

# Otter Rock Marine Reserve

## Site Management Plan



2013

Marine Resources Program  
Newport, Oregon

## **Acknowledgments:**

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# List of Acronyms & Abbreviations

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DSL	Oregon Department of State Lands
MPA	Marine Protected Area
NSAT	Depoe Bay Near Shore Action Team
ODFW	Oregon Department of Fish and Wildlife
OPAC	Oregon Ocean Policy Advisory Council
Oregon State Police	Oregon Department of State Police
Otter Rock site	Otter Rock Marine Reserve
RFP	Request for Proposals
USFWS	U.S. Fish and Wildlife Service

# Introduction

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Formal marine reserve discussions began in Oregon, at the state level, in 2000. In 2008, the state began a process to establish a limited system of marine reserve sites within state waters. In 2009, the state's first two sites were established: Redfish Rocks Marine Reserve and Marine Protected Area located on Oregon's south coast near Port Orford, and Otter Rock Marine Reserve located on Oregon's central coast near Depoe Bay.

The Oregon Department of Fish and Wildlife (ODFW) is the designated lead agency responsible for implementation of Oregon's system of marine reserve sites. To that effect, in 2009 ODFW established a program comprised of staff responsible for developing and implementing site management plans, ecological monitoring, human dimensions (socioeconomic) monitoring, outreach activities, and community engagement as part of marine reserves implementation.

The *Otter Rock Marine Reserve Site Management Plan* was developed by ODFW staff with assistance and collaboration from the Depoe Bay Near Shore Action Team. This document describes the state's implementation goals, objectives, and strategies for the Otter Rock Marine Reserve (Otter Rock site).

## A. Management Plan Purpose and Contents

The purpose of this site management plan is to: a) describe the state policies that direct and guide the implementation of Oregon's marine reserves, b) document the state and community implementation priorities for the Otter Rock site, and c) provide a course of action for state agency implementation efforts. The plan details the state's implementation strategies developed for ecological and human dimensions monitoring, reporting, and evaluation; outreach; compliance and enforcement; and management strategies pertaining to disturbance issues. The plan also provides for how the local community engages and collaborates in state implementation efforts and describes the local community's priorities and implementation efforts for Otter Rock that complement that of the state.

We hope that by documenting these priorities and strategies we will spur support for, and engagement in, implementation efforts and attract complementary actions conducted by external entities to further assist with implementation of the Otter Rock site. As implementation will evolve over time, the *Otter Rock Marine Reserve Site Management Plan* will be reviewed and updated every five years, with assistance and collaboration from the local community.

# Policies

## Oregon's Marine Reserves

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This chapter gives an overview of the state policies that direct and guide the siting, development, and implementation of Oregon's limited system of marine reserve sites. This site management plan sets the state's priorities and directs actions towards implementing these policies for the Otter Rock Marine Reserve.

### A. Legislation, Rules, and Policy Guidance

#### A.1 Marine Reserves Legislation

Oregon Revised Statutes, 196.540 through 196.555, establish requirements and provide direction with regards to the siting, development, and implementation of Oregon's limited system of marine reserve sites.

#### A.2 Oregon Administrative Rules

Marine reserve sites are established and governed by state agency administrative rules. To establish a marine reserve site, three primary state agencies are responsible for adopting administrative rules:

1. **Department of State Lands** - Rules establish site boundaries and regulate submerged and submersible land uses that require state authorization or a removal-fill permit (including harvest of subtidal kelp).
2. **Department of Fish and Wildlife** - Rules regulate fishing, hunting, and take of fish, invertebrate, and wildlife species within a site.
3. **Parks and Recreation Department** - Rules regulate extraction of living (i.e., seaweed) and non-living natural products, and disruptive activities, within rocky intertidal portions of a site.

#### A.3 Ocean Policy Advisory Council (OPAC)

The Oregon Ocean Policy Advisory Council (OPAC) is a legislatively mandated body that advises the Governor, state agencies, and local governments on marine resource policy issues. Further guidance pertaining to siting, development, and implementation of marine reserve sites is provided in the "Oregon Marine Reserve Policy Recommendations" developed and approved by OPAC in 2008. Key definitions, goals, and objectives provided by OPAC that guide management of Oregon's marine reserve sites and lead development of this site management plan are described in the sections that follow.

## B. Definition of Marine Reserve

As established in the OPAC policy recommendations, Oregon defines a marine reserve as:

... 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. (OPAC 2008)

## C. Marine Protected Areas

Marine Protected Areas (MPAs), that allow or prohibit certain specified extractive activities, are also included as part of Oregon's limited system of marine reserve sites. As established in the OPAC policy recommendations, Oregon 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. (OPAC 2008, adopted from Presidential Executive Order 13158 issued May 26, 2000).

The allowed and prohibited extractive activities of each MPA site are defined in agency administrative rules.

## D. Goal and Objectives

The implementation strategies for the Otter Rock Marine Reserve site, outlined in this management plan, have been developed to meet the goal and objectives of Oregon's marine reserves, as established by OPAC in 2008.

### D.1 Marine Reserve Goal

Oregon's goal for marine reserves is to:

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. (OPAC 2008)

### D.2 Marine Reserve Objectives

Marine reserve objectives further guide the siting, development, and implementation of Oregon's marine reserves (OPAC 2008):

1. Protect areas within Oregon's Territorial Sea that are important to the natural diversity and abundance of marine organisms, including areas of high biodiversity and special natural features.
2. Protect key types of marine habitat 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.

## E. Planning Principles and Guidelines

Additional guidance is provided by means of planning principles and guidelines provided in the OPAC policy recommendations (OPAC 2008):

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.

## F. Implementation Principles and Guidelines

Further guidance is given by means of implementation principles and guidelines provided in the OPAC policy recommendations (OPAC 2008):

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, 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.

# Implementation

## Oregon's Marine Reserves

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This chapter provides an explanation of how the OPAC goal and objectives, and the planning and implementation principles and guidelines, relate to implementation of Oregon's marine reserve sites. The chapter presents an overview of the major steps in implementation: how marine reserves are used, when and how implementation is reviewed, when and how marine reserves are evaluated, and how sites are adaptively managed.

### A. How We Use Marine Reserves

The OPAC marine reserve goal and objectives (Chapter II, section D) direct the state to use marine reserves to conserve marine habitats and biodiversity and to use the reserves as reference areas for conducting ongoing research and monitoring of reserve condition, effectiveness, and the effects of natural and human-induced stressors. Use of marine reserves as reference areas is implemented through the state's monitoring activities. The information gathered from ecological and human dimensions monitoring efforts will be used in support of nearshore resource management in general and in the adaptive management of marine reserves.

Ecological and human dimensions data collected over the first two years, prior to the prohibition of extractive activities taking effect, will be used to establish a baseline and the beginning point of the long term monitoring of a site. Detailed methods, analyses, and results from monitoring of marine reserve sites will be presented in biennial monitoring reports. Ecological and human dimensions baseline monitoring reports, for the Redfish Rocks and Otter Rock sites, will be available in 2013.

### B. Implementation Review

A review of site implementation and updates to the Otter Rock Marine Reserve Site Management Plan is to be conducted every five years, with assistance from community members. The OPAC planning and implementation principles and guidelines (Chapter II, sections E and F) will be used as a guide to review implementation efforts. Focus will be on the progress made implementing the strategies outlined in this site management plan for:

1. Ecological and human dimensions monitoring
2. Outreach
3. Compliance and enforcement
4. Public and community engagement

Implementation review may trigger adaptations to strategies and updates to the site management plan in order to better meet the OPAC planning and implementation principles and guidelines. Any adaptations to implementation being considered will include consultation with, and general support from, the Depoe Bay Near Shore Action Team (NSAT).

## C. Marine Reserves Evaluation

A comprehensive evaluation of the Otter Rock site and limited-system of reserves is to be conducted after the system has been in place for a minimum of 10-15 years after the prohibition of extractive activities have taken effect. This period will allow time for adequate ecological, social, and economic data to be collected through monitoring and for the detection of ecological responses to begin. The evaluation will focus on if, where, and to what degree each marine reserve site and the system as a whole are meeting the OPAC marine reserve goal and objectives (Chapter II, section D). The evaluation will provide information so the state can determine if and how marine reserves should continue to be used as a nearshore resource management tool in the future.

