: the guidelines and/or rules that enable judgments, choices, or decisions to be made about how well individual marine reserve proposals address the goal and objectives about how such proposals might be fit together to form a recommended system of marine reserves.

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 (e.g., a strategic framework for policy setting the context for individual programs and projects).

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. Just as humans live in houses, within neighborhoods, within a town or geographic area, within a certain region, and so on, marine organisms live in habitats which may be referred to at different scales (OPAC, 1994).

Hard Bottom Subtidal: see rocky subtidal

Heritage Value: see natural heritage areas

Kelp Forest: a sub-set (or ecotype) of hard bottom subtidal habitat. Kelp forests (also known as kelp beds) grow 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*.

Key Types of Marine Habitat:

- Rocky intertidal
- Soft bottom subtidal
 - 0-25 meters
 - greater than 25 meters depth

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- Hard bottom subtidal
 - Low topographical relief (0-25 m)
 - High topographical relief (0-25 m)
 - Low topographical relief (over 25 m depth)
 - High topographical relief (over 25 m depth)
 - Kelp forest

"0" is defined as the coastal baseline of Oregon's Territorial Sea. See the individual habitat types for definitions.

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

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 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 such as climate change. Marine reserves are intended to provide lasting protection. However, based on monitoring and evaluation, individual sites may later be altered, moved, or removed from the limited system in order to meet prescribed goals and objectives.

Natural Heritage Areas: areas established and managed wholly or in part to sustain, conserve, restore, and understand the protected area's natural biodiversity, populations, communities, habitats, and ecosystems; the ecological and physical processes upon which they depend; and, the ecological services, human uses and values they provide to this and future generations (MPA Center, 2006).

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 nomination process, marine reserves

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will be within the boundaries of Oregon's Territorial Sea as well as some rocky intertidal areas.

Nomination Guidelines: the data and information needed to help evaluate proposed marine reserve sites using the evaluation criteria.

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 (Frohnmayr, 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).

Replicate: any one reserve in which a particular habitat type is represented

Resilience: the amount of natural or manmade disturbance an ecosystem can absorb while retaining the same function, structure, and feedbacks (Walker and Salt, 2006). The concept of resilience also applies to the economic and social function of coastal communities.

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, seawalls or small islands (ODFW, 2006).

Socioeconomic (social and economic) 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 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).

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Species: a population or collection of populations of closely related and similar organisms capable of interbreeding freely with one another but not with members of other species under natural conditions (OPAC, 1994).

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 shoreline, whether it is for traditional, recreational, educational, commercial or other purposes.

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