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CAPE FALCON MARINE RESERVE SITE MANAGEMENT PLAN

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OREGON
Fish & Wildlife

Marine
Resources

ACKNOWLEDGMENTS

Many thanks to all the individuals that donated their time and hard work, contributing to the development of the management strategies for the Cape Falcon Marine Reserve site and this document.

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ACRONYMS & ABBREVIATIONS

Cape Falcon Site	Cape Falcon Marine Reserve and Marine Protected Areas
DSL	Oregon Department of State Lands
MPA	Marine Protected Area
ODFW	Oregon Department of Fish and Wildlife
OPAC	Ocean Policy Advisory Council
OPRD	Oregon Parks and Recreation Department
OSP	Oregon State Police
RFP	Request for Proposals
STAC	Scientific and Technical Advisory Committee
USFWS	U.S. Fish and Wildlife Service

ICON LEGEND

Here are several icons you will find throughout this document, to help you navigate throughout the management plan.

FREQUENTLY ASKED QUESTION
Answers to some of our most frequently asked questions.

MANDATE
A requirement, or guiding principle, that is to be carried out in the planning or implementation of marine reserves. Mandates come from state statutes, agency administrative rules, or policy recommendations from OPAC.

PROCEDURE
A procedure to be followed in order to stay in compliance with marine reserve administrative rules.

FIND OUT MORE
Where you can find more information.

KEY STRATEGIES
Management strategies that ODFW and our state agency management partners are committed to carrying out for the marine reserve sites.

SITE SPECIFIC STRATEGY
A management strategy that has been developed specially for the Cape Falcon site.

CHAPTER 1. INTRODUCTION
OREGON'S MARINE RESERVES & HOW TO USE THIS PLAN

A. OREGON'S MARINE RESERVES AND THE ODFW MARINE RESERVES PROGRAM

Marine reserves are areas in Oregon's coastal waters dedicated to conservation and scientific research. In 2012, Oregon completed designation of five marine reserve sites. The Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks sites are each named after local natural landmarks. These sites are managed as a system by the State of Oregon, with the Oregon Department of Fish and Wildlife (ODFW) as the lead management agency.

ODFW's Marine Reserves Program is responsible for overseeing the management and scientific monitoring of the reserve sites. The team includes six full-time staff located in Newport, Oregon. The program's responsibilities include scientific monitoring, developing and implementing site management plans, providing information to the public, engaging communities, and supporting compliance and enforcement. Four additional state agencies share management responsibilities with ODFW.

In the year 2023, the Oregon Legislature has called for an evaluation of the Oregon Marine Reserves Program. This evaluation will reflect upon all aspects of the program including the management, scientific monitoring, outreach, community engagement, compliance, and enforcement of the five reserve sites. It also marks the first point at which the state may consider adaptive management of the marine reserve system, including the role of reserves as a nearshore resource management tool moving into the future.

Parks and Recreation Department (OPRD)
Regulates shoreline activities, including removal of natural products and other activities requiring an ocean shore permit. Provides interpretative and educational opportunities to enhance recreational experiences.

Department of State Lands (DSL)
Regulates submerged and submersible land uses that require state authorization or a removal-fill permit, including harvest of subtidal kelp and the siting of ocean renewable energy projects and submarine cables.

WHAT IS A MARINE RESERVE?
Marine reserves are areas in our coastal waters dedicated to conservation and scientific research. All removal of marine life is prohibited, as is ocean development.

AND A MARINE PROTECTED AREA?
Marine Protected Areas (MPAs) are adjacent to the reserves. Ocean development is still prohibited, but some fishing activities are allowed. Rules are specific to each protected area.

HOW WERE THE LOCATIONS CHOSEN?
Local communities worked with state officials to site Oregon's reserves in areas that would provide ecological benefits while also avoiding significant negative impacts to ocean users and coastal communities (following Governor's Executive Order 08-07). The sites are located within Oregon's state waters, all within 3 nautical miles from land

B. OUR PROGRAM'S PRINCIPLES

The ODFW Marine Reserves Program is entrusted with leading the management and scientific monitoring of Oregon's marine reserve system. Our staff have developed the following program principles that serve as a daily guide to our work, help our program evolve as we learn and adapt, and ensure that we focus and stay true to the tasks that Oregonians have entrusted to us.

The ODFW Marine Reserves Program's principles hold that we are committed to:

- **MEETING OREGON'S MARINE RESERVE MANDATES** Our work is devoted to implementing the marine reserves mandates provided by the Oregon Legislature and the Ocean Policy Advisory Council.

- **PRODUCING ROBUST SCIENTIFIC INFORMATION** We do rigorous scientific monitoring and research that provides information to support marine reserves and nearshore ocean management.

- **PROVIDING DIVERSE WAYS FOR PEOPLE TO ENGAGE** We foster and support a diversity of ways for people with different interests, spanning different age groups and generations, to engage in marine reserves implementation.

Oregon State Police (OSP)
Provides enforcement of the regulations associated with each site. Provides information and education in support of voluntary compliance.

Department of Land Conservation and Development
Administers the Oregon Territorial Sea Plan, which provides the legal and regulatory framework for management of the Territorial Sea. Provides staff support for the Ocean Policy Advisory Council (OPAC).

- **BUILDING PARTNERSHIPS AND COLLABORATIONS TO SUPPORT IMPLEMENTATION** We build partnerships with academic institutions, conservation organizations, the fishing industry, local community groups and beyond to support and bolster implementation efforts.

- **PROVIDING TRANSPARENCY AND SHARING AS WE GO** We document and clearly communicate our work and how it ties to our mandates. We are transparent in our Program's activities and operations.

C. HOW TO USE THIS DOCUMENT

The *Cape Falcon Marine Reserve Site Management Plan* outlines the state's marine reserve mandates and describes the management strategies that have been developed for the site. The Cape Falcon site includes a marine reserve and two Marine Protected Areas (MPAs). This plan has been developed by ODFW staff with assistance and collaboration from state and federal agencies, local community members, and other interested stakeholders. This site management plan can be used in the following ways:

- To understand the state's mandates guiding the implementation of Oregon's marine reserve sites and the ODFW Marine Reserves Program.
- To see the state's and communities' priorities for the management of the Cape Falcon site.
- To see the management strategies that ODFW and our state agency management partners are committed to carrying out for the Cape Falcon site. These management strategies have been developed to support scientific monitoring, provide information to the public, engage communities, and to support compliance and enforcement.
- To understand the local communities' interests for activities above and beyond what is being carried out by ODFW or our state agency management partners. By highlighting the communi-

ties' interests we hope to attract additional research and resources, and to foster community led projects.

By documenting priorities and management strategies here in the management plan we hope to spur additional support and engagement, and attract complementary actions by others, to further assist with implementation of the Cape Falcon site. As implementation of the site evolves over time, the *Site Management Plan* will be reviewed and updated at least every ten years with input and assistance from local communities and other interested stakeholders.

D. WHERE TO FIND MORE INFORMATION

	VISIT THE STATE'S OFFICIAL OREGON MARINE RESERVES WEBSITE AT OREGONMARINERESERVES.COM
	STAY UP TO DATE WITH OUR MONTHLY E-NEWSLETTER, SIGN-UP AT OREGONMARINERESERVES.COM/NEWSLETTER
	FIND FISHING RULES, MAPS, AND BOUNDARY COORDINATES AT OREGONMARINERESERVES.COM/RULES
	FIND PHOTOS AND UNDERWATER VIDEOS AT OREGONMARINERESERVES.COM/MEDIA
	VISIT OUR LIBRARY TO FIND RESEARCH REPORTS, OUTREACH MATERIALS, CONTRACT APPLICATIONS AND MORE AT OREGONMARINERESERVES.COM/LIBRARY

CHAPTER 2. MARINE RESERVE MANDATES
REQUIREMENTS & GUIDING PRINCIPLES

In this chapter we provide an overview of the state's mandates for Oregon's marine reserves. Mandates are the requirements, as well as guiding principles, for the planning and implementation of the reserves as necessitated by state statute, administrative rule, or policy guidance. In subsequent chapters we outline the priorities and specific management strategies that ODFW and our state agency management partners will be implementing for the Cape Falcon site in order to best meet these mandates.

A. WHERE ARE THE MANDATES FROM?

A.1 STATUTES (ORS)

The Oregon Legislature has passed two marine reserves bills, one in 2009 and one in 2012. Oregon Revised Statutes (ORS) 196.540 through 196.555 provide instructions to state agencies and set siting, planning, and implementation requirements for the Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks sites. The ORS also call for an evaluation and report on the Oregon Marine Reserves Program due to the Oregon Legislature in the year 2023.

A.2 ADMINISTRATIVE RULES (OARs)

Site boundaries, as well as the prohibited and allowed activities for marine reserves and MPAs are set in state agency administrative rules (OARs) by three state agencies. In 2009 and 2012, OARs were adopted for the Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks sites by the State Land Board, the Fish and Wildlife Commission, and the Parks and Recreation Commission: OAR 141-142 (DSL), OAR 635-012 (ODFW), and OAR 736-029 (OPRD).

WHERE TO FIND THE STATUTES AND RULES

OREGONMARINERESERVES.COM/LIBRARY/#POLICY

WHAT DO YOU MEAN BY MANDATE?
Mandates are the requirements, as well as guiding principles, to be carried out for the planning and implementation of Oregon's marine reserves.

WHERE DO THE MARINE RESERVE MADATES COME FROM?

- **STATUTES** - Passed by the Oregon Legislature
- **AGENCY ADMINISTRATIVE RULES** - Adopted by state agency Commissions and Boards
- **POLICY RECOMMENDATIONS** – Developed by the Ocean Policy Advisory Council

DEPARTMENT OF STATE LANDS (DSL)
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 and the siting of ocean renewable energy projects and submarine cables.

DEPARTMENT OF FISH AND WILDLIFE (ODFW)
Rules regulate fishing, hunting and take of fish, invertebrate, and wildlife species.

PARKS AND RECREATION DEPARTMENT (OPRD)
Rules regulate shoreline activities including extraction of living (i.e., seaweed) and non-living natural products, and disruptive activities.

A.3 POLICY RECOMMENDATIONS - OCEAN POLICY ADVISORY COUNCIL (OPAC)

The Oregon Ocean Policy Advisory Council (OPAC) -- a legislatively mandated body that advises the Governor, state agencies, and local governments on marine resource policy issues -- developed and approved the *Oregon Marine Reserve Policy Recommendations* document in 2008. These recommendations provide guidance to state agencies on the siting, development, and implementation of Oregon's marine reserve sites.

B. THE MANDATES THAT SHAPE OUR MANAGEMENT

Here we outline the key marine reserve mandates -- provided by OPAC and the Oregon Legislature -- that guide us in our development of management strategies for the Oregon marine reserve system and the Cape Falcon site.

B.1 WHAT IS A 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)

B.2 ... AND A MARINE PROTECTED AREA?

Marine Protected Areas (MPAs), which allow or prohibit specific extractive activities, are also included Oregon's marine reserves system. 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 specific allowed and prohibited extractive activities of each MPA are defined in agency administrative rules.

B.3 WHY? MARINE RESERVE GOALS AND OBJECTIVES

The strategies outlined in this management plan for the Cape Falcon site have been developed to meet the OPAC goals and objectives for Oregon's marine reserves.

OREGON'S MARINE RESERVE GOALS

CONSERVATION

Conserve marine habitats and biodiversity.

GOALS

Oregon's marine reserve goals are 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)

OBJECTIVES

Marine reserve objectives help 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.

RESEARCH

Serve as scientific reference sites, to learn about marine reserve protections and Oregon's nearshore ocean, to inform management.

COMMUNITIES

Avoid significant adverse social and economic impacts to ocean users and coastal communities.

B.4 PLANNING AND IMPLEMENTATION PRINCIPLES AND GUIDELINES

Additional guidance is provided in marine reserve planning and implementation principles and guidelines set by OPAC (2008).

PLANNING PRINCIPLES AND GUIDELINES:

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

IMPLEMENTATION PRINCIPLES AND GUIDELINES:

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

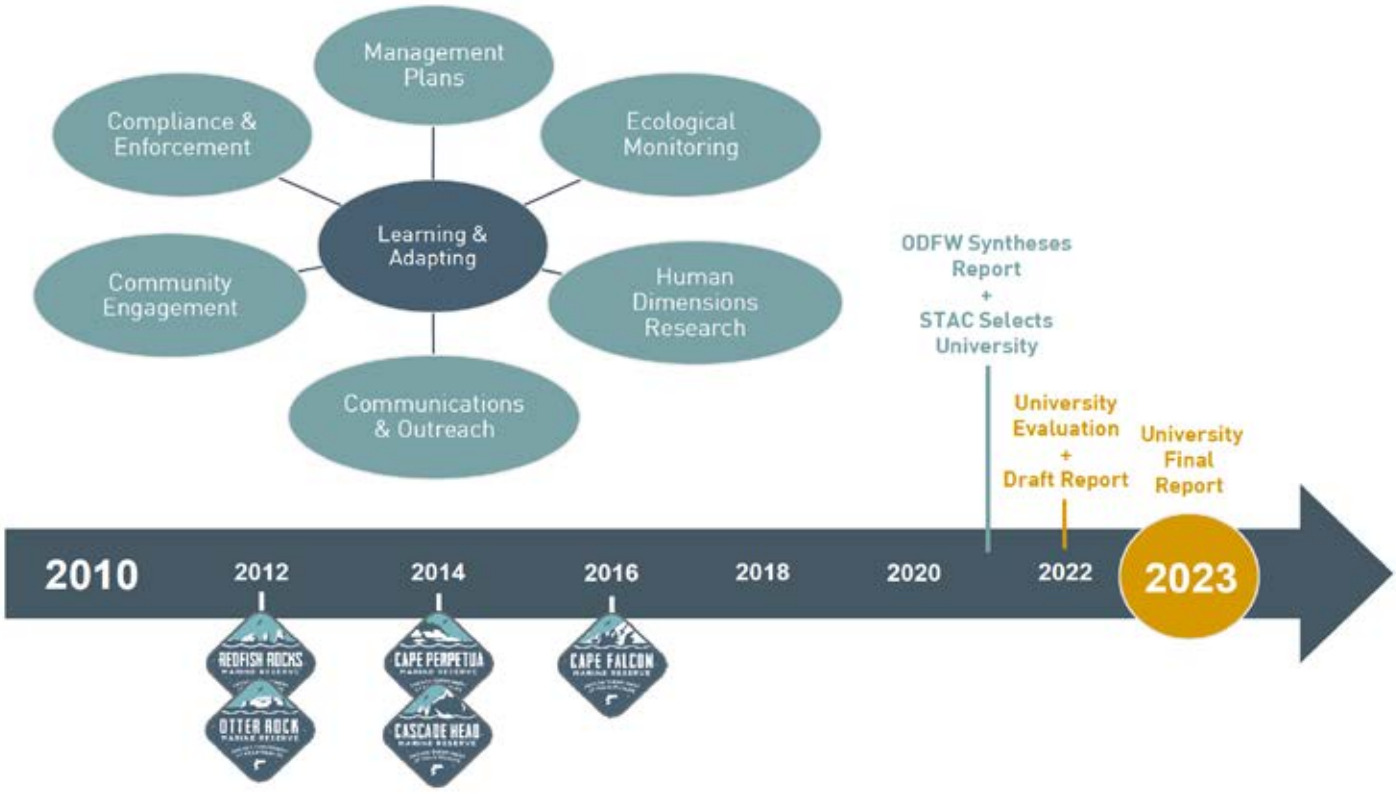
conserving marine habitats and biodiversity will be encouraged.