To assist the state's evaluation of the Otter Rock site and the limited-system as a whole, ODFW's long-term monitoring is designed to address the following aspects of marine reserves evaluation:

1. Determine the effectiveness of marine reserves in conserving certain species, habitats, biodiversity or certain aspects of the ecosystem.
2. Determine if marine reserves serve as ecological reference areas which allow us to deduce natural from human-induced changes to certain species, habitats, or certain aspects of the ecosystem and measure these changes over time.
3. Determine if marine reserves increase our knowledge of Oregon's nearshore environment, resources, and uses. Use this information to support nearshore resource management.
4. Determine if size, configuration, location and prohibitions of marine reserve sites and associated marine protected areas, and the system as a whole, allow scientific evaluation of ecological effects.
5. Determine if size, configuration, location and prohibitions of marine reserve sites and associated marine protected areas, and the system as a whole, avoid significant adverse social and economic impacts to ocean users and coastal communities.

## D. Adaptive Management

Based on the marine reserves evaluation, adaptations to management or the site(s) may be considered, but only after adequate time for thorough evaluation of ecological, social, and economic effects. Changes to site boundaries or prohibitions are unlikely to be considered until after 10 to 15 years of study. Any adaptive management considerations of the Otter Rock site will include consultation with, and general support from, the NSAT. Consensus will be sought through the community team prior to any alteration of site boundaries or prohibitions/allowances within the site. If consensus cannot be reached, it will be clearly stated to the appropriate board or commission (e.g. Fish and Wildlife Commission, State Land Board, Parks Commission) considering changes and all parties will have the opportunity to voice their positions individually.

# Otter Rock Marine Reserve

## A. Background

### A.1 Site Description

The Otter Rock site (Figure 1) is located off the central Oregon coast, south of Depoe Bay and north of Newport in Lincoln County.

The site consists of a subtidal marine reserve that starts at the extreme low water line (ELWL) and covers approximately 1.3 square miles. The marine reserve also includes the rocky intertidal area, lying between the mean high water line (MHWL) and extreme low water line (ELWL), at the north end of the site between points B and C on the map in Figure 1. The sandy intertidal area between points C, D and E is not included as part of the site. The boundary coordinates for the site are provided in Table 1.



**Figure 1.** Otter Rock Marine Reserve Site

**Table 1.** Otter Rock Marine Reserve boundary points.

Point	Latitude	Longitude
A	44°45.175'	-124°4.53'
B-C	Reserve starts at the Mean High Water Line (MHWL)	
B	44°45.175'	-124°3.8583
C	44°44.7933'	-124°3.7833'
C-E	Reserve starts at the Extreme Low Water Line (ELWL)	
D	44°44.7283'	-124°3.7833'
E	44°43.315'	-124°3.6567'
F	44°43.315'	-124°4.2'

### **A.1.a. Otter Rock Marine Garden**

The intertidal area north of the marine reserve, extending to the southern base of Cape Foulweather, is designated as the Otter Rock Marine Garden. The Marine Garden lies between the extreme high water line (EHWL) and extreme low water line (ELWL) and is closed to the take of shellfish and all other marine invertebrates, except for single mussels that may be taken for bait. Angling from shore is permitted within this area, north of the marine reserve. For more information on the Otter Rock Marine Garden, please refer to the Oregon Sport Fishing Regulations guide published by ODFW.

## **A.2 Designation History**

The Otter Rock site was originally proposed in 2008, by the Depoe Bay Near Shore Action Team (NSAT), for consideration by OPAC as part of a public marine reserve proposal process. NSAT is an advisory group to the City of Depoe Bay, comprised of residents of the city representing various interests within the local community. The purpose of NSAT is: “To take an active role in any decision making process that may affect our near shore ocean.”

In November 2008, OPAC forwarded marine reserve recommendations to Governor Kulongoski including a recommendation that the Otter Rock site move forward for implementation. In 2009, the Oregon Legislature adopted marine reserves legislation directing state agencies to adopt rules to establish, study, monitor, evaluate and enforce the Otter Rock site. In addition, a Memorandum of Understanding (MOU) between Lincoln County, the cities of Depoe Bay and Newport, Lincoln County Fishermen Involved in Natural Energy, and ODFW was signed in 2009, providing guidance on management, site implementation and community engagement for the Otter Rock site. A copy of the MOU is provided in Appendix C.

In December 2009 and January 2010, state agencies adopted administrative rules establishing the Otter Rock site and implementation was begun starting with the development of monitoring plans, collection of baseline data, and development of a site management plan. Department of State Lands rules, establishing the site boundaries and regulating submerged and submersible land uses that require state authorization or a removal-fill permit, became effective in December of 2009. Oregon Parks and Recreation Department and ODFW rules pertaining to take within the site became effective on January 1, 2012. This provided for two years of ecological and human dimensions baseline data to be collected prior to the cessation of extractive harvest activities. For more information on ecological and human dimensions monitoring of the Otter Rock site, see Chapter V.

### **A.2.a. Focus of protections**

The Otter Rock site was proposed by NSAT to provide protection to subtidal kelp habitat, and rocky intertidal organisms and habitat, as well as to provide some protections to adult and juvenile groundfish. The site was also proposed to provide protections to marine areas adjacent to sensitive terrestrial bird and marine mammal habitats.

## **B. Marine Environment**

This section provides an overview of the nearshore marine environment in and around the Otter Rock site. Long-term ecological monitoring at the Otter Rock site will provide us with more details about the marine environment in this area over time. More information on ecological monitoring can be found in Chapter V, section A.

The Otter Rock site is situated between two prominent headlands, Cape Foulweather to the north and Yaquina Head to the south. The area includes emergent rocks and islands, patches of subtidal kelp beds, bedrock and boulders, extensive areas of unconsolidated soft bottom sediment, and bands of sand dollar beds. Shoreline features include basalt and sandstone cliffs, sandy beaches, and rocky intertidal areas.

North of the Otter Rock site the shoreline is predominately basalt cliffs. Cape Foulweather is a large basalt headland that rises 500 feet above sea level, one of the highest along the Oregon coast (OPRD 1988). As you move south of Cape Foulweather, the geologic features change to sandstone. The small headland at Devils Punch Bowl includes a circular hole that was formed when the roof over two sea caves collapsed. Moving further south the shoreline is dominated by extensive sandy beaches, including Beverly Beach and Moolack Beach. To the south of Moolack Beach is Yaquina Head.

### **B.1 Otter Rock Marine Reserve**

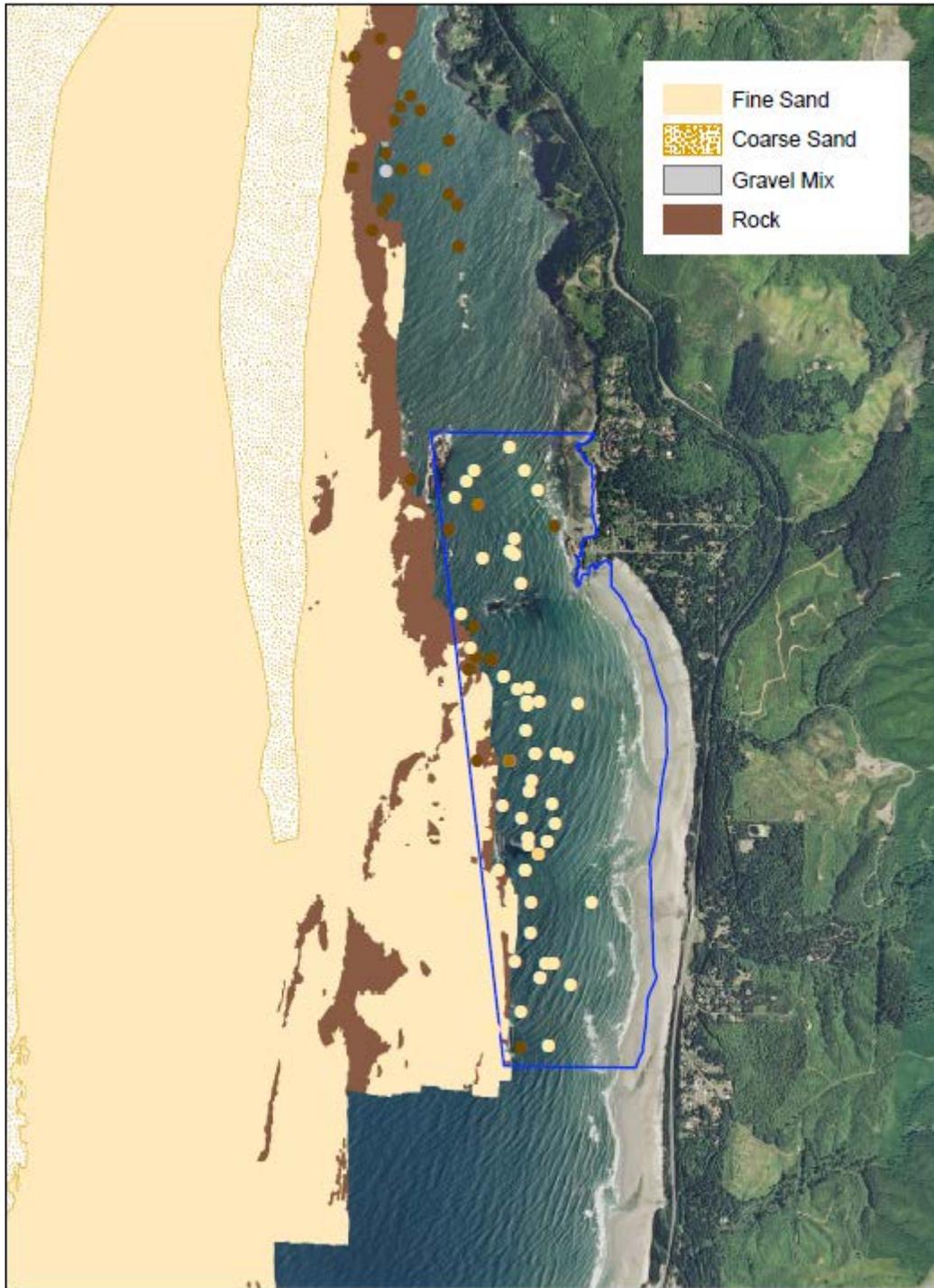
The Otter Rock Marine Reserve is located south of Cape Foulweather and runs adjacent to Devils Punch Bowl and Beverly Beach. Depth at the Otter Rock site ranges from the mean high water line (MHWL) to a depth of 18 meters (approximately 10 fathoms). Three prominent islands comprise the western boundary of the site: Gull Rock on the north west corner, Otter Rock, and Whale Back Rock on the south west corner. These islands support several seabird nesting colonies and pinniped haulouts. Patches of kelp beds are located within the site. Most of the area inshore of the islands is comprised of unconsolidated soft bottom sediment and sand dollar beds have been observed. Figures 2 and 3 provide maps of the different substrate types observed in the marine reserve, based on video lander sampling (see Appendix A for more details about video lander and other visual survey tools used in monitoring of the site).

## **C. Cultural and Human Uses**

The Otter Rock site is located adjacent to the unincorporated community of Otter Rock, with approximately 223 residents. Five and a half miles north of the site is the city of Depoe Bay with a population of 1,398 people. The city of Newport is located approximately 8 miles south of the site, with a population of 9,989 people (2010 Census). Three Oregon State Park properties are in the vicinity: Devils Punch Bowl State Natural Area, Otter Crest Scenic Viewpoint, and Beverly Beach State Park.

The nearshore waters surrounding Otter Rock support many forms of consumptive and non-consumptive activities. Recreational and commercial fishing are established uses in the area. Commercial fishing vessels hailing from Depoe Bay, Newport, and other ports along the west coast fish these nearshore waters targeting mainly groundfish, crab, sea urchin, and salmon. Recreational private and charter boats use this area to target mainly groundfish. Fishing from shore and kayaks, and spear fishing are also common uses. Non-consumptive uses include agate hunting on beaches; SCUBA diving; wildlife viewing; water sports including surfing, stand-up paddle boarding, and kayaking; and general beach use.

Long-term human dimensions monitoring will provide us with more detailed descriptions of the communities of interest and place that are associated with the Otter Rock site. Monitoring will also provide us with a better understanding of the consumptive and non-consumptive users of the Otter Rock site and the general surrounding area including: what the uses are, the level of use, and how this use changes over time. More information on human dimensions monitoring can be found in Chapter V, section B.



**Figure 2.** Substrate types classified based on high resolution multibeam sonar, along the western edge of the reserve and outside the reserve, and based on observations with a video lander within the reserve in 2010 and 2011.

# Monitoring

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Monitoring serves two purposes in the implementation of Oregon’s marine reserves. First, to implement specific aspects of the marine reserve goal and objectives (i.e. provide a framework for research and monitoring, and serve as reference areas). Second, to gather information needed for evaluation of marine reserves; to understand over time if, where, and to what degree marine reserve sites and the system as a whole are meeting the marine reserve goal and objectives established by the OPAC. The following sections provide the ecological and human dimensions monitoring strategies for Oregon’s limited system of marine reserves developed to meet these two purposes.

## A. Ecological

The ecological monitoring research questions, metrics, field sampling activities, and data analyses are designed to derive the necessary ecological information needed for marine reserves evaluation and to support nearshore resource management in general.

The OPAC policy recommendations, described in Chapter II of this management plan, provide three main themes that drive the design and execution of ODFW’s ecological monitoring:

- Using marine reserves as a tool to protect species, habitats, and biodiversity.
- Using marine reserves as a reference area to deduce natural from human-induced changes in the environment.
- Evaluating the effectiveness of marine reserves as a management tool to achieve the protection and reference area purposes listed above.

Using marine reserves as reference areas and evaluating reserve effectiveness requires monitoring that:

- Examines species and habitats to determine change or variation over time.
- Compares the marine reserve area with similar areas that are not in protected status to see if changes differ over time between the sites.

ODFW’s long-term ecological monitoring is designed to address the following aspects of the marine reserves evaluation:

- Determine the effectiveness of marine reserves in conserving certain species, habitats, biodiversity or certain aspects of the ecosystem.
- Determine if marine reserves serve as ecological reference areas which allow us to deduce natural from human-induced changes to certain species, habitats, or certain aspects of the ecosystem and measure these changes over time.

- Determine if marine reserves increase our knowledge of Oregon’s nearshore environment and resources. Use this information to support nearshore resource management.
- Determine if size, configuration, location and prohibitions of marine reserve sites and associated marine protected areas, and the system as a whole, allow scientific evaluation of ecological effects.

## A.1 Monitoring Plan

ODFW staff, with assistance and collaboration from external scientists and members of NSAT, drafted the *Oregon Marine Reserves Ecological Monitoring Plan* (Appendix A) designed for the long-term monitoring of Oregon’s limited system of marine reserve sites. The monitoring plan documents and describes the research questions, sampling design, metrics, sampling activities, and data analyses that are a part of the ecological monitoring conducted at Otter Rock and other sites that comprise Oregon’s system of marine reserves.

### A.1.a. Research questions

ODFW’s ecological monitoring efforts are focused on answering the following research questions:

1. What is the oceanographic condition of each site? How does it change over time?
2. What habitats exist within each site? How do they change over time?
3. What algal, invertebrate, and fish species exist at each site?
  - a. How do species biometrics change over time?
  - b. How does biodiversity change over time?
4. What are the species-habitat correlations at each site? How do they change over time?
5. Does the prohibition of extractive activities change the community structure of the reserve?
6. Are patterns or changes within the marine reserve consistent throughout the marine reserve system?

### A.1.b. Monitoring scheme

Monitoring is designed to sample in space, over time, and both within and outside of the Otter Rock site.