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.

C. PROGRAM EVALUATION IN 2023: A CHECK-IN

The Oregon Legislature calls for a check-in and report on the Oregon Marine Reserves Program due to the Legislature by March 1, 2023 (ORS 196.540 through 196.555). The check-in will include evaluating the various aspects of the Program including management, scientific monitoring and research, outreach, community engagement, compliance, and enforcement of the reserves. It also marks the first point at which the state may consider adaptive management of the marine reserve system, including the role of reserves as a nearshore resource management tool moving into the future.

The Scientific and Technical Advisory Committee (STAC) is to select an Oregon public university to research and prepare the report due to the Legislature. ODFW staff will be preparing a synthesis report on the Program in the year 2021, to aid the university's evaluation. The university evaluation will be conducted in 2022, with a draft report provided to the Oregon Legislative Assembly's interim committees on environment and natural resources by October 1, 2022 and a final report to the Legislative Assembly no later than March 1, 2023.



CHAPTER 3. HOW WE IMPLEMENT THE RESERVES

In this chapter we provide an overview of how Oregon's marine reserves are used, how we will review and adapt management strategies for the Cape Falcon site over time, and the evaluation of the Oregon Marine Reserves Program in the year 2023.

A. HOW MARINE RESERVES ARE USED

A.1 CONSERVATION AND SCIENTIFIC RESEARCH

The goals and objectives, provided by OPAC (see Chapter 2, B.3), specify that Oregon's marine reserves are to be used in two ways:

1. **TO CONSERVE MARINE HABITATS AND BIODIVERSITY** In order to protect the marine habitats and biodiversity within a given site, all extractive activities are prohibited within a marine reserve.
2. **TO SERVE AS SCIENTIFIC REFERENCE AREAS** As reference areas, the marine reserves allow us to learn about the effects that protections -- no fishing and no ocean development -- have on marine species and habitats, to differentiate the effects of natural vs. human-induced stressors, and to learn about Oregon's nearshore ocean ecosystem.

   This is a long-term research and monitoring program. What we're learning from this work is being used to support the management of marine reserves and sustainable nearshore ocean resources and coastal communities here in Oregon.

A.2 FIVE CASE STUDIES

Each of Oregon's marine reserve sites is unique. They are different shapes and sizes. They have distinct habitats and biological characteristics. They experienced different types and levels of fishing pressure before closure. The coastal towns and communities most closely tied to each site have differing demographics and socioeconomic characteristics.

These unique characteristics mean we will likely see different conservation outcomes, and different effects on people and communities, at each site. This gives us an opportunity to use Oregon's marine reserves as five case studies to learn from. By examining these case studies over time we will learn how these different marine reserve site designs and placement matter, and understand the strengths and weaknesses of different management strategies.

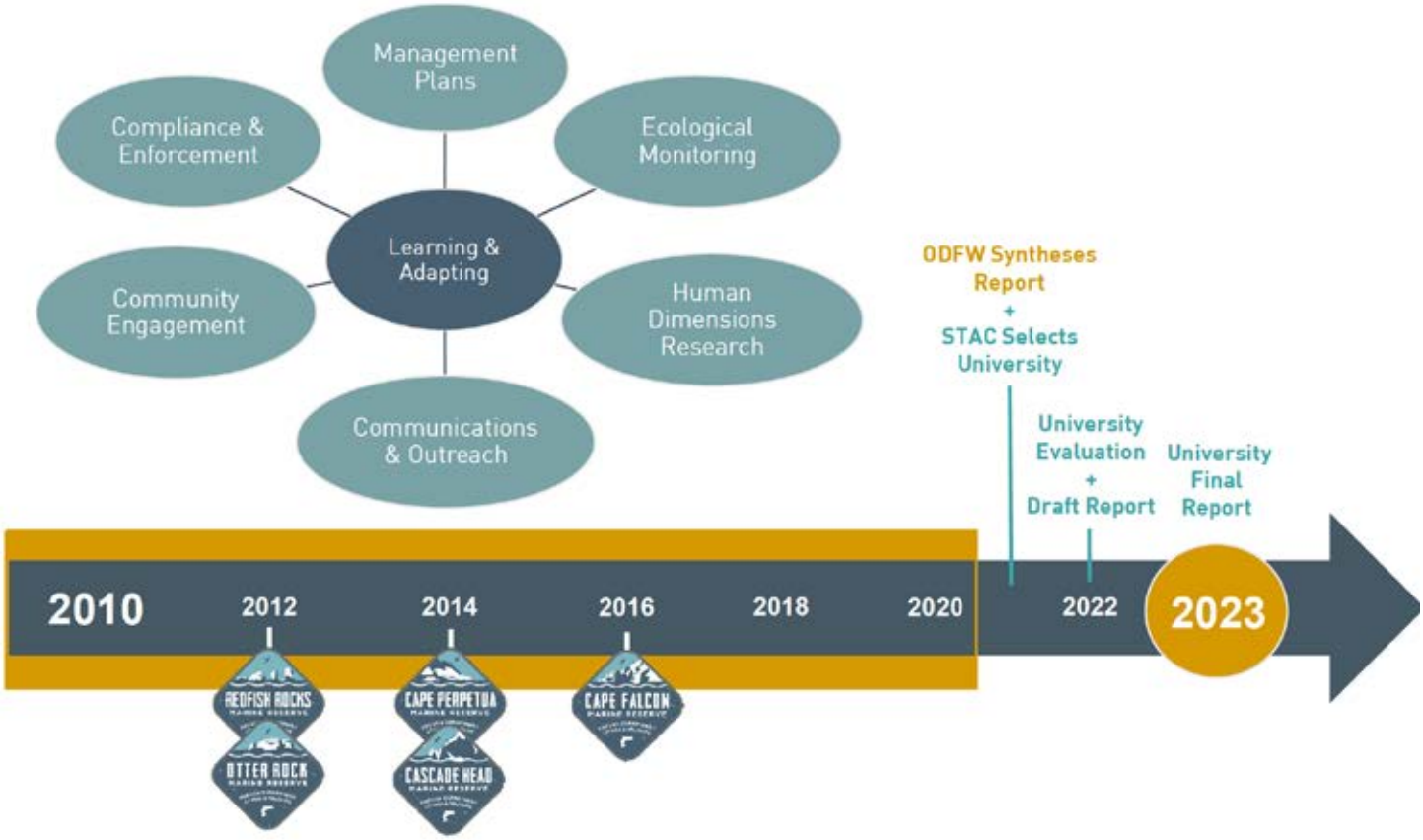
B. LEARNING AND ADAPTING

This plan outlines the state's priorities and management strategies that ODFW and our other state agency management partners are committed to carrying out for supporting scientific monitoring, providing information to the public, engaging communities, supporting compliance and enforcement, and for addressing site specific management issues for the Cape Falcon site. We anticipate these management strategies will evolve and be adapted over time as we continue to learn from our implementation efforts.

A review of these management strategies will be conducted at least every ten years with input from community members. The review will be guided by OPAC's principles and guidelines (Chapter 2, B.4) and will focus on the progress made to date on implementing the management strategies and strategy effectiveness. The review may trigger adaptations to strategies, and updates to this site management plan, in order to better meet the OPAC planning and implementation principles and guidelines. Any adaptations to management strategies being considered will include consultation with local communities.

C. PROGRAM EVALUATION IN 2023: A CHECK-IN

The Oregon Legislature calls for a check-in and report on the Oregon Marine Reserves Program due to the Legislature by March 1, 2023 (ORS 196.540 through 196.555). The check-in will include evaluating the various aspects of the Program including management, scientific monitoring and research, outreach, community engagement, compliance, and enforcement of the reserves. It also marks the first point at which the state may consider adaptive management of the marine reserve system, including the role of reserves as a nearshore resource management tool moving into the future.



There is general agreement from the scientific community that this evaluation timeframe is too brief for substantive ecological changes to occur due to marine reserve protections. With Oregon's temperate marine ecosystem – where many species grow slowly, mature late, and are long-lived – scientists project a minimum of 10-15 years after extractive activities (e.g., fishing) have ceased before we might

begin to scientifically detect any ecological changes. However, this timeframe does provide for the establishment and evaluation of: (a) a rigorous long-term monitoring program, (b) the generation of robust datasets from which we can track and understand future ocean changes, (c) information that furthers our knowledge about design and placement of marine reserves in Oregon, and (d) contributions of data and information used to support other nearshore ocean management and policy efforts as well as support understanding of emerging ocean issues.

CHAPTER 4. CAPE FALCON MARINE RESERVE
SITE CHARACTERISTICS & DESIGNATION HISTORY

The Cape Falcon Marine Reserve is located on Oregon's north coast, just off of Oswald West State Park and near the town of Manzanita. This is Oregon's northernmost site and includes a marine reserve plus two Marine Protected Areas (MPAs) (Figure 1). The marine reserve encompasses 32 square km and the MPAs include an additional 20 square km. The site also includes stretches of rocky shoreline that are protected in the marine reserve.

The marine reserve prohibits all extractive activities - including fishing and ocean development - with an exception provided for scientific monitoring or research if it is deemed necessary for evaluating the condition of the reserve, reserve effectiveness, or the impact of stressors (OPAC 2008; see Chapter 2, B.1).

The two MPAs prohibit ocean development but allow for some fishing activities. Fishing prohibitions and allowances are specific to each MPA and are summarized here:

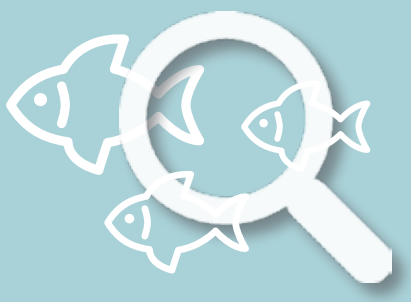
WEST MPA

No take except:
- Crab is allowed
- Salmon (by troll) is allowed

SHORESIDE MPA

- Angling from shore is allowed
- Intertidal harvest is allowed

SCIENTIFIC MONITORING AND HARVEST RESTRICTIONS



BEGAN 2014

BEGAN 2016

In this chapter we provide an overview of the geology and marine environments in the local region, look at what makes the marine reserve at Cape Falcon unique, and provide a brief history of how the Cape Falcon site came to be designated.

Figure 1. Map of the Cape Falcon Marine Reserve site. The site includes a marine reserve that covers 32 km^2 (12.4 mi^2) of ocean and two Marine Protected Areas (MPAs) encompassing an additional 20 km^2 (7.7 mi^2).

A. THE LOCAL GEOLOGY AND MARINE ENVIRONMENT

Here we provide an overview of the geology and nearshore marine environment in the region in and around the Cape Falcon site, stretching from the town of Cannon Beach down to the headlands at Cape Meares and Maxwell Point. Our ecological monitoring reports provide additional details about the marine environment and marine communities in this area. More information on the ecological monitoring being conducted at the Cape Falcon site can be found in Chapter 5.

A.1 CANNON BEACH TO ARCH CAPE

SHORELINE

Near Cannon Beach, Haystack Rock rises 235 feet above an otherwise unbroken stretch of sandy beach. Haystack Rock is surrounded by a boulder field that hosts a wide variety of invertebrates and algae. These rocky shore features are primarily composed of Columbia River basalt. Moving south, between Haystack Rock and Hug Point State Park, are approximately seven widely spaced rock outcroppings made of basalt or sandstone separated by long stretches of sandy beach. Continuing south the shoreline is primarily sandy beach until reaching a small headland at Arch Cape made of sedimentary rock. Associated with the headland are a few large boulders providing rocky intertidal habitat.

SUBTIDAL AND OFFSHORE

Within state waters, this section of the coast hosts a mix of subtidal habitats. Soft sediment, sand habitat is broken up by several patches of rock habitat that spans both shallow (<25 m) and deeper (>25 m) depth ranges. There are some gravel/mixed sediment habitat interspersed among the deeper rock habitat patches. West of Arch Cape you'll find an offshore island known as Castle Rock, which supports nesting seabird colonies, and another small patch of subtidal rock habitat in shallow depths.

A.2 ARCH CAPE TO MANZANITA

SHORELINE

Between Arch Cape and Manzanita lie two prominent headlands, Cape Falcon and Neah-Kah-Nie Mountain. The Cape Falcon headland rises 300 feet above the ocean while Neah-Kah-Nie Mountain towers 1,700 feet high. Both headlands are composed of sedimentary rock interspersed with basaltic rock. Between the two headlands lies a cove with a sandy beach, known as Short Sands Beach.