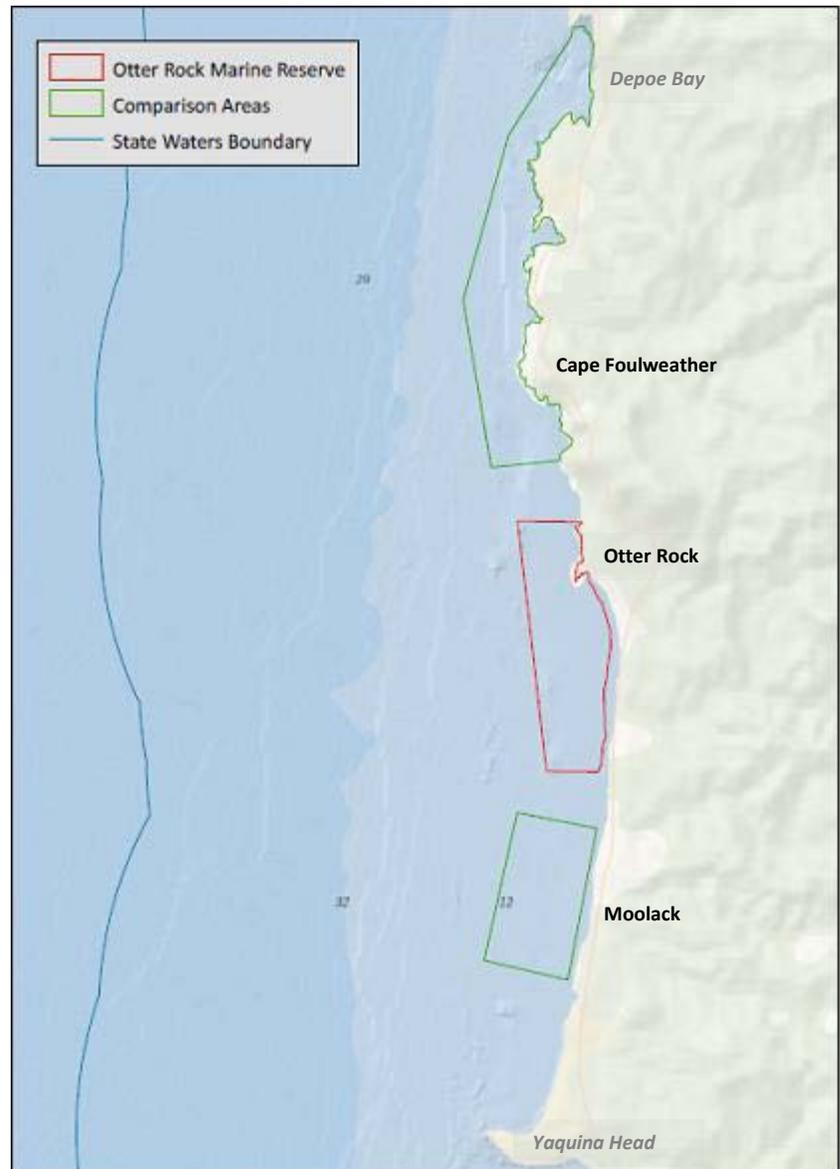
*Comparison Areas.* Two of the core components of marine reserve monitoring are separating natural changes in species and habitats from human-caused changes, and determining if marine reserves are effective in conserving certain species and habitats. To accomplish this, the Otter Rock site needs to be compared before and after protective measures are put in place, and with areas that do not have the marine reserve protections. Over the past couple decades this has been the approach of choice for scientifically rigorous and defensible studies for differentiating natural from human-caused changes within an area and has been applied to marine reserve monitoring elsewhere in the world (Michellie et al. 2004). Each marine reserve site is therefore paired to other areas referred to as comparison areas (i.e. scientific controls) to be monitored alongside the marine reserve.

Comparison areas are chosen based on similarities in habitat, depth, species, oceanography, and fishing pressure to that of the marine reserve site. ODFW staff worked with local Depoe Bay fishermen and Oregon Coast Aquarium dive staff familiar with the area to identify comparison areas. Two comparison areas have been identified for Otter Rock, one at Cape Foulweather and a second at Moolack (Figure 3).

*Sampling Approach.* Sampling at the site and comparison areas is designed to:

1. Characterize the habitat, oceanographic condition, and species that exist at each site.
2. Determine whether or not the marine reserve (prohibition of extractive activities) changes the environment over time.
3. Determine which components of the environment are affected.
4. Estimate the magnitude of the effects.

The approaches to sampling include general site characterization, systematic rapid assessment, and detailed assessment. The general site characterization, systematic rapid assessment, and detailed assessment are conducted during the first two years, before the prohibition of extractive activities take effect, to generate a baseline for the site and comparison areas. The detailed assessment continues to be conducted over the long-term and occurs at the site and comparison areas both before and after the prohibition of extractive activities take effect. For the detailed assessment, sampling is divided between two bottom types: hard bottom and unconsolidated sediment. Each bottom type is stratified by depth and sampling is conducted randomly within each depth strata.



**Figure 3.** Otter Rock Marine Reserve and comparison areas at Cape Foulweather and Moolack.

*Focal Species.* While efforts are made to identify and enumerate all species sampled, sampling gear limitations and limited time, staff, and funds require that reporting and analysis focus on a select group of species for each marine reserve site. These focal species are chosen based on their ecological or economic importance and their potential to show a response, or change, to the marine reserve.

*Sampling Tools and Methods.* Sampling falls into four major categories: oceanographic assessment, seafloor mapping, visual surveys, and extractive surveys. Sampling tools and methods are chosen based on their ability to sample within given bottom types and to derive specific metrics. The methods are

integrated to collect a baseline/ $T_0$  and long-term data set to generate algal, invertebrate, and fish species biometrics and to characterize the general ecology and oceanography of the site.

## **A.2 Reporting and Review**

Detailed methods, analyses, and results from monitoring of the Otter Rock site and any additional sites within the limited-system are to be presented in biennial monitoring reports. The monitoring reports will be provided to NSAT, OPAC, and posted on the state's marine reserves website for access by the public. Adaptations to monitoring are anticipated over time as more is learned from monitoring activities. An extensive review of monitoring activities and updates to the ecological monitoring plan is expected to be conducted every five years, with assistance from external scientists and community members.

## **A.3 Field Logistics**

The majority of sampling is to be carried out between April and October, when the swell is smaller, for logistical and safety reasons. The degree of exposure to prevailing swell, currents, and winds affects the ability of researchers to access the site and comparison areas to conduct studies. The Otter Rock marine reserve is located in shallow water, with depth ranging from 3-5 fathoms. Sampling within the Cape Foulweather and Moolack comparison areas is also conducted within this depth range. For safety reasons, these shallow conditions require sampling to be conducted when the swell is 6 feet or less.

## **A.4 Procedures for Non-ODFW Researchers**

Non-ODFW researchers interested in conducting work within the Otter Rock site are to review the procedures for scientific research outlined in Chapter VII, section C of this site management plan. In addition, researchers are to review the guidelines and best practices provided in Chapter VIII that have been established by the U.S. Fish and Wildlife Service to avoid or minimize human disturbance to wildlife using National Wildlife Refuge islands and rocks located within the Otter Rock site. Researchers are also encouraged to review the Oregon Marine Reserves Ecological Monitoring Plan (Appendix A) and to coordinate or collaborate with ODFW marine reserves staff on research efforts.

## **A.5 Community Engagement Strategies**

Strategies, to be implemented by ODFW, for engaging the local community in ecological monitoring efforts have been developed in collaboration with NSAT. These strategies are outlined below. Additional strategies are likely to be identified in the future and specific activities implemented with continued collaboration between ODFW and NSAT.

*Use of Local Fishing Vessels.* When and where feasible, ODFW will look to contract local fishing vessels for use as research platforms to conduct marine reserves research and monitoring work. Vessels are contracted through the state's open competitive bidding process. Request for Proposals (RFP) are posted on-line on the state's Oregon Procurement Information Network (ORPIN) system at: <http://orpin.oregon.gov/open.dll/welcome>. Bids are scored based on estimated fees, qualifications/experience and project approach and the highest scoring bid is awarded the contract. Preference will be given in the qualifications/experience segment to local vessels, with captains and crew that have local knowledge of the areas of work. Vessels unable meet vessel requirements to conduct the work or are found unsafe are not to be awarded a contract. NSAT members will assist in advertising any posted RFP, encouraging local vessel owners to submit bids and engage in monitoring activities.

*Collaboration with the Oregon Coast Aquarium.* The Oregon Coast Aquarium is a private, not-for-profit aquatic and marine science educational facility located in Newport. Opportunities for ODFW and Aquarium staff to collaborate on specific monitoring and research, as well as scientific outreach, activities in conjunction with the Otter Rock site will continue to be sought and conducted.

*Citizen Science.* Volunteer opportunities may periodically be provided for volunteers to participate in ODFW led marine reserves research and monitoring activities. Opportunities will be announced to NSAT. Community team staff and members may be asked to help advertise specific opportunities and solicit volunteers. Volunteers must fill out an ODFW volunteer form before participating in any research or monitoring activity.

Currently, ODFW staff and funding resources are not available for the agency to lead development and implementation of dedicated citizen science projects. As the ODFW monitoring program matures and/or staff and funding resources evolve, opportunities may be explored to develop specific citizen science projects.

*Monitoring Reporting & Feedback.* Twice per year, in the spring and in the fall, ODFW will report on ecological monitoring activities to NSAT and local community members. ODFW will host informal meetings at local establishments or participate in local events in Depoe Bay, to share updates with local community members on monitoring activities, discuss analyses and results, and to converse about upcoming planned monitoring activities and opportunities for vessel contracts and community engagement. Discussions with members of the local fishing fleet may center on local knowledge and feedback for developing new, or re-tooling existing, monitoring activities. ODFW will work with NSAT members and City of Depoe Bay staff to advertise and solicit participation in any and all meetings. Presentations or updates may also be given at NSAT meetings, upon request by NSAT.

*Non-ODFW Research.* External scientists conducting marine reserves related research in the Otter Rock area are encouraged to work with NSAT and to consider use of local vessels, volunteer opportunities, or citizen science projects as part of their work. They are also encouraged to share the results of their work with ODFW, NSAT, and the Depoe Bay community. For external scientists looking for more information about any of the aforementioned, please contact ODFW program staff.

## B. Human Dimensions

Another key component of marine reserves implementation is monitoring of the human dimensions. Research questions, metrics, data collection methods, and data analyses are designed to derive the necessary social and economic information needed for marine reserves evaluation and to support nearshore resource management in general.

The OPAC policy recommendations, described in Chapter II of this management plan, provide several themes that drive the design and execution of ODFW's human dimensions monitoring:

- Using marine reserves in ways that are compatible with the needs of ocean users and coastal communities. Avoiding significant adverse social and economic impacts on ocean users and coastal communities.
- Using the marine reserves as reference areas for conducting ongoing research and monitoring. Using the research and monitoring information in support of nearshore resource management and adaptive management of marine reserves.
- Evaluating the effectiveness of marine reserves as a management tool that achieves the compatibility and reference area purposes listed above.
- Using marine reserves as reference areas and evaluating reserve effectiveness requires monitoring that examines direct and indirect social, cultural, and economic effects that are a result of the

marine reserve (i.e. prohibition of extractive activities) on ocean users and identified communities of interest and place.

ODFW's long-term human dimensions monitoring is designed to address the following aspects of the marine reserves evaluation:

- Determine if marine reserves increase our knowledge of Oregon's nearshore environment, resources, and uses. Ascertain if this information is being used to support nearshore resource management.
- Determine if size, configuration, location and prohibitions of marine reserve sites and associated marine protected areas, and the system as a whole, avoid significant adverse social and economic impacts to ocean users and coastal communities.

## **B.1 Monitoring Plan**

ODFW staff, with assistance and collaboration from external scientists and members of NSAT, drafted the *Human Dimensions Monitoring and Research* plan (Appendix B) designed for the long-term monitoring of Oregon's limited system of marine reserve sites. The monitoring plan documents and describes the objectives, sampling approaches, metrics, sampling activities, and data analyses that are a part of the human dimensions monitoring to be conducted at Otter Rock and other sites that comprise Oregon's system of marine reserves.

### **B.1.a. Research questions**

Human dimensions monitoring is designed to answer the following research questions:

1. Who are the consumptive users of the site, comparison areas, and general area? What are these uses? What is the level of consumptive use? How does this use change over time?
2. What are the general social, cultural, and economic drivers and characteristics of the communities of place? How are these variables tied to the site? How do these change over time?
3. What are the general attitudes and perceptions held by members of the various communities (place and interest) of implementation of the site? What are the motivating variables behind these attitudes and perceptions? How do these attitudes and perceptions change over time?
4. What are the potential social, cultural and economic effects to users and identified communities of displaced consumptive activities? How do these effects change over time?
5. Who, in general, are the non-consumptive users of the site, comparison areas, and general areas? What are these uses? What is the level of non-consumptive use? How does this use change over time?
6. What are the non-market variables connected to the site? What are the social, cultural and economic values associated with these variables and how do these values change over time?

### **B.1.b. Monitoring approach**

The above research questions serve as the foundation of the monitoring framework and guide monitoring strategies and activities for each reserve site. Monitoring has been designed to provide for area specific data and information, but also address a broader scope of research to add to Oregon's nearshore management efforts. Data collected during the first two years, before the prohibition of

extractive activities take effect, will be used to generate a baseline for each marine reserve site. Monitoring is focused on four main areas.

*General Social & Economic Characterization of the Area.* Development of a socio-cultural and economic characterization of the shore-side communities that could most directly be affected by the site. This includes information such as historical records, demographics including employment data, social structure, tribal or spiritual connections, cultural and social events, and economic drivers of the local markets. This characterization attempts to set the “back story” and monitoring parameters for these communities.

*Direct Use of the Area.* Understanding who is using the site. First, quantitatively and spatially analyze available commercial and recreational fisheries data. Sources of data include logbooks, port sampling, on-board observer programs, and interview or survey instruments. The analysis allows identification of physical areas of use, which fisheries are targeted in these areas, and communities of place that may be affected from a displacement or disruption of these activities. Second, gather both existing and new data on non-consumptive use of the ocean and shore area connected to the site. Socio-cultural and economic information is also collected from the direct users of the area through various methods.

*Attitude & Perception of Implementation.* To manage these protected areas it is imperative to understand the attitudes and perceptions of stakeholders toward the process of implementation, monitoring and research, and management and enforcement. Understanding these aspects will allow managers and communities to address any issues related to education and outreach that may assist the public in understanding the goals of the marine reserve and protected area, what is to be learned, how this information will be applied to policy and management of these areas, and how stakeholders are involved in the process. Collecting this information will allow adaptation of strategies to better serve Oregonians and enlist stakeholder engagement in the success of these areas.

*Assessment of the Non-market Aspects of the Area.* To completely understand the potential economic and social effects, both positive and negative, of these protected areas it is essential to identify the non-market variables connected to the sites. The first step to address this important research question is to develop a comprehensive list of leisure and recreational users of the areas. This list will allow for development of research strategies to measure the importance of these users to the local communities and the importance of these areas to these users.

In addition to non-consumptive user identification, research will also be conducted to identify and measure the different “values” associated with the natural resources and qualities of the areas, such as the ecosystem services and studies to measure the various “benefits” of the areas.

## **B.2 Reporting and Review**

Detailed methods, analyses, and results from monitoring of the Otter Rock site and additional marine reserve sites are to be presented in biennial monitoring reports. The monitoring reports will be provided to NSAT and posted on the state’s marine reserves website for access by the public. Adaptations to monitoring are anticipated over time as more is learned from monitoring activities. An extensive review of monitoring activities and updates to the monitoring plan should be conducted every five years, with assistance from external scientists and community members.

## **B.3 Community Engagement Strategies**

Strategies, to be implemented by ODFW, for engaging the local community in human dimensions monitoring efforts have been developed in collaboration with NSAT. These strategies are outlined below.

Additional strategies may be identified in the future and specific activities implemented with continued collaboration between ODFW and NSAT.

*Working with Local Liaisons.* ODFW will seek to continue providing monetary support to the City of Depoe Bay to contract a local resident to serve as a liaison between ODFW and local fishermen. The individual will be a person with a well established rapport within the fishing community in Depoe Bay. They will assist in data gathering and field work by identifying persons for interviewing, providing introductions and contact information, coordinating meetings with interviewees and performing other tasks that will assist in gathering information necessary to conduct long-term human dimensions monitoring of the Otter Rock site.

*Monitoring Reporting & Feedback.* Twice per year, in the spring and in the fall, ODFW will report on human dimensions monitoring activities to NSAT and local community members. ODFW will host informal meetings, over coffee at local establishments in Depoe Bay, to share updates with local community members on monitoring activities, discuss analyses and results, and to converse about upcoming planned monitoring activities and opportunities for contracts and community engagement. ODFW will work with NSAT members and City of Depoe Bay staff to advertise and solicit participation in any and all meetings.