Several stretches of rocky intertidal habitats, found in association with these two headlands, are included within the boundaries of the Cape Falcon Marine Reserve. On the north side of the Cape Falcon headland the intertidal area consists of large basalt and sandstone boulders that lie at the base of the cliff. In the upper intertidal zone common invertebrates include black turban snails, giant green anemones, and aggregating anemones. In the mid to lower intertidal zone mussels, gooseneck barnacles, and sea stars are common. South of this northern point are three sand coves each bordered by rocky points. This area is inaccessible and therefore no information is available on the rocky intertidal communities that live there. On the north side of Neah-Kah-Nie Mountain are high relief rocky shelves at the base of cliffs, which are largely devoid of sessile organisms due to sand-scouring. Most of Neah-Kah-Nie Mountain is vertical cliffs with fractured columns of basalt rock and inaccessible. Aerial photos indicate some rocky

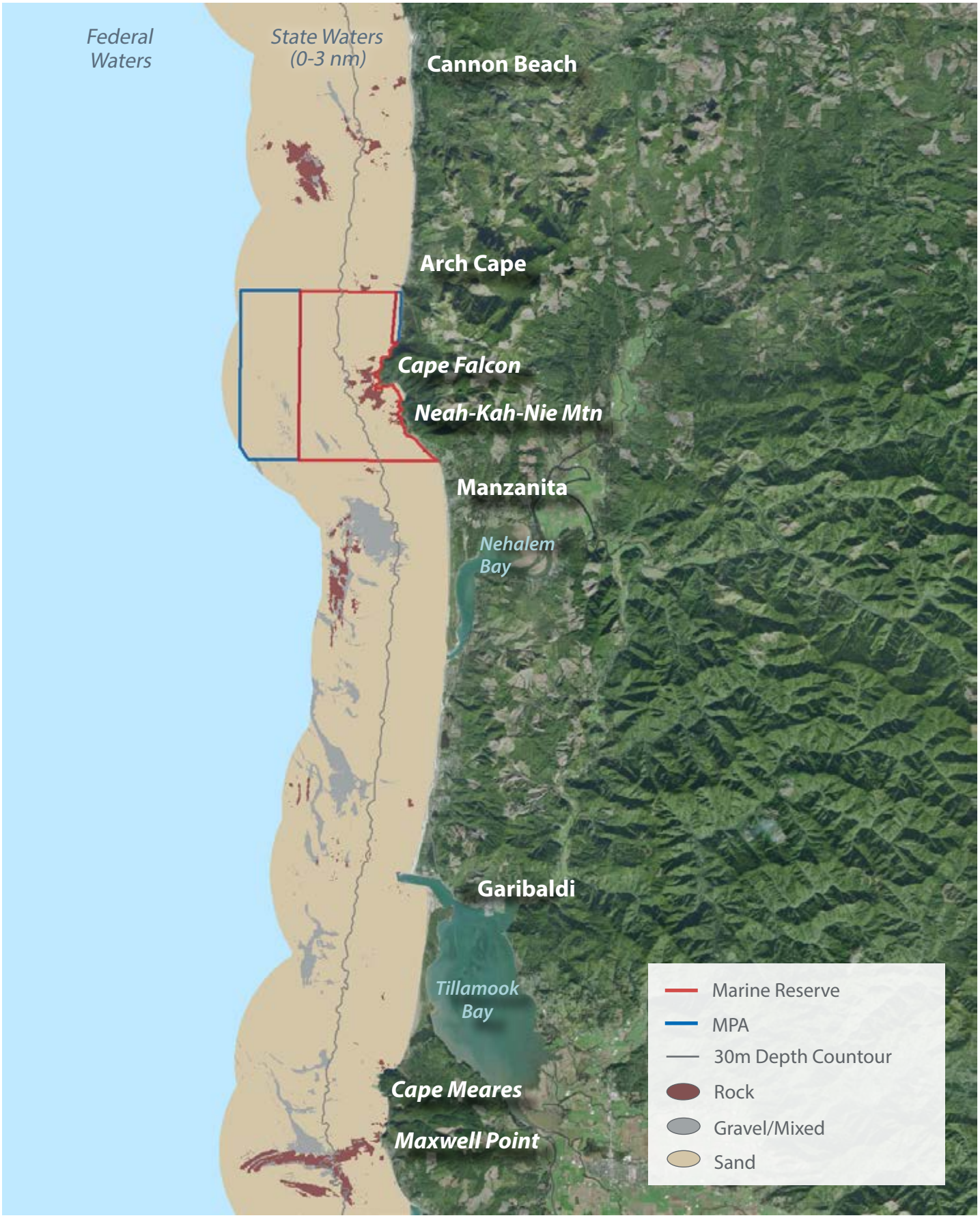


Figure 2. Seafloor habitat map of the nearshore marine waters in and around the Cape Falcon Marine Reserve site.

intertidal habitats are present.

Once south of Neah-Kah-Nie Mountain and the Cape Falcon Marine Reserve, the shoreline is a long stretch of sandy beach to Manzanita.

SUBTIDAL AND OFFSHORE

Just west of the Cape Falcon Shoreside MPA are a small cluster of rocks, known as Gull Rocks, which support nesting seabird colonies. An additional 44 emergent rocks are also found within the reserve boundaries, mostly in shallow water near the base of the two headlands. Soft bottom, sand habitat is the dominate subtidal habitat within the reserve and west MPA. Small patches of low-relief, rock habitat are found in shallow (<25 m) depths near the headlands in the reserve. Patches of gravel/mixed habitat are found in the deeper (>25 m) waters of the reserve and in the west MPA. Common fish species found here include black rockfish, lingcod, kelp greenling, buffalo sculpin, cabezon, pile perch, and striped perch. Some of the common invertebrates that live here are Dungeness crab, burrowing sea cucumbers, white plumed anemones, giant rock scallops, as well as ochre and leather sea stars.

A.3 MANZANITA TO TILLAMOOK BAY

SHORELINE

Heading south from Manzanita, the shoreline is a long stretch of sandy beach and then a narrow sand spit until reaching the mouth of Nehalem Bay. From the south side of Nehalem Bay the shoreline remains dominated by sandy beach until reaching the north jetty of Tillamook Bay.

SUBTIDAL

Within state waters, this section of the coast hosts a variety of subtidal habitats. Shallow waters (<25 m) are dominated by soft sediment, sand habitat. But in deeper (>25 m) waters, there is a combination of sand and gravel/mixed habitats, along with patches of rock habitat that are largely oriented in a north-south direction.

A.4 TILLAMOOK BAY TO CAPE MEARES

SHORELINE

South of Tillamook Bay, the shoreline remains sandy beach until reaching the headlands of Cape Meares and Maxwell Point. These two headlands are dominated by basaltic rock with some overlays of sedimentary rock. Cliffs on the headland rise between 200 and 400 feet high. The rocky intertidal habitats in this area consist primarily of ledges and vertical faces around the bases of cliffs as well as some areas of scattered boulders.

SUBTIDAL AND OFFSHORE

Offshore islands near the Cape Meares and Maxwell Point headlands include Three Arch Rocks and Pillar and Pyramid Rocks, all of which support seabird colonies. Three Arch Rocks is home to the largest seabird nesting colony in Oregon, supporting over 200,000 seabirds. Between Tillamook Bay and the Cape Meares headland, shallow (<25 m) subtidal waters are dominated by sand habitat and while the deeper (>25 m) waters are a combination of sand and gravel/mixed subtidal habitats. Offshore of the Maxwell Point headland lies a subtidal rocky reef that spans both shallow (<25 m) and deeper (>25 m) depth ranges. This rock habitat is surrounded by sand and gravel/mixed habitats.

B. WHAT MAKES THE CAPE FALCON RESERVE UNIQUE

Each of Oregon's marine reserves is unique. They are different shapes and sizes. They have distinct habitats and biological characteristics. They experienced different types and levels of fishing before closure. And the coastal towns and communities most closely tied to each site differ. These unique features mean we will likely see different ecological changes, conservation outcomes, and effects on people and communities at each site. Here we focus on some of the characteristics that make the marine reserve at Cape Falcon unique.

B.1 RELATIVE COMPARISONS BETWEEN RESERVES

When we make a relative comparison of the characteristics between Oregon's five marine reserves, the reserve at Cape Falcon:

- Is considered moderate in size.
- Has a moderate diversity of habitats. The site is dominated by soft sediment sand and gravel/mixed habitats. There are small patches of low-relief rock habitat in shallow waters. Some small stretches of rocky intertidal habitats are also included.
- Has low habitat connectivity. The site has some small, low-relief, rock patches in shallower waters that are isolated from other rocky habitat in the nearby area.
- Includes a broad range of depths, but subtidal rock habitat is only found in shallow portions of the reserve.
- Experienced low fishing pressure on groundfish in rocky reef areas, moderate fishing pressure on crab in sand habitat areas.

HARVEST RESTRICTIONS BEGAN	January 1, 2016
MONITORING BEGAN	2014
SIZE	Reserve: 32 km^2 (12.4 mi^2) MPAs: 20 km^2 (7.7 mi^2)
DEPTH RANGE	Reserve: 0-55 m (0-180 ft) West MPA: 55-70 m (180-230 ft)
HABITATS	Mostly soft sediment with isolated patches of rock habitat in shallow (< 25 m) depths. Several small streteches of rocky intertidal habitats.
HABITAT CONNECTIVITY	Isolated, low-relief rock habitat in shallow (< 25 m) depths
PRIOR FISHING PRESSURE	Relatively low fishing pressure on groundfish in rocky habitat areas. Relatively moderate fishing pressure on crab in sandy habitat areas.

COMMON SUBTIDAL INVERTEBRATES

Some of the common subtidal invertebrates we see during SCUBA monitoring surveys in the marine reserve.

Leather Star

Rock Scallop

Bryozoan

Stubby Rose Anemone

Snails

Purple Sea Urchin

B.2 UNIQUE FEATURES

Some of the distinctive features found within the marine reserve at the Cape Falcon site are described here.

MARINE HABITATS

The reserve has some of the only shallow rocky reef habitat in the nearby vicinity.

OCEANOGRAPHIC FEATURES

This is the only marine reserve located off the northern Oregon coast, giving the best representation of the highly productive oceanographic area influenced by the Columbia River. The Columbia River is the largest flow of freshwater into the eastern Pacific Ocean.

Artwork: Oregon Coast Aquarium

COMMON FISH SPECIES

Red Irish Lord is another sculpin species seen in our surveys

Black Rockfish

Kelp Greenling

Buffalo Sculpin

Lingcod

Other

Cabezon

Hook and Line Surveys
Proportion of species caught during our 4 years of surveys in the marine reserve

LAND-SEA CONNECTIONS

Much of the land adjacent and near the Cape Falcon site is public and has management measures in place. Stretching along four miles of coastline in dense, old growth forest between Arch Cape and Neah-Kah-Nie Mountain, is the 2,484 acre Oswald West State Park (OPRD). A little south of the reserve, Nehalem Bay State Park (OPRD) is situated on a four mile sand spit between the ocean and Nehalem Bay. The offshore rocks that fall within the reserve boundaries are included as part of the Oregon Islands National Wildlife Refuge and are managed by the US Fish and Wildlife Service.

B.3 THE HUMAN CONNECTION

Nearby towns and ports include Cannon Beach, Manzanita, Nehalem, Wheeler, Rockaway Beach, and Garibaldi. Also in close proximity to the Cape Falcon site are the unincorporated communities of Falcon Cove and Arch Cape. The ocean, estuaries, and terrestrial lands in this

area are of cultural significance to the Clatsop-Nehalem Confederated Tribes, Confederated Tribes of Grand Ronde, and the Confederated Tribes of Siletz Indians.

The nearshore waters in and around the Cape Falcon site support many forms of consumptive and non-consumptive activities. Recreational and commercial fishing are established uses in this area. Commercial and charter fishing vessels hailing from Garibaldi, Warrenton, Astoria and other ports along the west coast fish these nearshore waters targeting mainly crab and salmon as well as some groundfish. Sport boats out of Garibaldi, Nehalem, and Wheeler occasionally fish these waters. Fishing from shore and intertidal harvest are also occasional uses. Short Sands Beach at Oswald West State Park is a popular surfing spot. In calmer sea states sea kayaking is another popular activity. Wildlife viewing boat tours are also offered in the area.

Visitors have many other opportunities for other outdoor recreational activities around this area. Popular activities include hiking, beach going, whale watching, bird watching, and artistic endeavors. Adjacent to the reserve, Oswald West State Park has a secluded sandy beach and miles of trails leading to expansive views of the ocean from atop Cape Falcon and Neah-Kah-Nie Mountain. A little south of the reserve is Nehalem Bay State Park that includes a campground, day use areas, a boat ramp into the bay, and a bike path.

Ongoing human dimensions research will provide us with more insights into the communities of interest and place associated with the Cape Falcon site. This research will also provide us with a better understanding of the consumptive and non-consumptive uses and users of the Cape Falcon site and the region. You can find more information in Chapter 5 on the human dimensions research being conducted.

C. DESIGNATION HISTORY

Marine reserve discussions began at the state level in the year 2000, through the Oregon Ocean Policy Advisory Council (OPAC), under the direction of then Governor Kitzhaber. Marine reserves planning began in March 2008, with Governor Kulongoski issuing Executive Order 08-07 and a letter to OPAC. The Governor asked OPAC to lead a public nomination process, with assistance from state agencies, and to forward recommendations for up to nine sites to be considered for marine reserve designation. OPAC proceeded by soliciting proposals from local community groups and individuals. In the summer of 2008, twenty marine reserve site proposals were submitted by the public to OPAC. After thorough consideration, OPAC forwarded recommendations to the Governor in November 2008 including:

- Two sites be designated immediately as pilot marine reserve sites (Redfish Rocks and Otter Rock).
- Three sites undergo further evaluation and community dialogue as potential marine reserve sites (Cape Perpetua, Cascade Head, Cape Falcon).
- One area undergo a local community process, led by the International Port of Coos Bay, to consider developing a new marine reserve proposal (Cape Arago).
- The OPAC August 19, 2008 Oregon Marine Reserves Policy Recommendations.

In 2009, the Oregon Legislature passed House Bill 3013 (HB 3013) directing state agencies to implement the OPAC recommendations. The Legislature also approved funding and dedicated staffing for state agencies to carry out the evaluation and implementation of marine reserve sites.

In 2010, in accordance with HB 3013, ODFW formed three community teams. The teams included prescribed representation from a spectrum of stakeholder interests to further evaluate potential marine reserve sites at Cape Perpetua, Cascade Head, and Cape Falcon. Each team met over the course of 11 months, evaluating the original proposal recommended by OPAC in 2008. The evaluation consisted of determining whether the site could meet sideboards established in Executive Order 08-07, namely: was the site large enough to allow scientific evaluation of ecological benefits, but small enough to avoid significant economic or social impacts?

In November 2010, the three community teams forward their marine reserve recommendations to ODFW. The recommendation for the Cape Falcon site was that of the original OPAC proposal, with a very narrow vote of nine to seven by community team members.

In December 2010, ODFW used the community teams' recommendations and information gathered throughout the community team process to forge final marine reserve recommendations in consultation with OPAC. Given the lack of strong agreement among the Cape Falcon community team, ODFW worked with OPAC and individual members of the Cape Falcon community team to modify the recommendation to reduce adverse social and economic impacts while maintaining enough of the site's ecological significance. After deliberation and discussion, OPAC reached a consensus supporting the ODFW package of site recommendations. ODFW then forwarded the OPAC approved recommendations to coastal State Legislators.

During the 2012 legislative session, the Oregon Legislature passed Senate Bill 1510 (SB 1510) directing state agencies to implement ODFW's recommendations for sites at Cape Perpetua, Cascade Head, and Cape Falcon. SB 1510 also provided that an evaluation and a report to the Legislature be provided on the Oregon Marine Reserves Program by March 1, 2023.

In the latter half of 2012, state agencies adopted marine reserve and protected area administrative rules for the Cape Perpetua, Cascade Head, and Cape Falcon sites. The harvest restrictions at the Cape Falcon site became effective on January 1, 2016, following two years of baseline data collection for the site.

CHAPTER 5. MONITORING & RESEARCH
APPROACHES, STRATEGIES, & PROCEDURES FOR RESEARCHERS

"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." -- OPAC 2008

The Oregon Legislature has placed the Oregon Department of Fish and Wildlife (ODFW) in charge of leading the scientific monitoring and research of Oregon's marine reserves. We are studying both the ecology and the human dimensions of the reserves. We have created long-term ecological monitoring and human dimensions research programs that allow us to track and understand ocean changes as

ECOLOGICAL MONITORING

Our monitoring focuses on tracking and understanding ocean changes in Oregon's nearshore waters. Ongoing surveys are being conducted inside the five reserves and outside the reserves, in eight comparison areas, to track changes over time. These "living laboratories" are giving us a better understanding of Oregon's nearshore ocean, are producing data being used to support nearshore ocean management decision making, and are informing us on emerging ocean issues here in Oregon.