*Non-ODFW Research.* External scientists conducting human dimensions related research in the Otter Rock area are encouraged to connect with and solicit feedback from NSAT. They are also encouraged to share the results of their work with ODFW, NSAT, and the Depoe Bay community. External scientists can contact ODFW program staff for more information.

# Outreach and Engagement

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ODFW staff, with assistance and collaboration from external experts and community members, will be developing a plan for long-term outreach, and public and community engagement to be used for Oregon's limited system of marine reserve sites. Once completed, this plan will be added as an appendix to this management plan.

## A. Goals and Objectives

The goals and objectives for outreach and engagement are developed to meet the following OPAC planning and implementation principles and guidelines (OPAC 2008):

- 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.
- 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.
- 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.
- Education and economic development opportunities that are compatible with the goal of conserving marine habitats and biodiversity will be encouraged.

### A.1 Goals

- The public understands the marine reserves goal and process and is able to engage in implementation in a meaningful way
- The public has access to research and monitoring information used in and collected from marine reserves implementation
- Marine reserves are an opportunity for the public to engage in cooperative and collaborative research, monitoring, and compliance activities
- The public has the necessary information and tools to comply with marine reserves regulations
- Marine reserves implementation helps build capacity within local communities' for stewardship of ocean resources
- Marine reserve implementation is transparent to the public

## A.2 Objectives

- To provide relevant information to the general public regarding marine reserves policy and implementation, thereby increasing the public's awareness and knowledge about marine reserve implementation
- To increase the public's and decision makers' knowledge of the ecological and human dimensions research being conducted, thereby increasing their understanding of marine reserves and ocean resources in general
- To create meaningful opportunities for the general public to provide information and feedback to ODFW marine reserves staff
- To provide a meaningful way for communities associated with marine reserve sites to engage in research, monitoring, and compliance activities
- To encourage communities associated with marine reserve sites to develop site specific goals that are compatible with the goals and objectives of marine reserves

## B. Outreach Strategies

The following outreach strategies, to be implemented by ODFW for the Otter Rock site, have been developed in collaboration with NSAT and the NSAT human dimensions working group. For information about the community of Depoe Bay's priorities for education and outreach, please see Appendix D.

### B.1 Signs

Marine reserve interpretive and regulatory signs will be designed by ODFW and the Oregon Parks and Recreation Department, with assistance from members of NSAT, the NSAT human dimensions working group, and Oregon State Police. The signs will be posted at strategic locations. Interpretive signs will provide the general public basic information about the goal of Oregon's marine reserves, ecological and human dimensions monitoring occurring at the Otter Rock site, and the communities of interest and place associated with the site. The regulatory signs provide ocean users and the public with a map, boundary coordinates, and a summary of the prohibitions and allowances of the Otter Rock site.

### B.2 Brochures

Marine reserve informational brochures are to be designed by ODFW and the Oregon Parks and Recreation Department, with assistance from members of the NSAT human dimensions working group. Brochures are to be distributed and provided at strategic locations. The brochures will provide the general public basic information about the goal of Oregon's marine reserves, ecological and human dimensions monitoring occurring at the Otter Rock site, and the communities of interest and place associated with the site.

### B.3 Website

ODFW and the Department of Land Conservation and Development will revamp the state's marine reserves website to focus on marine reserves implementation. Site specific information on the Otter Rock site will be provided on the website. The state's marine reserves website is located at: [www.oregonocean.info/marinereserves](http://www.oregonocean.info/marinereserves).

# Compliance and Enforcement

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Enforcement of marine reserve sites is carried out by the Fish and Wildlife Division of the Oregon Department of State Police (Oregon State Police). Surveillance of sites is conducted by land and on the water by boat. Penalties for the take or attempt to take of fish, invertebrate, or wildlife species within a marine reserve site are dictated by the wildlife code (Chapter 496) and commercial fishing code (Chapter 506) within Oregon Revised Statutes.

Compliance and enforcement strategies, to be implemented by ODFW, have been developed in consultation with Oregon State Police and members of NSAT. Strategies include outreach, procedures for removing lost fishing gear, procedures for scientific research, and monitoring and review of enforcement. The local communities of Depoe Bay and Otter Rock have a large influence and will play a significant role in compliance with the Otter Rock rules.

## A. Outreach

There are several strategies ODFW will use to reach and provide information to commercial fishermen, sport fishermen, and the general public on the prohibitions and allowances at the Otter Rock site.

### A.1 Signs

Two types of signs, regulations signs and interpretive signs, will be posted at strategic locations. Signs are to be designed and sign locations determined in consultation with Oregon State Police and members of NSAT.

### A.2 Leaflets

Leaflets that include a map of the Otter Rock site, boundary coordinates, and a summary of the regulations will be developed in consultation with Oregon State Police. Leaflets may be distributed as handouts or in mailers.

### A.3 Website

Site coordinates, regulations, and a map of the Otter Rock site will be available on the state's marine reserves website ([www.oregonocean.info/marinereserves](http://www.oregonocean.info/marinereserves)) and on the ODFW Marine Resources Program website ([www.dfw.state.or.us/MRP/](http://www.dfw.state.or.us/MRP/)).

### A.4 Synopsis of Commercial Fishing Regulations

Site coordinates and a synopsis of the prohibitions and allowances at the Otter Rock site will be posted in the annual Synopsis of Oregon Commercial Fishing Regulations produced by ODFW.

### **A.5 Sport Fishing Regulations Pamphlet**

Information on the Otter Rock site will be posted in the annual Oregon Sport Fishing Regulations pamphlet, within the Marine Zone section under Special Regulations.

## **B. Procedures for Retrieval of Lost Fishing Gear**

Marine reserve regulations include a provision for the retrieval of fishing gear that has accidentally drifted into the Otter Rock site.

### **B.1 Notify Oregon State Police**

The retrieving vessel operator must notify Oregon State Police at 1-800-452-7888 and receive permission before retrieving the gear. No species may be retained from the retrieved gear.

### **B.2 Additional Provisions for Commercial Crab Pots**

- If the pot(s) do not belong to the retrieving vessel, the vessel operator must follow the retrieval requirements set forth in OAR 635-005-0490.
- If the pot(s) do belong to the retrieving vessel, the vessel operator may re-set the pot(s) outside of the reserve area, pursuant to the requirements set forth in OAR 635-005-0490.

## **C. Procedures for Scientific Research**

### **C.1 Scientific Research That May Include Take**

A Scientific Taking Permit is required to “take” fish and marine invertebrates for scientific or educational purposes from any waters belonging to the state of Oregon (OAR 635-007 and 635-043). “Take” as defined in Oregon Administrative Rule (OAR 635-012) means to “fish for, hunt, pursue, catch, capture or kill or attempt to fish for, hunt, pursue, catch, capture or kill.” Take includes the use of all fishing gear and methods that affect an animal’s behavior or movement.

Marine reserve regulations include a provision for scientific take in the Otter Rock site (OAR 635-012). The take must be deemed necessary and contribute to the evaluation of site condition, effectiveness, or impact of stressors (OPAC 2008). The following procedure is for non-ODFW researchers looking to conduct research that may include scientific take in the Otter Rock site or any other marine reserve site.

#### **C.1.a. Scientific Taking Permit Required**

Researchers must apply for and obtain an Oregon Scientific Taking Permit in order to conduct scientific research that may include take in any marine reserve site.

In addition to the standard information required in the permit application, the following information must be provided:

- Detailed project description, including identification of marine reserve site(s) where work is to be conducted, and how project will contribute to the monitoring or scientific study of the site(s).
- Rationale for why the take of species is necessary for monitoring or scientific study in order to evaluate reserve condition, effectiveness, or impact of stressors. And why alternative, no-take, methods are not practicable.

- Rationale for species and amount of take requested.
- Under the application section, “measures to minimize negative effects” describe measures that will be taken to minimize impacts to species and habitats located within the site(s).

All Scientific Taking Permit applications are reviewed by the appropriate ODFW District Fish Biologist and/or Marine Resources Program biologist depending on the research location. Applications for marine reserve sites will undergo an additional review by ODFW marine reserves staff. Permits may take up to eight weeks for processing. For more information or to apply for a permit visit the ODFW website at: [http://www.dfw.state.or.us/fish/license\\_permits\\_apps/scientific\\_taking\\_permit.asp#oar](http://www.dfw.state.or.us/fish/license_permits_apps/scientific_taking_permit.asp#oar).

### **C.1.b. Notification of Research Activity**

The Principle Investigator (PI) named on the Scientific Taking Permit, must notify ODFW marine reserves staff at (541) 867-7701, ext. 228 and Oregon State Police at 1-800-452-7888, 24 hours prior to conducting research within the Otter Rock site or any other marine reserve. The PI is required to provide the date of activity, vessel name, vessel ID number, gear to be deployed, and the species to be collected.

## **C.2 Research Requiring Authorization from Department of State Lands**

An authorization or removal-fill permit from the Oregon Department of State Lands (DSL) is required in order to conduct activities that may include structures in, on, under or over the seafloor or the removal, fill, and/or alteration of material (rock, gravel, sand, silt and other inorganic substances). DSL marine reserve regulations include provisions for research in marine reserve sites that require authorization or removal-fill permits (OAR 141-142). DSL will only grant an authorization or a removal-fill permit if activities are deemed necessary to study, monitor, evaluate, enforce or protect a marine reserve site. In addition, DSL may grant an authorization for harvest or removal of subtidal kelp and other seaweeds (algae) in order to study, monitor, evaluate, enforce or otherwise further the purpose of the marine reserve site.

Authorizations for scientific experiments are issued under special use authorization rules by DSL (OAR 141-125). The different types of authorizations may include:

- **Short term access agreements:** Issued for a term of less than one year. No application fee, no compensation (rent). The authorization has some indemnification language. Appropriate for short term research including the placement of instrumentation for a limited duration.
- **Special use licenses (less than 3 years) and special use leases (up to 30 years):** Both authorizations have an application fee, compensation and insurance requirements. Appropriate for the establishment of research projects that include long term placement of scientific equipment.

### **C.2.a. Applications for Authorizations and Removal-Fill Permits**

Researches must apply for and obtain any necessary authorization or removal-fill permit from DSL prior to conducting the research activity within the marine reserve site. The proposed activities must meet the requirements of OAR 141-142-0020(1) and the marine reserve site management plan(s).

In addition to the standard information required in the application to DSL, the following information must be provided:

- Detailed project description, including identification of marine reserve site(s) where work is to be conducted, and how project will contribute to the monitoring or scientific study of the site(s).
- Rationale for why the activity is necessary for monitoring or scientific study to evaluate reserve condition, effectiveness, or impact of stressors. And why alternative methods are not practicable.
- Description of measures that will be taken to minimize impacts to species and habitats located within the site(s).

### **C.2.b. Applications for Subtidal Kelp and Seaweed Collection**

Researches must apply for and obtain authorization by DSL to harvest or remove subtidal kelp or other seaweeds (algae).

In addition to the standard information required in the application to DSL, the following information must be provided:

- Detailed project description, including identification of marine reserve site(s) where work is to be conducted, and how project will contribute to the monitoring or scientific study of the site(s).
- Rationale for why the harvest/removal of specimens is necessary for monitoring or scientific study to evaluate reserve condition, effectiveness, or impact of stressors. And why alternative methods are not practicable.
- Rationale for which types of kelp or other algae are to be harvested/removed and amount of take requested.
- Description of measures that will be taken to minimize impacts to species and habitats located within the site(s).

### **C.2.c. Notification of Research Activity**

The Principle Investigator (PI) named on the Authorization or Removal-Fill Permit, must notify ODFW marine reserves staff at 1-541-867-7701, x228 and Oregon State Police at 1-800-452-7888, 24 hours prior to conducting research within the Otter Rock site or any other marine reserve. The PI is required to provide the date of activity, vessel name, vessel ID number, and activity to be performed.

## **C.3 Research Requiring Permit from Oregon Parks and Recreation Department**

A permit from the Oregon Parks and Recreation Department (OPRD) is required in order to engage in a prohibited activity (listed below) for scientific research or monitoring purposes within the Ocean Shore State Recreation Area (Ocean Shore). The Ocean Shore as provided in ORS 390.605(2), means the land lying between extreme low tide of the Pacific Ocean and the statutory vegetation line as described by 390.770 or the line of established upland shore vegetation, whichever is farther inland. It is necessary that the activity be consistent with the purposes of the Marine Reserve.

### **Prohibited activities:**

- (a) Collect, pick, cut, mutilate or remove living or non-living natural products (e.g., marine plants, minerals, shells, rocks, and sand);

- (b) Give or offer food items to any wildlife;
- (c) Pursue, injure, or molest any wildlife or disturb their habitats;
- (d) Dig up or remove any soil, sand, rock, or fossil materials; or
- (e) Disturb or remove any archaeological, cultural, or historical material.

Researchers must apply for and obtain an OPRD scientific research permit in order to conduct any of the above prohibited activities within a marine reserve. In addition to the standard information required in the permit application, the following information must be provided:

- Detailed project description, including identification of marine reserve site(s) where work is to be conducted, and how project will contribute to the monitoring or scientific study of the site(s).
- Rationale for why the prohibited activity is necessary for monitoring or scientific study to evaluate reserve condition, effectiveness, or impact of stressors and why alternative methods are not practicable.
- Description of measures that will be taken to minimize impacts to species and habitats located within the site(s).

All applications are reviewed by the appropriate OPRD Stewardship Division staff and relevant park staff. For more information or to apply for a permit visit the OPRD website at:

<http://www.oregon.gov/OPRD/NATRES/permitting.shtml>

## D. Monitoring and Review

Oregon State Police will conduct monitoring of enforcement efforts at the Otter Rock site and use the monitoring information to evaluate compliance and enforcement of the site. ODFW, OPRD, and Oregon State Police staff will meet two times per year to review compliance and enforcement efforts and determine if adjustments are needed. Workshops with the fishing fleet, sport fishermen, or the general public may be used to disseminate information or to discuss and gain feedback on specific compliance or enforcement issues.

# Management Strategies for Disturbance Issues

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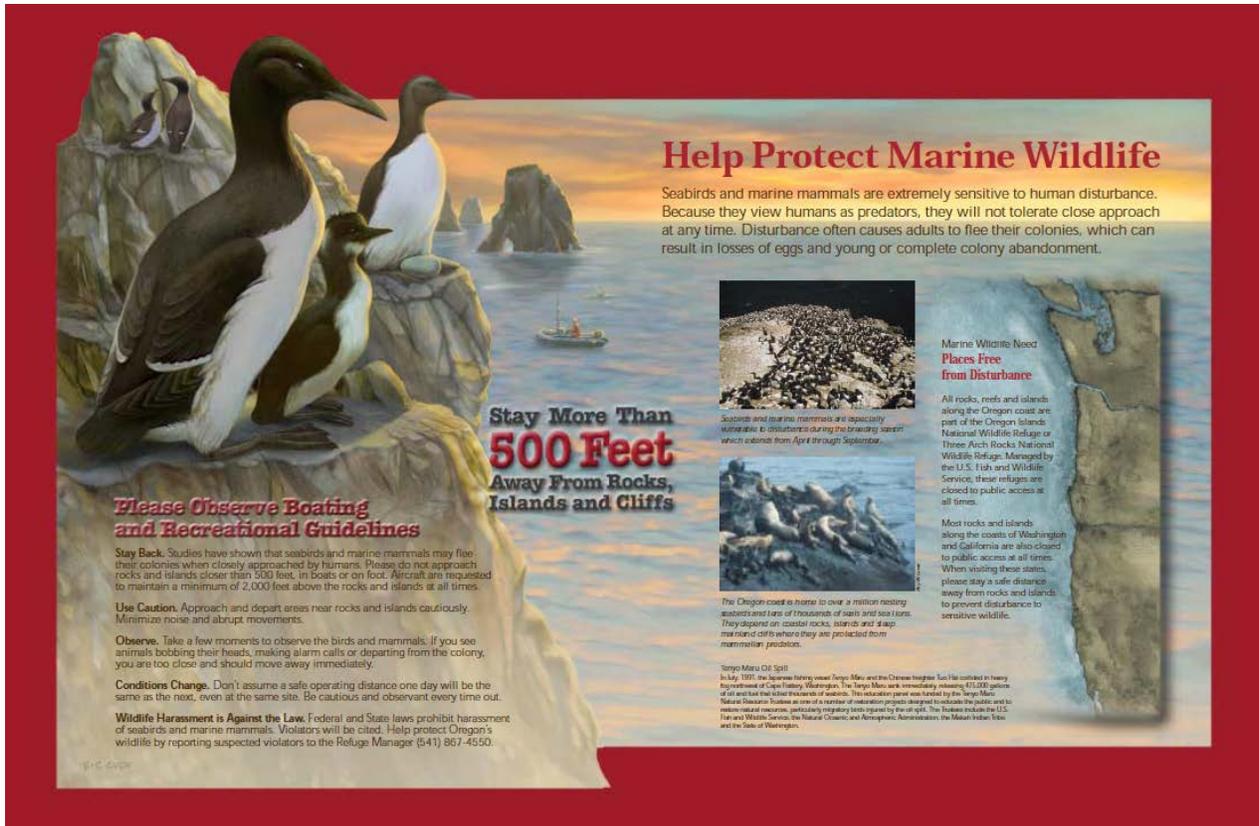
This Chapter provides non-regulatory management strategies used to avoid or minimize wildlife and habitat disturbance issues, consistent with the marine reserves goal, objectives, and planning and implementation principles and guidelines. Issues and strategies are identified and developed by ODFW in collaboration with NSAT and may involve other state or federal agencies as appropriate.