HUMAN DIMENSIONS RESEARCH

Conservation strategies such as marine reserves can create positive, negative, or no changes for individuals and communities. Our research focuses on understanding the different ways people and communities are affected by Oregon's marine reserves. We are studying the human dimensions of the reserves using multiple social scientific methods including economics, sociology, anthropology, and political science. What we're learning from this research is being used to support coastal management and policy decision making.

"Use ... research and monitoring information in support of nearshore resource management and adaptive management of marine reserves."
-- OPAC 2008

well as understand changes and impacts to ocean users and coastal communities over time. What we're learning from this work is being used to support the management of nearshore ocean resources and adaptive management of marine reserves, now and into the future (OPAC 2008; see Chapter 2, B.3).

Questions our research is looking to answer include how do marine reserve protections — no fishing and no ocean development — affect marine species and habitats? How do these protections affect people and communities? How do different people value and depend on the ocean? What else can we learn about Oregon's nearshore ocean? The ODFW Marine Reserves Program works in collaboration with a number of research partners to study both the ecology and the human dimensions of the reserves.

In this chapter we describe the ODFW Marine Reserves Program's approach to long-term scientific monitoring and research. We also provide information for researchers who may be interested in conducting research in connection with Oregon's marine reserves. And finally, we outline the management strategies ODFW is committed to carrying out for sharing information and engaging communities with regards to our monitoring and research work.

DID YOU COLLECT BASELINE DATA BEFORE THE RESERVE CLOSED TO FISHING?

Yes, we began collecting data for the Cape Falcon Marine Reserve in 2014, two years prior to harvest restrictions taking effect.

A. OUR APPROACH

A.1 ESTABLISHING LONG-TERM MONITORING AND RESEARCH PROGRAMS

ODFW has created long-term ecological monitoring and human dimensions research programs that are allowing us to track and understand ocean changes as well as understand changes and impacts to ocean users and coastal communities over time. What we're learning from this work is being used to support nearshore ocean management efforts and adaptive management of marine reserves here in Oregon.

MONITORING PLANS

We have developed ecological and human dimensions monitoring plans for Oregon's marine reserves. These plans describe our research questions, sampling designs, and sampling activities as well as sampling frequencies currently through the year 2023. These plans are reviewed and updated at least every five years, and are available from the Resource Library we've created on the state's Oregon Marine Reserves website at oregonmarinereserves.com/library.

HOW DO WE PRIORITIZE?

Since we have limited staff and budgt resources, we prioritize our monitoring and research activities based on the goals and objectives of the marine reserves (OPAC 2008; see Chapter 2, B.3), scientific accuracy, and cost. We strive for rigorous scientific monitoring and research that provides information to support marine reserves and nearshore ocean management here in Oregon, and will be of substance in the 2023 Program evaluation.

A.2 RESEARCH PARTNERS HELPING TO EXPAND RESEARCH

We are collaborating with a variety of research partners. Our partners provide advice, lend different expertise, bring additional resources, and help us expand our monitoring and research. They include folks from academia, state and federal agencies, non-government organizations, consultants, and the fishing industry. In addition, Oregon's marine reserves and ODFW's monitoring programs are attracting additional research that is providing greater insights into Oregon's nearshore ocean, the design and placement of marine reserves, and emerging ocean issues.

EXPLORE MORE ABOUT THE SCIENCE

NEWS FROM THE FIELD
OREGONMARINERESERVES.COM/NEWS

RESEARCH PLANS AND REPORTS
OREGONMARINERESERVES.COM/LIBRARY

THE SCIENCE OF MARINE RESERVES
DOWNLOAD THIS BOOKLET produced by **PISCO**
providing a great introduction to the science of marine reserves

A.3 EACH SITE IS UNIQUE

Each of Oregon's marine reserves is unique. They are different sizes and shapes. They have distinct habitats and biological characteristics. They each experienced different types and levels of fishing before closure. And, the demographics and socioeconomic characteristics of the coastal towns and communities most closely tied to each site are different. These unique features mean we will likely see different conservation outcomes and different impacts to ocean users and coastal communities in association with each site. Our monitoring and research program have been set up to be able to distinguish these differences.

A.4 LEARNING AND ADAPTING

Marine reserves are a relatively new management tool here in Oregon. Based on what we've learned during this initial evaluation time period, our monitoring approaches and tools have evolved or been adapted in order to produce robust long-term datasets that best answer our research questions. We continue to refine our monitoring programs based on the best-available science and latest technologies. Updates to our monitoring plans reflect, and are a means of recording, adaptations we make.

A.5 SHARING WHAT WE LEARN

An important component of the ODFW Marine Reserves Program is sharing what we're learning along the way. We are committed to producing monitoring and research reports or journal publications at least every two years. In section D, we outline additional strategies we are employing to keep constituents, partners, and decision makers informed about the science being performed, what we are learning, and how that information is being used to support management.

A.6 OPPORTUNITIES FOR ADDITIONAL RESEARCH

There are additional research questions beyond ODFW's current focus that could greatly add to what we might learn from Oregon's marine reserve sites. We continue to look for ways to attract researchers and resources to answer some of these additional research questions -- especially those questions that have strong interest from local community members, the scientific community, and fishermen. We highlight some of the opportunities for additional research for the Cape Falcon Marine Reserve in Chapter 9.

B. OUR MONITORING AND RESEARCH PROGRAMS

The ODFW Marine Reserves Program is studying both the ecology and the human dimensions of the reserves. Here we provide an overview of the approaches we are using in our respective ecological monitoring and human dimensions research programs.

B.1 ECOLOGICAL MONITORING OF THE MARINE RESERVE SYSTEM

LIVING LABORATORIES

Oregon's marine reserves are living laboratories where we are learning more about Oregon's nearshore ocean, tracking ocean changes, and learning about the effects that protections — no fishing and no ocean development — have over time on species and habitats. We conduct robust, long-term monitoring and novel research that is supporting management of the reserves and of nearshore resoures.

"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."

-- OPAC 2008

The marine reserves mandates that propel our ecological monitoring approach include (OPAC 2008; see Chapter 2.B.3):

- 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.
- Protect key types of marine habitat in multiple locations along the coast to enhance resilience of nearshore ecosystems to natural and human-caused effects.
- 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.
- 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.

WHAT ARE WE FOCUSING ON?

- **LONG-TERM MONITORING OF MARINE COMMUNITIES** We are conducting long-term monitoring of fish, invertebrate, and macroalgal (seaweed) communities. We are tracking changes over time in organism size, organism abundance, and community composition inside and outside of the reserves.
- **METHODOLOGY DEVELOPMENT AND REFINEMENT** We are building upon advances in sampling technology and gear to design robust and contemporary survey tools that are able to effectively sample in Oregon's challenging nearshore ocean environment.
- **NEARSHORE RESEARCH** We are supporting research that expands our understanding of Oregon's nearshore ocean that can be used to inform management of marine resources.

This approach ensures we establish robust long-term datasets for detecting ecological changes over time, using the best available methods, while also pushing new discoveries and a better understanding of Oregon's nearshore ocean.

TIMEFRAMES FOR DETECTING ECOLOGICAL CHANGES

There is general agreement from the scientific community that the program evaluation timeframe, set by the Oregon Legislature (ORS; see Chapter 2.C), is too brief a time for substantive ecological changes to have occurred due to marine reserve protections. With Oregon's temperate marine ecosystem – where many species grow slowly, mature late, and are long-lived – scientists project a minimum of 10-15 years, and for some species as long as 40 years, after extractive activities (e.g., fishing) have ceased before we might begin to scientifically detect any ecological changes. However, this timeframe does provide for the establishment and evaluation of: (a) a rigorous long-term monitoring program, (b) the generation of robust datasets from which we can track and understand future ocean changes, (c) information that furthers our knowledge about design and placement of marine reserves in Oregon, and (d) contribution of data and information that is used to support other nearshore ocean management efforts and understanding of emerging ocean issues.

DESIGN AND PLACEMENT MATTERS

Oregon's reserves vary in size, habitats, depths, and past fishing pressure — important characteristics that can influence ecological responses to reserve protections. Where possible, we collect data using the same sampling tools at all five reserves to allow for comparisons across the entire reserve system. However, the unique characteristics of each reserve requires that we use different sampling approaches and tools in order to sample the marine communities present at each particular site. We have therefore tailored our sampling approaches and monitoring activities for each site, which you can find in more detail in our Ecological Monitoring Plan (2017) .

B.2 ECOLOGICAL MONITORING AT CAPE FALCON

WHAT MAKES CAPE FALCON UNIQUE?

The marine reserve at Cape Falcon is dominated by soft bottom habitats. The site also includes some small, low-relief, rock patches in shallower waters that are isolated from any other rocky habitat in the nearby area. Prior to closure, there was moderate levels of crabbing in sandy habitat areas and infrequent fishing for groundfish in rocky habitat areas.

The ocean waters around Cape Falcon are influenced by the Columbia River, which is the largest flow of freshwater from any river in North America into the Pacific Ocean.

More detailed site characteristics and a relative comparison of Cape Falcon to Oregon's four additional marine reserve sites can be found in Chapter 4.B.

HOW LONG TO DETECT CHANGES?

10-15 YEARS MINIMUM

Due to Oregon's cold water and temperate marine ecosystem — where many species are long-lived and slow to grow and mature — scientists project a minimum of 10-15 years, and for some species as long as 40 years, after protections (i.e. no fishing) have begun before we might begin to scientifically detect ecological changes due to the protections. In the interim, the data and information from marine reserves monitoring and research is being used to support other nearshore ocean management and understanding of emerging ocean issues.

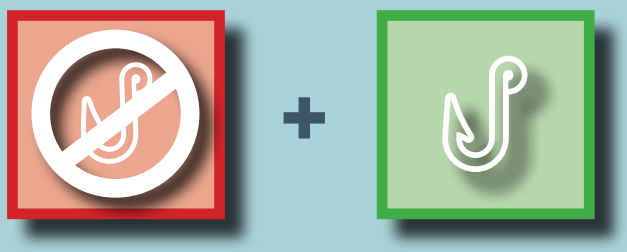
OUR MONITORING APPROACH AT CAPE FALCON

The Cape Falcon Marine Reserve is dominated by soft bottom habitats. The site also includes some small, low-relief, rock patches in shallower waters that are isolated from any other rocky habitat in the nearby area. Prior to closure, there was crabbing in sandy habitat areas and infrequent fishing for groundfish in rocky habitat areas.

These site characteristics, including the low fishing pressure on groundfish that previously occurred at the site, means we are not likely not see changes as a direct result from marine reserve protections (i.e. no fishing) at this site.

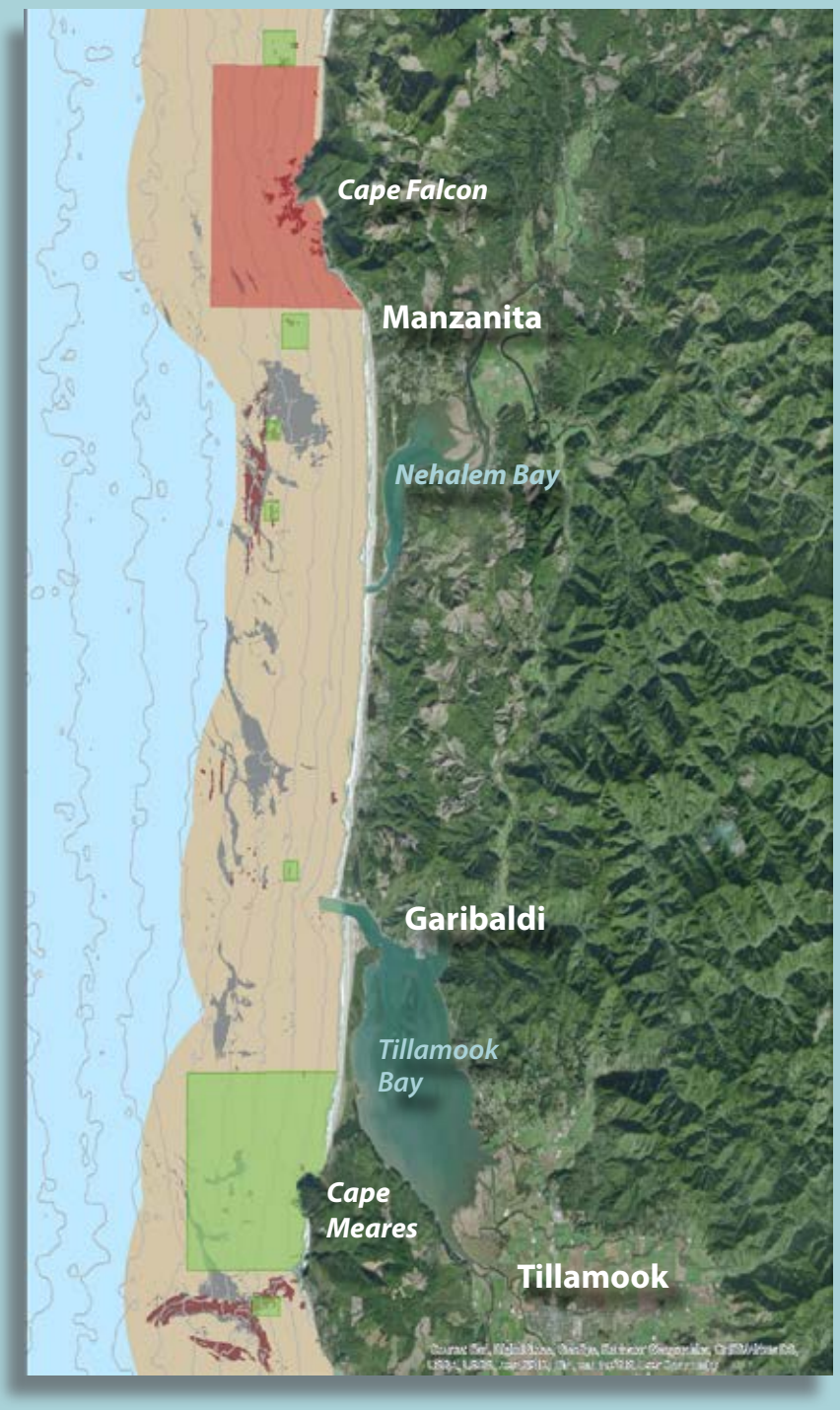
As such, we are not employing the usual Before-After-Control-Impact (BACI) study design. Instead, our monitoring approach is to survey a number of small rocky reefs in the local region, that each experience different levels of fishing pressure. In this approach, the rocky reefs in the reserve represent light fishing pressure. Patch reefs immediately to north and south of the reserve, and reefs closer to the port of Garibaldi, each represent higher levels of fishing pressure. We'll look at change over time along this gradient of fishing pressures to explore how different levels of fishing influence rates of change in rocky reef marine communities.