Through ongoing monitoring efforts, we may learn more about potential disturbances to wildlife and habitat. A review of issues and strategies will be conducted every five years as part of the implementation review (described in Chapter III). The review may trigger adaptations to strategies and updates to this segment of the site management plan.

## A. Oregon Islands National Wildlife Refuge: Wildlife Disturbance

The offshore islands, and emergent rocks and reefs located within the Otter Rock site are part of the Oregon Islands National Wildlife Refuge and Oregon Islands Wilderness, managed by the U.S. Fish and Wildlife Service (USFWS). Seabirds and pinnipeds spend the majority of their life at sea foraging on marine fishes and invertebrates and return to land for breeding, loafing, and roosting. The islands and emergent rocks and reefs that comprise the Oregon Islands National Wildlife Refuge provide habitat that is important for vulnerable eggs, young, and adults. The refuge is closed to public access at all times to minimize human disturbance to wildlife.

Motorized and non-motorized watercraft approaching too close to the refuge have a high potential for disturbing seabirds and pinnipeds and can result in the reduction or loss of eggs and chicks, and in some cases in colony or rookery abandonment. Low flying aircraft have a high potential for disturbing seabird nesting grounds and pinniped breeding and resting sites (USFWS 2009). USFWS has developed guidelines and best practices for boaters, aviators, and wildlife viewers to avoid or minimize human caused disturbances to wildlife using the refuge islands, rocks, and reefs. USFWS advises all motorized and non-motorized watercraft to remain at least 500 feet away from all islands and emergent rocks and reefs associated with the Oregon Islands National Wildlife Refuge. Watercraft venturing closer than 500 feet may disturb wildlife and place the boat operator in violation of the Migratory Bird Treaty Act. USFWS requests aircraft pilots maintain an altitude of 2,000 feet above ground level or maintain one-half mile lateral distance from all coastal rocks and islands. Overflights lower than 2,000 feet AGL or closer than one-quarter to one-half mile have a high potential for disturbing seabird nesting grounds and pinniped breeding and resting sites.



**Figure 4.** USFWS sign, posted at the Port of Port Orford, describing boating and recreational guidelines to avoid or minimize human disturbance to wildlife.

**A.1 Strategies**

ODFW will assist USFWS by promoting and educating boaters, aviators, researchers, wildlife viewers, and the general public about USFWS guidelines and best practices for avoiding or minimizing human disturbance to wildlife.

**A.1.a. Boaters, Aviators, Wildlife Viewers, and the General Public**

Incorporate guidelines and best practices into outreach materials for the Otter Rock site. Provide the public with easy access to USFWS outreach materials and information including brochures at strategic locations in and around Depoe Bay and Otter Rock, and links to USFWS materials in this management plan and on the Oregon Marine Reserves website ([www.oregonocean.info/marinereserves](http://www.oregonocean.info/marinereserves)).

**A.1.b. Scientific Researchers**

Provide information to researchers about USFWS best practices and contact information for Oregon Islands National Wildlife Refuge staff for questions or consultation.

**B.1 Additional USFWS Information Resources**

- Oregon Islands National Wildlife Refuge website: [www.fws.gov/oregoncoast/oregonislands/](http://www.fws.gov/oregoncoast/oregonislands/)
- Map of Oregon Islands National Wildlife Refuge:  
[www.fws.gov/oregoncoast/images/maps/ORG\\_public\\_111607.pdf](http://www.fws.gov/oregoncoast/images/maps/ORG_public_111607.pdf)
- Pacific Northwest Seabirds brochure: [www.fws.gov/oregoncoast/PDF/seabird%20brochure-final\\_sm.pdf](http://www.fws.gov/oregoncoast/PDF/seabird%20brochure-final_sm.pdf)
- Catalog of Oregon Seabird Colonies: [www.fws.gov/oregoncoast/seabird\\_colony\\_catalog.htm](http://www.fws.gov/oregoncoast/seabird_colony_catalog.htm)
- Oregon Islands, Three Arch Rocks, and Cape Meares National Wildlife Refuges: Comprehensive Conservation Plan and Wilderness Stewardship Plan:  
[www.fws.gov/oregoncoast/CCP\\_ORG\\_CPM\\_TAR.htm](http://www.fws.gov/oregoncoast/CCP_ORG_CPM_TAR.htm)

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# Appendices

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- A. Oregon Marine Reserves: Ecological Monitoring Plan (available at: [www.oregonocean.info/marinereserves](http://www.oregonocean.info/marinereserves))
- B. Oregon Marine Reserves: Human Dimensions Monitoring and Research Plan (available at: [www.oregonocean.info/marinereserves](http://www.oregonocean.info/marinereserves))

**Appendix D**

Updated April 14, 2011

**Otter Rock Marine Reserve  
Human Dimensions Working Group****Statement of Purpose:**

Work with ODFW and NSAT to support and promote the Otter Rock marine reserve by developing strategic education and engagement opportunities for our target audiences.

**Goals:**

1. Cultivate a working group that represents a diversity of the stakeholders (communities, agencies, and individuals) connected to the marine reserve.
  - Add Depoe Bay resident
  - Add a state parks and recreation representative
2. Inform target audiences about the Otter Rock marine reserve and its purpose.
  - Fishermen
  - Local businesses
  - Watershed councils
  - Conservation groups
  - Non-consumptive users
  - Local residents
3. Assist target audiences in understanding the short and long-term effects of the marine reserve.
  - Fishermen
  - Non-consumptive users
  - Local residents
  - Local businesses
4. Assist target audiences in understanding the regulations of the marine reserve.
  - Fishermen
  - Non-consumptive users
  - Conservation groups
  - Watershed councils
5. Assist target audiences in understanding ecosystem-based management and the science behind the Otter Rock marine reserve.
  - Fishermen
  - Non-consumptive users
  - Educational institutions
6. Create a sense of ownership for the marine reserve in local communities.
  - Local residents
  - Local businesses
  - Fishermen

7. Create a model and best practices for marine reserve community engagement, research, and outreach.
  - Marine Reserve working groups
  - ODFW

Messages:

Purpose – Messages will be used internally by the committee to define and focus the content areas of future materials.

- 1) The coast of Oregon is home to a rich diversity of species. There are competing needs for ocean uses that must be balanced.
- 2) Marine Reserves in Oregon are being used as a tool to protect biodiversity and habitats.
- 3) There are economic advantages and disadvantages to marine reserves.
- 4) Marine reserves are used to manage an area at an ecosystem level rather than by individual species.
- 5) Marine reserves are like wildlife refuges on land.
- 6) Researchers are monitoring the marine reserves by collecting a variety of different data types. There is much we can learn from this information that will help us manage our resources.
- 7) Oregon Marine reserves are a state designation and are found in state waters.

Project Criteria

- 1) Projects must meet one of the education and outreach goals.
- 2) Projects must reach one of the primary target audiences for the goal.
- 3) Projects must be fundable.
- 4) Projects must communicate content identified by the primary messages.
- 5) Projects should be replicable or be a model for other marine reserve projects.
- 6) When possible, projects should allow for collaboration with other marine reserve sites.

# References

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