WE SAMPLE IN THE



MARINE RESERVE + COMPARISON AREAS

We began sampling in 2014, two years prior to the reserve being closed to fishing. You can find more information about our monitoring activities for the Cape Falcon site in our **2017 Ecological Monitoring Plan**.and in the summary of the 2015 **Moving Beyond BACI** workshop.



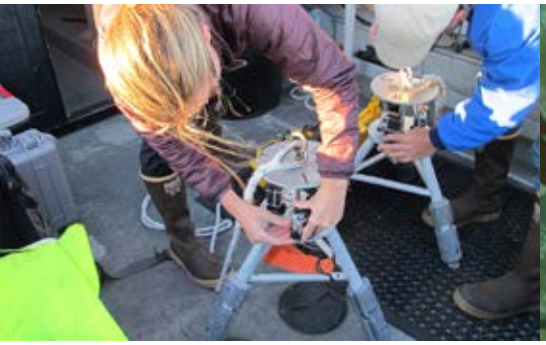
ODFW LONG-TERM MONITORING SURVEYS AT CAPE FALCON

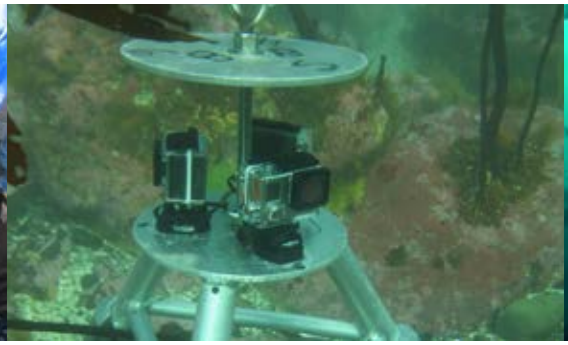
Based on the site's depths and habitat types, we are using the following three core sampling tools to collect long-term monitoring data for the Cape Falcon site. These surveys are led by ODFW. More information about our survey tools and sampling frequency can be found at OregonMarineReserves.com/science/ecological or in our 2017 Ecological Monitoring Plan.

HOOK AND LINE

TOOL USAGE	
DEPTH RANGE	10-40 m
HABITATS	Rock
SAMPLING LIMITATIONS	Calm sea states, availability of volunteer anglers
WHAT DATA ARE WE COLLECTING?	Fish species, fish size, catch rates (CPUE)

VIDEO LANDER





TOOL USAGE	
DEPTH RANGE	5-20 m
HABITATS	All habitat types
SAMPLING LIMITATIONS	Calm sea states, minimum visibility of 3 m
WHAT DATA ARE WE COLLECTING?	Relative abundance of fish and select invertebrates, habitat characteristics

SCUBA

TOOL USAGE	
DEPTH RANGE	10-20 m
HABITATS	Shallow rock
SAMPLING LIMITATIONS	Calm sea states, minimum visibility of 3 m, availability of volunteer divers
WHAT DATA ARE WE COLLECTING?	Fish, invertebrate, and macroalgae counts. Fish size. Species densities. Habitat characteristics.

LONG-TERM MONITORING COLLABORATIONS AT CAPE FALCON

Additional long-term monitoring surveys, led by research partners, are being conducted at Cape Falcon. These are ongoing surveys providing long-term datasets from which we can track ocean changes over time.

OCEANOGRAPHY

COLLABORATION LEADS	PISCO-Oregon State University
WHAT DATA ARE BEING COLLECTED?	Temperature, dissolved oxygen, salinity, carbon dioxide, pH, and wave and current motion.

"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."

-- OPAC 2008

B.3 HUMAN DIMENSIONS RESEARCH

WHAT IS HUMAN DIMENSIONS RESEARCH?

Human dimensions research looks at the different ways in which humans use, value, and depend on their natural environment. Oregon's marine reserves are a staging ground for studying the human social interactions that surround natural resource issues. This "natural laboratory" is valuable for understanding the current and long-term impacts of conservation and management decisions on people and communities, as well as the impacts demographic shifts, gentrification, and socio-economic changes have on the lives of Oregonians. What we're learning from this research is being used to support future nearshore resource management and policy decision making, and adaptive management of marine reserves here in Oregon.

WHAT ARE WE STUDYING?

Our research focuses on understanding the different ways that people and communities may be affected by the marine reserve sites over time. When conservation strategies such as marine reserves are introduced they can create positive, negative, or no changes for individuals and for communities. Negative changes may include loss of income for businesses or fishermen; increased feelings of distrust towards government; or increased animosity between neighbors with different ideological perspectives on environmental issues. Positive changes may include increased tourism dollars to small businesses in communities near reserve sites, cultural shifts towards feeling closer to nature, or increased awareness about the ocean and ocean issues.

The marine reserves mandates that propel our research questions and approach include (OPAC 2008; see Chapter 2.B.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.

- ... Use the research and monitoring information in support of nearshore resource management and adaptive management of marine reserves.

RESEARCH QUESTIONS Stemming from these mandates, the following research questions were developed by ODFW in consultation with the Scientific and Technical Advisory Committee (STAC) and additional economics and social science experts to guide our human dimensions research.

1. Are people knowledgeable about the marine reserves?
2. What are the public's attitudes about the marine reserves?
3. What are the economic impacts of the marine reserves on fishermen?
4. What are other significant economic impacts of the marine reserves on local communities?
5. What are the social impacts of the marine reserves?

We also want to know if these change over time, and if long-term impacts are different from short-term or initial impacts.

BROADER QUESTIONS We have also developed a set of broader research questions aimed at increasing knowledge and understanding of social relationships that can be used to support nearshore resource management and policy in the future.

1. How do social and cultural values shape the way communities manage and relate to the ocean?
2. How do coastal communities adapt to social, political, or ecological change?
3. Under what circumstances is it possible for different stakeholder groups to come together and make difficult decisions about ocean management?
4. How do we build community resilience to risk?

OUR APPROACH

We work in close collaboration with a number of research partners from universities and the private sector. Together, we study the human dimensions of marine reserves through multiple social scientific methods - including economics, sociology, anthropology, political science, and psychology. Some of our studies provide quantitative information, while others provide qualitative or descriptive information. These partners also provide advice, lend different expertise, and help us round out our research program.

TYPES OF RESEARCH PROJECTS

Our human dimensions research falls into four different categories. We are conducting a variety

of scientific studies in each of these categories to help us address the research questions described above, and to understand the variety of effects marine reserve sites may have on people and communities.

1. CHARACTERIZATIONS OF COMMUNITIES

We develop general characterizations of the coastal communities most directly tied to each of the marine reserve sites. Characterizations include information such as historical records, demographics such as employment data, social structure, tribal or spiritual connections, cultural and social events, and economic drivers of the local economy. These characterizations set the "back story" and provide context to help us understand effects we might observe over time for these communities.

2. DIRECT USES OF COASTAL ENVIRONMENTS

Fishing:

To understand commercial and recreational fishing patterns associated with marine reserve areas, our studies analyze existing data from sources such as logbooks and fish landings, as well as new data collected from observations, interviews, and surveys. These analyses allow us to identify physical areas of use, which fisheries were conducted in these areas, and which communities may be affected from displacement or disruption of these activities.

Recreation and Aesthetic Engagement:

To understand other types of recreational use and aesthetic engagement with the coast, we gather existing and new data from visitor interviews and surveys. This allows us to understand what uses presently exist, and to monitor changes which may occur with implementation of the marine reserve site. Social and economic data are also collected from the users of these areas.

3. ATTITUDES AND PERCEPTIONS OF IMPLEMENTATION AND MANAGEMENT

To assist in management of the reserves, we are looking to understand the knowledge, attitudes, and perceptions of stakeholders, coastal businesses, and other Oregon residents pertaining to marine reserves purpose, regulations, monitoring and research, management, outreach, and enforcement. Collecting this information also allows us to tailor our marine reserves outreach to better serve Oregonians and engage community members and stakeholders in the implementation of these areas.

4. SOCIAL AND ENVIRONMENTAL VALUES

To gain a more complete understanding of how Oregon residents value the ocean and the marine reserves, this research examines the values associated with the natural resources and ecological characteristics of these areas, as well as how these values may be different across stakeholders, communities, and among the general public.

EXPLORE MORE HUMAN DIMENSIONS RESEARCH

You can explore more about the Human Dimensions Research being conducted by ODFW and our partners on the state's website at oregonmarinereserves.com/science/human-dimensions. You can also find research infographics, reports, and more in our Resource Library.

ATTENTION RESEARCHERS!

Are you a scientist interested in conducting research in connection with the Cape Falcon site or any of Oregon's other reserves? If so, we're interested in hearing from you. Please note that some research activities may require a permit.

Please see Chapter 7, D to determine if your research will require a permit and for instructions on how to apply.

C. PROCEDURES FOR RESEARCHERS

Scientific take of organisms (e.g. fish, invertebrates, and algae) or disturbance of habitats (e.g. equipment attached to the seafloor or in rocky intertidal habitats) is only permitted if deemed necessary and the research contributes to the evaluation of marine reserve site condition, effectiveness, or the impact of stressors (OPAC 2008; see Chapter 2, A.2 and B.1). Researchers should refer to Chapter 7, section D to determine if your research will require a permit, and for instructions on how to apply.

In addition, researchers are urged to review the guidelines and best practices provided in Chapter 8, established by the U.S. Fish and Wildlife Service, to avoid or minimize human disturbance to wildlife using offshore islands and rocks that are a part of the Oregon Islands National Wildlife Refuge.

Please contact ODFW Marine Reserves Program staff if you have any questions or would be interested in exploring possible collaborations. Our staff contact information can be found on the Oregon Marine Reserves website at oregonmarinereserves.com/team.

"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."

-- OPAC 2008

D. STRATEGIES FOR SHARING INFORMATION & ENGAGING COMMUNITIES

In this section we outline the management strategies ODFW is committed to carrying out for sharing information and engaging communities with regards to monitoring and research of the Cape Falcon site. These strategies have been developed based on feedback and input we have received from local community members, fishermen, and scientists as well as other interested members of the public. We anticipate these strategies will evolve and be adapted over time as we continue to evaluate and learn from our implementation efforts. Changes in strategies will be captured in updates to this site management plan.

D.1 KEEPING TABS ON MONITORING AND RESEARCH

ODFW has developed several strategies to help keep constituents, partners, and decision makers regularly informed about the ecological and human dimensions science being performed, what we are learning along the way, and how that information is being used to support management.

LEARN MORE ABOUT THE SCIENCE ON OUR WEBSITE

Check out the Science Research page on the Oregon Marine Reserves website. We also regularly post science news stories and updates for the Cape Falcon site. Reserves News posts can be sorted by category of science (ecology or human dimensions) as well as by marine reserve site.

VISIT THE RESOURCE LIBRARY ON OUR WEBSITE

We have created a Resource Library page for anyone to access marine reserves ecological and human dimensions monitoring plans, monitoring reports, workshop reports, and scientific journal publications produced by ODFW Marine Reserves Program staff and our research partners. The Resource Library is available on the state's Oregon Marine Reserves website at oregonmarinereserves.com/library.

SUBSCRIBE TO OUR E-NEWSLETTER

We have created a "Marine Reserves News" electronic newsletter that we email to subscribers once a month. Each newsletter includes a photo or video along with a brief news story or update on research and monitoring work being conducted by ODFW or our research partners. You can sign-up for the eNewsletter at oregonmarinereserves.com/newsletter.

ODFW DATA DASHBOARD

We invite you to explore with us as we begin investigating nearshore ocean trends and natural variation of different species at each reserve. The ODFW Data Dashboard is a website where you can delve into marine reserves ecological monitoring data collected by ODFW over the years. These data are considered preliminary and for exploratory purposes.

ATTEND A PRESENTATION

Our staff are committed to presenting papers and posters at scientific conferences, professional meetings, and/or webinars a few times each year. Upon request staff may also give science presentations to college students, local community groups, or decision makers.

D.2 USING LOCAL FISHING VESSELS FOR RESEARCH

When and where feasible, ODFW contracts local fishing vessels to serve as research platforms for our ecological monitoring and research work (see mandates in Chapter 2, A.1 and B.4). Contracting with fishermen allows us to use their expertise in vessel operations, in working with different gear types, and in building equipment. We work with local fishermen in order to improve our monitoring efforts and learn from their years of experience and in depth local knowledge of the ocean in and around the Cape Falcon site.

For the Cape Falcon site we contract local vessels for our hook and line surveys and to assist with deployment of oceanographic moorings. Occasionally there may be other vessel contract opportunities available.

VESSEL CONTRACT PROCESS

In most instances we contract vessels through the state's open competitive bidding process. This entails posting a Request for Proposals (RFP) and then soliciting applications. The RFP

"Cooperative and collaborative research will be encouraged as well as utilization of fishing vessels as research platforms."

-- OPAC 2008

outlines the at-sea project, vessel specifications, expectations and deliverables of the captain and any specified crew, and the insurance requirements. The RFP includes application forms to be filled out and submitted by bidders. Applications are scored based on estimated fees; qualifications and experience; and project approach. Applicants should note that they may include the cost of insurance in their bid price. The highest scoring application is awarded the contract. Preference is given in the qualifications and experience segment to local vessels, with captains and crew that have local knowledge of the areas of work. Vessels unable meet vessel requirements or that are determined to be unsafe to conduct the work will not be awarded a contract.

WAYS TO BE NOTIFIED OF CONTRACT OPPORTUNITIES

Once we have an RFP posted, we use several methods for notifying local fishing vessel owners and captains to solicit applications.

- **EMAIL/PHONE/TEXTING NOTIFICATION** For vessel owners and captains that have expressed interest to our staff or have previously bid on a contract with us, we send notifications by email, phone call, or text message based on their stated preference.
- **E-NEWSLETTER** We include RFP announcements in our "Marine Reserves News" eNewsletter which is emailed to subscribers. You can subscribe to our eNewsletter at oregonmarinereserves.com/newsletter. We also post RFP announcements on our Reserves News page on the state's Oregon Marine Reserves website at oregonmarinereserves.com/news.
- **DOCK WALKS** In some instances, particularly for new research projects at the Cape Falcon site, our staff will walk the docks in Garibaldi to talk to fishermen about the project and hand out applications for those who are potentially interested in applying.

WHERE TO GET AN APPLICATION

We provide several ways for folks to get applications.

- **DOWNLOAD FROM OUR WEBSITE** Applications can be downloaded from the Resource Library page on the state's website at oregonmarinereserves.com/library/#applications.
- **RECEIVE BY EMAIL OR MAIL** You can contact one of our ODFW Marine Reserves Program staff to email you an application, or send you an application in the mail.

D.3 COMMUNITY SCIENTIST OPPORTUNITIES

ODFW currently engages community members in the following ecological monitoring surveys at Cape Falcon.

VOLUNTEER ANGLERS

We use volunteer anglers to help us catch groundfish, in order to collect fish length data, during our hook and line surveys. These volunteers are experienced saltwater anglers willing to spend a full day out on the water helping us catch and sample fish, often in rough ocean conditions.

At the end of the year volunteers receive our "Fish On!" hook and line newsletter. The newsletter provides highlights from the year -- such as biggest and smallest fish caught -- as well as a summary of the data that the volunteers helped us collect. Copies of each year's "Fish On!" newsletter are also available from our online Resource Library page at oregonmarinereserves.com/library/#ecological

VOLUNTEER SCIENTIFIC DIVERS

We use volunteer scientific divers to conduct SCUBA diving surveys in shallow rocky reef areas. These are AAUS certified scientific divers who must then undergo a special survey method training, developed by the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). The method includes collecting data on fish, invertebrates, and algal communities. The volunteer divers, trainings, and surveys are a collaborative effort between ODFW, the Oregon Coast Aquarium, and Oregon State University.

FUTURE OPPORTUNITIES

As ODFW's monitoring and research programs continue and evolve, opportunities may be explored to develop other community science opportunities or specific community science projects.

Beyond ODFW, there are other opportunities and community science projects being hosted by other researchers and organizations in and around the Cape Falcon area. You can find some current ongoing projects listed in Chapter 9. You can find more upcoming opportunities on the Friends of Cape Falcon Marine Reserve website at www.nehalemtrust.org/capefalconmr.

CHAPTER 6. COMMUNICATIONS
STRATEGIES FOR COMMUNICATION & OUTREACH

"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."

-- OPAC 2008

Our communications objectives are to raise awareness about Oregon's marine reserves, the Cape Falcon site, and the ODFW Marine Reserves Program's activities. Our target audiences are coastal residents; fishermen and other extractive users; conservation organizations; scientists and marine resource managers; coastal leaders and decision makers; and coastal visitors who may be visiting at or near a marine reserve site.

Our communications and outreach predominately focus on the following:

RAISING AWARENESS ABOUT OREGON'S MARINE RESERVES	MARINE RESERVES PROGRAM ACTIVITIES
EMPHASIS IS ON: • What are marine reserves • Why marine reserves • Where are the marine reserve sites • What can and can't I do in a marine reserve or MPA	EMPHASIS IS ON: • Connecting people to what lies below the surface of the ocean • The scientific research being conducted by ODFW scientists and our research collaborators • Sharing what we're learning from Oregon's marine reserves and how that information is being used in management

In this chapter we outline our communication and outreach strategies. These will evolve over time as we continue to learn from, adapt and build on our current efforts.

A. COMMUNICATIONS STRATEGIES

Here we outline the current communications strategies that ODFW is committed to implementing. Some of these strategies are tailored specifically for the Cape Falcon site based on input staff received from local community members and other interested members of the public at site management plan workshops, from written comments, and from one-on-one conversations.

These strategies have been prioritized based on our marine reserves mandates, our communications objectives, and the staff time and resources we have available. These strategies will evolve over time as we learn, adapt and build on our current efforts. Communications strategies specific to compliance and enforcement are covered in Chapter 7.

A.1 COMMUNICATIONS PRODUCTS

We are committed to developing and implementing the following products to provide communications about Oregon's marine reserve system, the Cape Falcon site, and the work of our Program. We will work with partners on development or distribution of these products when pertinent and resources are available.

OREGONMARINERESERVES.COM WEBSITE	ODFW has created an official state website for Oregon's marine reserves at **oregonmarinereserves.com**. The website was launched in Spring 2016, and provides information on the marine reserve sites, rules, monitoring and research, and ways for the public to engage. It also includes a Resource Library where folks can download reports, policy documents, outreach materials and more.
E-NEWSLETTER	Our monthly "Marine Reserves News" eNewsletter is a great way to keep tabs on current research, find out about reports and upcoming events, dive into interesting ocean topics, and hear perspectives from scientists, fishermen, volunteers and community members. We always feature photos or videos from our work.. You can sign-up for the eNewsletter at **oregonmarinereserves.com/newsletter**.
RESERVES NEWS ON THE WEBSITE	We regularly post stories on current research, upcoming events and announcements, and ocean related topics on our website. Reserves News posts can be sorted by category of science (ecology or human dimensions) as well as by marine reserve site. You can browse current and past news posts on the website at **oregonmarinereserves.com/news**.
ODFW DATA DASHBOARD	We invite you to explore with us as we begin investigating nearshore ocean trends and natural variation of different species at each reserve. The **dashboard** is a website where you can delve into ecological monitoring data collected by ODFW over the years. These data are considered preliminary and for exploratory purposes.

BROCHURES AND FAQ HANDOUTS	We have brochures and Frequently Asked Question handouts available for each of Oregon's marine reserve sites, including Cape Falcon. There is also a statewide marine reserves brochure that covers all five sites. These brochures are for distribution to local information hubs, for use at tabling events, and for download by the public from the website.
COLLABORATIONS WITH THE FRIENDS OF CAPE FALCON MARINE RESERVE	This local Friends group is comprised of volunteers and organizations working to increase understanding and appreciation of the Cape Falcon Marine Reserve. They coordinate outreach and education events, as well as promote research through a number of community science projects. ODFW participates in and collaborates on specific outreach and communications events and projects led by the Friends group. Find more at **www.nehalemtrust.org/capefalconmr**.
EXHIBIT AT HATFIELD MARINE SCIENCE CENTER'S VISITOR CENTER	We have an exhibit on Oregon's marine reserves, highlighting ecological monitoring activities being conducted by the ODFW Marine Reserves Program and our Oregon State University research collaborators. The exhibit includes underwater video footage from the marine reserve sites collected during our monitoring activities.
PRESENTATIONS AND EVENTS	We will provide public presentations on Oregon's marine reserves and the Cape Falcon site. Preference is for presentations to be given at events or venues with audiences of 20+ people, or for audiences that may not otherwise be reached. Each of our staff are committed to attending 1-2 presentations or events each year.
PHOTO AND VIDEO REPOSITORY	We have created a repository for marine reserves related photos and underwater videos on the website at **oregonmarinereserves.com/media**.
RESOURCE LIBRARY	We have created a Resource Library on the website for anyone to access and download ecological monitoring documents, human dimensions research documents, outreach materials, policy and management documents, as well as applications for vessel contracts. Visit the Resource Library on the website at **oregonmarinereserves.com/library**.

A.2 LOCAL COMMUNICATIONS PATHWAYS

For the Cape Falcon site, we received input on local communications pathways for sharing marine reserves information and for engaging with members in local communities. These are pathways ODFW staff, or others, can consider when conducting marine reserves communications and outreach.

Here we provide a list of the local community connectors, events, and information hubs that were identified by local community members.

LOCAL CONNECTORS

These are specific local groups that may act as connectors to larger audiences. Targeting communications to these groups may help expand communications reach.

Examples identified by local community members:

- North Coast Land Conservancy
- Lower Nehalem Community Trust
- Lower Nehalem Watershed Council, Necanicum Watershed Council, North Coast Watershed Association
- Surfrider Foundation - North Coast Chapter
- CoastWatch Volunteers
- Portland Audubon
- Explore Nature Tillamook Coast
- Tillamook Estuaries Partnership
- Visit Tillamook Coast
- Haystack Rock Awareness Program (City of Cannon Beach)
- Friends of Cape Falcon Marine Reserve
- Friends of Haystack Rock
- Wildlife Center of the North Coast
- Pelican Science
- American Cetacean Society - Oregon Chapter
- North Coast Citizens for Watershed Protection
- Columbia Riverkeeper, Willamette Riverkeeper
- Fishermen's Advisory Committee for Tillamook (FACT)
- OSU Extension Offices (Astoria, Tillamook)

LOCAL EVENTS

These are local area events that may provide opportunities to reach large local and visitor audiences. Examples identified by local community members:

- Crave the Coast (Garibaldi)
- Birding and Blues (Pacific City)
- Farmer's Markets: Manzanita, Cannon Beach, Seaside, Astoria, Tillamook, Garibaldi
- Cannon Beach Sandcastle Contest
- Stormy Weather Arts Festival (Cannon Beach)
- Earth and Ocean Arts Festival (Cannon Beach)

LOCAL INFORMATION SOURCES AND HUBS

Community members suggested that many folks in their community get their information from local radio and newspaper, as well as local websites and listservs. Communications that use these pathways may be a good way to reach local audiences and stakeholders. They also described local hubs where people in the community often seek or find information.

Examples identified by local community members:

- Local Newspapers and Magazines: Daily Astorian, Hipfish, Tillamook Headlight Herald, North Coast Citizen, Cannon Beach Gazette, Seaside Signal, The Oregonian, Our Coast Magazine
- Local Radio: KMUN, Manzanita Radio, OPB
- Local Speaker Series: World of Haystack Rock (Cannon Beach), Lower Nehalem Watershed Council (Manzanita), Nature Matters (Astoria), Listening to the Land (Seaside), Tillamook Bay Watershed Council (Tillamook)
- Clatsop Community College, Tillamook Bay Community College
- North County Recreation District (Nehalem), Sunset Empire Recreation District (Seaside)
- Hoffman Center for the Arts (Manzanita)
- Cannon Beach Arts Association
- Local Libraries: Tillamook County Libraries (6), Cannon Beach Library, Seaside Public Library, Warrenton Community Library, Astoria Public Library
- Local Websites/Listservs: Oregon Coast Beach Connection, Tillamook Pioneer, Oregonsnorthcoast.com, North Coast BBQ, Tillamookcoast.com
- Local Fishing and Hunting Organizations: Santiam Fly Fishers, NW Fishing Club, Oregon Fishing Club, Rainland Flycasters

VISITOR INFORMATION SOURCES AND HUBS

Community members and members of the local tourism industry recommended pathways that may be a good way to reach tourists visiting at or near the marine reserve site.

Examples identified included:

- Print: Cannon Beach Visitor Guide
- TV: Grant's Getaways (KGW)
- Visitor Centers: Cannon Beach, Seaside, Manzanita, Tillamook, Rockaway Beach, Astoria-Warrenton
- Museums: Tillamook Pioneer Museum, Columbia River Maritime Museum, Cannon Beach Historical Society and Museum, Nehalem Valley Historical Society
- Seaside Aquarium
- Visit Tillamook Coast, Seaside Visitors Bureau
- Whale Watch Spoken Here (OPRD)
- Trailhead and Beach Ambassador Program (North Coast's Outdoor Recreation Action Team)
- Social Media: Use relevant regional hashtags (e.g. #seasideoregon, #northcoastoregon)

CHAPTER 7. COMPLIANCE & ENFORCEMENT
STRATEGIES & MANAGEMENT PROCEDURES

"Marine reserves will be adequately enforced.
-- OPAC 2008

In this chapter we outline the management strategies to be implemented by state agencies that support compliance and enforcement of the Cape Falcon site. These include methods for surveillance, periodic reviews of enforcement, as well as outreach methods and products. This chapter also outlines procedures for removing lost fishing gear and procedures for scientists conducting research in marine reserve sites. These strategies have been developed by the Oregon Department of Fish and Wildlife (ODFW) in consultation with Oregon State Police (OSP), Oregon Parks and Recreation Department (OPRD), and Department of State Lands (DSL) along with input from local community members.

We recognize that local communities have a large influence and play an important role in supporting compliance of the marine reserve and MPA rules at the Cape Falcon site.

A. ENFORCEMENT STRATEGIES

Enforcement of Oregon's marine reserves is carried out by OSP's Fish and Wildlife Division. Surveillance of sites is conducted from land, by air via airplane operated by OSP and helicopter in cooperation with the U.S. Coast Guard, and on the water by boat. OSP also has a tip line for citizens to **call and report** any possible fish or wildlife **violations at 1-800-452-7888**. We highly promote the public calling the OSP tip line to report any suspected violations at the Cape Falcon site.

OSP is monitoring and collecting data on enforcement efforts carried out for the Cape Falcon site. The state management agencies use this information along with observations from OPRD staff in the field and frequently asked questions or issues raised by constituents to review compliance and enforcement efforts and make adjustments. OSP, ODFW, and OPRD staff are committed to meeting twice per year to review compliance and enforcement. Adjustments may include shifting additional resources to certain locations, targeted education and outreach efforts, or piloting of new surveillance tools. Workshops with the fishing fleet, sport fishermen, or local community members may also be conducted when determined to be appropriate or requested as a means of disseminating information or discussing and gaining feedback on specific compliance or enforcement issues.

B. OUTREACH STRATEGIES

In this section we outline the outreach strategies ODFW is implementing to deliver information to commercial fishermen, sport fishermen, and the general public on the prohibitions and allowances of the Cape Falcon site.

B.1 MAPS AND RULES SUMMARIES

ON THE OREGON MARINE RESERVES WEBSITE

The following are available on our website at oregonmarinereserves.com/rules or by contacting the ODFW Newport office at (541) 867-4741.

- **MAPS AND RULES** One page handouts that can be viewed and downloaded. Best for fishermen who may be fishing offshore from a boat. The handout provides a map of the Cape Falcon site overlaid onto a nautical chart, the site boundary coordinates, and a summary of the prohibitions and allowances in the marine reserve and each of the three MPAs.
- **SHORESIDE MAPS AND RULES** One page handouts that can be viewed and downloaded. Best for folks who may be accessing the marine reserve or one of the MPAs via the shore. The handout provides a schematic map of the Cape Falcon site that includes landmarks on land and a summary of the prohibitions and allowances in the marine reserve and each of the three MPAs.
- **OREGON ADMINISTRATIVE RULES (OARS)** The complete set of official Oregon Administrative Rules for Oregon's marine reserves and protected areas (OARs 141-142, 635-012, and 736-029) can be viewed and downloaded.

IN THE SYNOPSIS OF COMMERCIAL FISHING REGULATIONS

Booklet printed annually. We include boundary coordinates, maps, and a summary of the rules for each of Oregon's marine reserve sites.

IN THE OREGON SPORT FISHING REGULATIONS GUIDE

Guide printed annually. We include maps and a summary of the rules for each of Oregon's marine reserve sites in the Marine Zone section under Management Designations for Marine Areas. The guide is also available electronically at www.eregulations.com/oregon/fishing.

B.2 DOWNLOADABLE COORDINATES FOR DIGITAL DEVICES

We have marine reserve and MPA boundary coordinates available for download for some more commonly used digital devices. The following are available from the Oregon Marine Reserves website at oregonmarinereserves.com/rules or by contacting the ODFW Newport office at **(541) 867-4741**.

FOR GPS

The following formats are available to download for hand held GPS units.

- **GPX FILE** Used by most Garmin products.
- **PRINT FILE** A printable pdf file with all coordinates for each site. Can be used to hand enter coordinates into your GPS unit.

FOR MAPPING PROGRAMS

The following formats are available to download.

- **KMZ FILE FOR GOOGLE EARTH** The file can be imported into Google Earth "My Places."
- **LAYER PACKAGE FOR ESRI ARCGIS** The layer package includes shapefiles of the site boundaries.

FOR VESSEL NAVIGATION SYSTEMS

ODFW has worked with the Oregon Fishermen's Cable Committee (OFCC) to develop boundary coordinates and rules summaries that can be downloaded for some of the more common vessel navigation systems used by Oregon's commercial fishing fleet. These are available for download as a .zip file from the website for use with the following systems:

- Maptech Offshore Navigator
- Rose Point Coastal Explorer
- Nobeltec Visual Navigation suite/Odyssey Time Zero
- OLEX
- P-Sea WindPlot II

There is also a separate instructions file to download that provides detailed instructions on how to load the boundary coordinate files for each specific navigation program.

ODFW and OSP also distributed electronic thumb drives containing these boundary coordinate files during commercial crab hold inspections at the start of the 2013-14, 2014-15, 2015-16 , and 2016-17 crab seasons.

Fishermen can also obtain a thumb drive by stopping by or calling the ODFW Newport office at **(541) 867-4741**.

WHAT ARE THE PENALTIES FOR VIOLATIONS?

Penalties for violations pertaining to fish, invertebrates, or wildlife within reserves are dictated by the wildlife code (Chapter 496) and commercial fishing code (Chapter 506) within Oregon Revised Statutes.

B.3 SIGNS

Two types of regulations signs have been developed and are posted at strategic locations near boat ramps and beach access points. Locations for the signs were decided in consultation with OSP and OPRD, along with input from local community members. ODFW may consider adding sign locations, or changing existing locations, during biannual enforcement reviews (see section A above) based on feedback received from constituents or agency staff.

HARVEST RESTRICTIONS SIGNS

These signs are intended for fishermen who may be fishing offshore from a boat. The sign provides a map of the Cape Falcon site overlaid onto a nautical chart, the site boundary coordinates, and a summary of the prohibitions and allowances in the marine reserve as well as in each of the two MPAs. These harvest restriction signs are currently posted at the Port of Garibaldi.

SHORESIDE REGULATIONS SIGNS

Aimed at folks who may be accessing the marine reserve or shoreside MPA via the shore. These signs are placed at common beach access points adjacent to the Cape Falcon site at Falcon Cove, Short Sand Beach, and Manzanita. The signs provide a generalized summary of what activities are prohibited from the shore at that specific location.

B.4 A GUIDE FOR DEVELOPING OUTREACH PRODUCTS

The ODFW Marine Reserves Program has developed an Outreach Guide for folks who are looking to produce marine reserves outreach products. The guide provides guidelines for helping to ensure that maps and rules language on any outreach materials or products, developed by any person or group, is accurate and consistent with outreach products statewide.

Applying these guidelines will help ensure that your outreach products are accurate, up-to-date, and support compliance and enforcement measures. We encourage you to contact our Communications staff early in your development process. Our staff will provide a timely review of products and determine if any other agencies should be included in the review (i.e., Oregon State Police or State Parks).

WHERE TO FIND THE OUTREACH GUIDE

Available on the state's Oregon Marine Reserves website at oregonmarinereserves.com/library/#outreach

HOW TO CONTACT OUR STAFF

Contact information for our Communications staff can be found at oregonmarinereserves.com/team.

ATTENTION FISHERMEN, LOST YOUR GEAR?

Marine reserve rules allow you to retrieve fishing gear that has accidentally drifted into a marine reserve site.

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.

CALL OREGON STATE POLICE AT 1-800-452-7888

C. PROCEDURES FOR RETRIEVAL OF LOST FISHING GEAR

The marine reserve administrative rules (OAR 635-012) include provisions for the retrieval of fishing gear that has accidentally drifted into the Cape Falcon site.

C.1 CONTACT 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.

C.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.

WHERE TO FIND MAPS AND RULES

OREGONMARINERESERVES.COM/RULES
or by contacting the ODFW Newport office at
(541) 867-4741

Oregon's marine reserve rules prohibit all extractive activities, with an exception for scientific take if the take is deemed necessary and the research contributes to the evaluation of site condition, effectiveness, or impact of stressors.

-- OAR 635-012; OPAC 2008

D. PROCEDURES FOR RESEARCHERS

Oregon's marine reserves prohibit all extractive activities -- including the take of fish, invertebrates, wildlife, or seaweeds as well as the removal or disturbance of non-living marine resources (i.e. habitats). However, marine reserve rules do include provisions for scientific take if the take is deemed necessary and the research contributes to the evaluation of site condition, effectiveness, or impact of stressors (OAR 635-012; OPAC 2008).

The following sections describe which types of research activities require a permit or state authorization for conducting research in a marine reserve and how to apply for the respective permit. Please contact ODFW Marine Reserves Program staff if you have any questions or would be interested in exploring possible collaborations. Our staff contact information can be found on the Oregon Marine Reserves website at oregonmarinereserves.com/team.

Researchers are also urged to review the guidelines and best practices provided in Chapter 8, established by the U.S. Fish and Wildlife Service, to avoid or minimize human disturbance to wildlife using offshore islands and rocks that are a part of the Oregon Islands National Wildlife Refuge.

D.1 PERMIT NEEDED FROM OREGON DEPARTMENT OF FISH AND WILDLIFE

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.

APPLICATIONS FOR SCIENTIFIC TAKING PERMITS

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:

- A project overview, 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).

WHEN DO I NEED A PERMIT FROM ODFW?

A Scientific Taking Permit is required from ODFW in order 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

- 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 biologist depending on the research location.

Applications that include research to be conducted within any marine reserve site will undergo an additional review by ODFW Marine Reserves Program staff to determine if the **take is deemed necessary and the research contributes to the evaluation of marine reserve site condition, effectiveness, or impact of stressors** (OAR 635-012).

Permits may take up to eight weeks for processing. For more information or to apply for a permit visit the ODFW website at: www.dfw.state.or.us/fish/license_permits_apps/index.asp.

NOTIFICATION OF RESEARCH ACTIVITY

The Principle Investigator (PI) named on the Scientific Taking Permit must send an email notification to ODFW and OSP at least 24 hours prior to conducting research within a marine reserve site. The PI is required to provide the date of the activity, site location (e.g. Redfish Rocks Marine Reserve), a brief general description of what the activity is (e.g. juvenile fish survey), vessel name and ID number (if applicable), and the species/species groups to be collected.

Please send email notifications at least 24 hours in advance to the following staff:

Cristen.N.Don@state.or.us (ODFW)	**TThompson@osp.oregon.gov** (OSP)

WHEN DO I NEED A PERMIT FROM DSL?

An authorization or removal-fill permit from DSL is required for activities that include structures in, on, under, or over the seafloor or the removal, fill, and/or alteration of material. An authorization is also needed for harvest or removal of subtidal kelp and other seaweeds.

-- OAR 141-125

D.2 AUTHORIZATION NEEDED 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's marine reserve rules 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.

APPLICATIONS FOR AUTHORIZATIONS AND REMOVAL-FILL PERMITS

Researchers 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).

Information on how to apply for an authorization or removal-fill permit can be found on the DSL website at www.oregon.gov/dsl/WW/Pages/Permits.aspx or by calling DSL in Salem at 503-986-5200.

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

- Detailed project overview, 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).

APPLICATIONS FOR SUBTIDAL KELP AND SEAWEED COLLECTION

Researchers 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).

NOTIFICATION OF RESEARCH ACTIVITY

The Principle Investigator (PI) named on the Scientific Taking Permit must send an email notification to ODFW and OSP at least 24 hours prior to conducting research within a marine reserve site. The PI is required to provide the date and location of activity, type of activity, vessel name and ID number (if applicable), gear to be used or deployed, and brief description of activity to be performed.

Please send email notifications 24 hours in advance to the following staff:

Cristen.N.Don@state.or.us (ODFW)	**TThompson@osp.oregon.gov** (OSP)

WHEN DO I NEED A PERMIT FROM OPRD?

A permit from OPRD is required for scientific research or monitoring activities occuring in the intertidal zone, including extraction of living (i.e., seaweed) and non-living natural products, and activities that may disturb habitats.

D.3 PERMIT NEEDED 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.

APPLICATIONS FOR SCIENTIFIC RESEARCH PERMITS

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 overview, 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: oprdpermits.org.

NOTIFICATION OF RESEARCH ACTIVITY

The Principle Investigator (PI) named on the Scientific Research Permit must send an email notification to OPRD and OSP at least 24 hours prior to conducting research within a marine reserve site. The PI is required to provide the date of activity and brief description of activity to be performed.

Please send email notifications 24 hours in advance to the following staff:

Laurel.Hillmann@oregon.gov (OPRD)	**TThompson@osp.oregon.gov** (OSP)

CHAPTER 8. SITE SPECIFIC MANAGEMENT ISSUES
NON-REGULATORY MANAGEMENT STRATEGIES

This Chapter identifies management issues specific to the Cape Falcon site and provides non-regulatory management strategies to address the issues in concurrence with the marine reserves goals, objectives, principles, and guidelines (see Chapter 2). Through ongoing management and monitoring efforts we may identify additional issues specific to the Cape Falcon site in the future. A review of issues and strategies will be conducted every five years as part of the management review (described in Chapter 3). The review may trigger adaptations to strategies and updates to this segment of the site management plan.

A. WILDLIFE DISTURBANCE: OREGON ISLANDS NATIONAL WILDLIFE REFUGE

The Cape Falcon site overlaps with two pinniped haulouts and 14 bird nesting colonies. The 48 emergent rocks located within the Cape Falcon 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 emergent rocks that comprise the Oregon Islands National Wildlife Refuge provide habitat that is important for vulnerable eggs, juveniles, 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).

A.1 CAUSES OF HUMAN DISTURBANCE

BOATERS

Motorized and non-motorized watercraft approaching too close have a high potential for disturbing seabirds and can result in the reduction or loss of eggs and chicks, and in some cases in colony abandonment (USFWS 2009).

AVIATION

Low flying aircraft have a high potential for disturbing seabird nesting grounds (**USFWS 2009**).

DRONES / UNMANNED AIRCRAFT SYSTEMS (UAS)

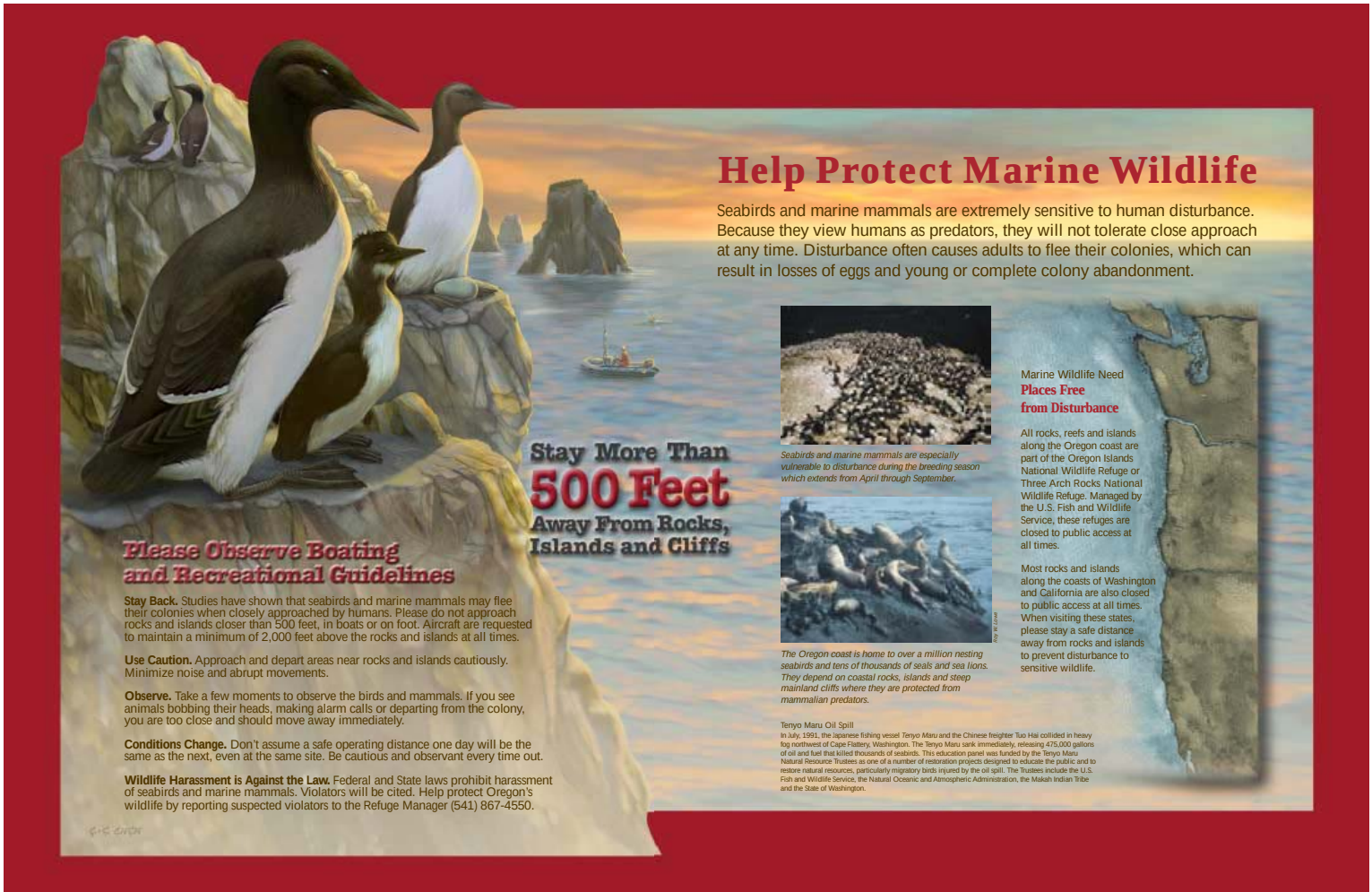
Flying unmanned aircraft systems (UAS) over or near wildlife can create stress that may cause significant harm, and even death. Areas considered ecologically sensitive—including lands within the National Wildlife Refuge System—can be disproportionately affected by drone flights. Thus it is illegal to operate unmanned aircraft on Refuge lands. In addition, if a UAS operator stands beyond Refuge boundaries and flies the vehicle over the Refuge, fines can be levied if the UAS is observed disturbing wildlife, e.g. flushing nesting birds from an offshore island.

A.2 USFWS GUIDELINES AND BEST PRACTICES

USFWS has guidelines and best practices for boaters, aviators, and wildlife viewers to avoid or minimize human caused disturbances to wildlife.

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 NWR. 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 to maintain a minimum altitude of 2,000 feet above ground level (AGL) or maintain a one-half nautical 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 as well as pinniped breeding and resting sites.



Recreational use of unmanned aircraft systems (UAS/drones) is prohibited at Oregon Islands NWR. Do not fly over or near wildlife as this can create stress that may cause significant harm, and even death. Pursuit, harassment, or an intentional disturbance of animals during breeding, nesting, rearing of young, or other critical life history functions is prohibited. Launch the UAS more than 100 meters (328 feet) from wildlife. Never approach animals or birds vertically with the UAS.
The FAA has authority over all airspace. Ensure that you comply with all FAA regulations and guidance for flying your UAS.

A.3 MANAGEMENT STRATEGIES

ODFW STRATEGIES

ODFW looks to assist the 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.

FOR BOATERS, AVIATORS, WILDLIFE VIEWERS, AND THE GENERAL PUBLIC Provide the public with easy access to USFWS outreach materials and information including their Seabirds of the Pacific Northwest brochure at outreach events and on the Oregon Marine Reserves website at oregonmarinereserves.com/library/#outreach.

FOR SCIENTIFIC RESEARCHERS Inform researchers looking to conduct research in marine reserve sites about the Oregon Islands National Wildlife Refuge and the guidelines and best practices established by USFWS. Provide contact information for Oregon Islands National Wildlife Refuge staff for questions or consultation.

A.5 ADDITIONAL USFWS RESOURCES

VISIT THE OREGON ISLANDS NATIONAL WILDLIFE REFUGE WEBSITE AT WWW.FWS.GOV/REFUGE/OREGON_ISLANDS

FIND A MAP OF THE REFUGE AT WWW.FWS.GOV/REFUGE/OREGON_ISLANDS/MAP.HTML

DOWNLOAD THE PACIFIC NORTHWEST SEABIRDS BROCHURE

LEARN ABOUT THE SCIENCE BEING CONDUCTED AT WWW.FWS.GOV/REFUGE/OREGON_ISLANDS/WHAT_WE_DO/SCIENCE.HTML

OREGON COAST NATIONAL WILDLIFE REFUGE COMPLEX
2127 SE MARINE SCIENCE DRIVE NEWPORT, OR 97365
(541) 867-4550 OREGONCOAST@FWS.GOV

Photo: Amelia O'Connor

B. HUMAN INDUCED STRESSORS FOR FUTURE CONSIDERATION

During this initial marine reserves program evaluation period (see Chapter 3, section C), implementation of Oregon's marine reserves is being staffed and funded at an austerity level by the Oregon Legislature. With limited resources, the state agencies have prioritized management efforts that are focused on extractive activities (e.g. fishing, ocean development). However, it is recognized that there are additional non-extractive activities that may negatively impact the marine reserve goals of conserving marine habitats and biodiversity; providing a framework for scientific research and effectiveness monitoring; or avoiding significant adverse social and economic impacts on ocean users and coastal communities (OPAC 2008).

Given additional resources, the state agencies should consider a process for identifying and prioritizing additional human induced stressors for specific marine reserve sites and the marine reserve system. Prioritization should include factors such as likelihood of occurrence and severity of impact. The prioritization can then be used by the state agencies to select which stressors need management strategies to be developed and incorporated into management plans.

In some instances, we may determine that certain stressors cannot be addressed through non-regulatory management strategies. These may warrant specific discussion during the marine reserves program evaluation in 2023 on if or how to address in marine reserves implementation moving into the future.

During site management plan workshops and public comment for the Cape Falcon Site Management Plan, comments were received that identified possible human induced stressors that may warrant future consideration. Here we highlight those stressors as identified by constituents.

Potential human induced stressors at the Cape Falcon site:

WATER QUALITY • Bacteria • Herbicides and pesticides • Changes in ocean chemistry (e.g. pH, dissolved oxygen, temperature)	**MARINE DEBRIS AND POLLUTION** • Failing septic systems • Trash left by visitors • Other land-based pollution affecting water quality or marine species
INCREASED VISITATION • Trampling • Lack of infrastructure to support visitors	**INVASIVE AND NON-NATIVE SPECIES**

Wildlife interpretive sign at Oswald West State Park.

CHAPTER 9. OPPORTUNITIES BEYOND THE AGENCY
REPRESENTING LOCAL COMMUNITY INTERESTS

This Chapter highlights activities and opportunities that are of interest to local communities above and beyond what is being carried out by ODFW and state agency management partners for the Cape Falcon site. These include additional opportunities for research, monitoring, outreach, and community engagement as well as for education and economic development.

By highlighting the communities' interests we hope to attract additional research and resources, and to foster community led projects.

A. IDENTIFYING ACTIVITIES AND OPPORTUNITIES

In developing this site management plan, ODFW was interested in learning what projects or additional research the community was interested in beyond what is being carried out by ODFW that could complement marine reserves implementation. In particular, we were interested in learning about potential projects that could be led by the community for the Cape Falcon site.

Between 2018 and 2019, ODFW gathered input from local community members and other interested members of the public through site management plan workshops, in an online survey, in written and emailed comments, and during one-on-one conversations with ODFW staff.

A.1 COMMUNITY WORKSHOPS AND ONLINE SURVEY

During a series of management plan community workshops held at three locations in 2018 and through an online survey conducted in early 2019, ODFW sought feedback on:

- Ways to improve our communication about the ecological monitoring and human dimensions research activities and results for the Cape Falcon site.
- The best ways to share monitoring and research information with the community.
- Ideas for projects or additional research important to community members beyond what is being carried out by ODFW.

The workshops were designed to listen and learn about community interests and were conducted as brainstorming sessions where all ideas were recorded. Workshop attendees recommended more than 60 different research and monitoring ideas for the Cape Falcon site and 43 different activities related to outreach and compliance. The workshops also produced suggestions for new partnerships to expand community engagement. The online survey asked specific ques-

tions of respondents pertaining to community interests and preferred communication methods. Summaries from the three workshops and the online survey are included in Appendix A.

A.2 TYPES OF PROJECTS IDENTIFIED

From the many ideas we gathered through the workshops, online survey, written comment, and one-on-one conversations -- those that fit ODFW's mandates (see Chapter 2) and were found to be feasible given staff and funding resources available have been adopted as management strategies in Chapters 5-8 or have been added as research and monitoring activities in ODFW's marine reserves monitoring plans. Other ideas shared have been identified as opportunities beyond the agency and are highlighted in this chapter. Projects included in this chapter fall into one of three categories:

- **COMMUNITY SUGGESTED RESEARCH** Research or monitoring of interest to the community to be carried out by non-ODFW scientists. The research would likely be led by an agency or academic institution due to complexity and/or expense.
- **COMMUNITY LED PROJECTS** The community provides all support, personnel, and resources needed to develop and perform the project.
- **PARTICIPATORY PROJECTS** A project made available locally that is likely to require resources and/or expertise beyond the community's capacity to develop and lead. Community members participate in the project.

B. RESEARCH AND MONITORING OPPORTUNITIES

Opportunities for research and monitoring identified in this section include ecological, human dimensions, and community science projects.

B.1 ECOLOGICAL RESEARCH PROJECTS

The community generated many ideas and suggestions for ecological research and monitoring projects that might complement work currently being carried out by ODFW and their research partners for the Cape Falcon site. Recommendations included "Community Suggested Research" that would require agency or academic leadership as well as projects that could be led by community members that would add to the overall monitoring effort.

COMMUNITY SUGGESTED - HABITAT AND CONNECTIVITY RESEARCH

The community identified several projects related to marine habitats, ecological parameters, and land/sea connection interactions. Suggested research included:

- Focusing on sandy bottom habitats and organisms that are prominent there.
- Studying connectivity linkages between the reserve and adjacent areas (comparison areas, other marine reserves, Tillamook Head).
- Study land/sea interactions between the reserve and the uplands including Oswald West State Park to determine what impacts to the reserve may originate on land.

Possible Project Leads: Universities, NOAA Fisheries, PISCO

Existing Projects: Dungeness crab research led by the Benthic Ecology Lab at Oregon State University (OSU) and NOAA Fisheries.

COMMUNITY SUGGESTED - SPECIES OF INTEREST RESEARCH

The community identified a number of species research projects they were interested in for the Cape Falcon site. Community members expressed that they'd like to see special attention given to species with high economic and cultural value, as well as those species that may be indicators of ecosystem health. Suggested research included:

- Expand research that contributes to stock assessments/management for important fisheries (i.e., crab, groundfish)
- Marine mammal and seabird use of site, including winter presence.
- Micro-organisms and food web interactions
- Coordinated nest and nearshore marbled murrelet surveys.
- Sea otter restoration potential for Cape Falcon Marine Reserve.
- Basic life history or biological studies for commonly found organisms (e.g. crabs, sea stars). How long do they live?
- Dungeness crab research including movement studies, determining natural mortality rates, life stages and habitat use as well as abundance and size structure inside vs outside of reserve.
- Invasive and non-native species surveys.
- Develop species lists for marine reserve and comparison areas.
- Continue and expand the benthic extraction surveys that were conducted by ODFW during baseline data collection.

Possible Project Leads: Universities, NOAA Fisheries, US Fish and Wildlife Service (USFWS), Tribes, Portland Audubon, Elakha Alliance

Existing Projects: Dungeness crab research led by the Benthic Ecology Lab at Oregon State University (OSU) and NOAA Fisheries.
Seabird nest monitoring surveys led by Portland Audubon.

COMMUNITY SUGGESTED - OCEANOGRAPHIC RESEARCH

Community members identified physical, chemical, and biological oceanographic data to be collected and research projects related to this data. They noted that large-scale oceanographic events such as El Nino, La Nina, and coastal upwelling, as well as changing ocean conditions including ocean acidification and nearshore hypoxia, can influence marine reserve characteristics. They also noted that monitoring ocean acidification and hypoxia at the marine reserve site can provide data to inform nearshore resource management more broadly. Suggested research included:

- Expand data collection of chlorophyll a, temperature, pH, dissolved oxygen. Consider if local vessels (e.g. commercial and charter fishing vessels) might be able to collect this data.
- Provide real time reporting of oceanographic data for use by fishermen and researchers.

Possible Project Leads: Universities

Existing Projects: Ocean acidification (pH) monitoring in the rocky intertidal led by OSU-PISCO. This project includes a community science opportunity (see B.3).

COMMUNITY SUGGESTED - WATER QUALITY AND TOXICOLOGY RESEARCH

A couple of studies related to water quality and toxicology were recommended by community members. Suggested research included:

- Monitoring for herbicides and pesticides in nearshore waters.
- Studies into microplastics in marine organisms

Possible Project Leads: Oregon State University (OSU, Portland State University (PSU), Surfrider Foundation

Existing Projects: Water quality monitoring (bacteria) by Surfrider Foundation Blue Water Task Force.
Microplastics in rockfish and mussels research by Brander Lab at OSU

B.2 HUMAN DIMENSIONS RESEARCH PROJECTS

COMMUNITY SUGGESTED

Community members suggested the following ideas for human dimensions research projects that might complement the work currently being carried out by ODFW and our research partners for the Cape Falcon site.

- What economic contributions does scientific research bring to the community and local economy?
- Do existing local businesses capitalize on marine reserves? Do businesses capitalize on information being generated for marine reserves? Are there new businesses being developed around marine reserves?
- Additional research related to ecosystem services provided by the reserve.

Possible Project Leads: Universities, Chambers of Commerce, County Economic Development Offices

Existing Projects: Statewide Survey of Social Values, Attitudes, and Opinions led by Portland State University (PSU).
Study of Economic Contribution From Ocean Research, Planning, and Management Activities at Port Orford led by The Research Group, LLC.

B.3 COMMUNITY SCIENCE PROJECTS

Community members identified community science projects as a good way to engage people in marine reserves implementation. Community members recommended ideas for projects that could be performed by non-professional scientists. Some of these projects could be done by folks who, after a little training, are able to perform tasks that contribute to data collection. Some of the projects identified could be done on one's own schedule or wouldn't need active

oversight by a professional staff. Community science recommendations included: "Community Led" projects, "Existing" projects that community members can plug into, as well as ideas for new "Participatory" community science projects.

COMMUNITY LED PROJECTS

Community members suggested the following ideas for community science projects that could be led by the community:

- Resident and visitor surveys for marine reserve awareness on site and in nearby communities
- Expand the seabird species that are currently monitored
- Monitor mussels and dominant macroalgae in intertidal habitats as well as soft-body invertebrates such as sea anemones to assess human impacts
- Monitor water quality in and near the marine reserve for land-based impacts.
- Bioblitz: Biodiversity inventorys and surveys of intertidal and adjacent watersheds.

Possible Project Leads: Friends of Cape Falcon Marine Reserve, Portland Audubon, CoastWatch, Oregon Coast Aquarium, Surfrider Foundation, The Nature Conservancy, Watershed Councils

EXISTING COMMUNITY SCIENCE PROJECTS

The following community science projects were identified as being established projects that community members could plug into:

- Beachcast (dead) bird surveys led by Coastal Observation and Seabird Survey Team (COASST)
- Sea Star Wasting Disease: Monitoring in rocky intertidal habitats led by CoastWatch and MARINe.
- Blue Water Task Force: Monthly water testing for bacteria led by Surfrider Foundation.
- NOAA Shoreside Marine Debris Monitoring: Monthly marine debris survey. Surfrider Foundation, Oregon Shores, NOAA Marine Debris Program.
- Seabird Monitoring Survey: nesting success/productivity annual survey led by Portland Audubon.
- CoastWatch Mile Surveys: Monthly beach surveys. Organized by Oregon Shores

PARTICIPATORY PROJECTS

Community suggestions included the following ideas for projects that could be developed for community members to participate in. These projects would likely require external support to develop and lead.

- Oceanographic sensors deployed by commercial and charter fishing boats

- Ocean acidification monitoring
- Volunteer SCUBA surveys

Possible Project Leads: Universities, Oregon Dungeness Crab Commission, Reef Check, REEF

Existing Projects: Ocean acidification (pH) monitoring in rocky intertidal zone. pH sensors are installed and maintained by local volunteers. Led by OSU-PISCO and the Friends of Cape Falcon Marine Reserve.

C. COMPLIANCE, OUTREACH, AND EDUCATION OPPORTUNITES

Community members shared ideas on ways in which marine reserves information could best be shared with local communities and the public. Many of the ideas shared have helped shape new communications tools, products, and channels that are actively being used by ODFW and are captured in Chapter 6. Additional ideas for compliance, outreach, and education projects beyond what is being carried out by the agency are provided in this section. Recommendations included both "Community Led" and "Participatory" projects.

COMMUNITY LED PROJECTS

Community members suggested the following ideas for projects that could be led by the community:

- Staff information kiosk at Short Sands Beach
- Video clips for businesses
- Provide marine reserves materials and information at local community events, make presentations at local meetings, and provide interpretive talks on hikes and outings.
- Develop marine reserves outreach packets to distribute to local businesses.
- Develop media packets for local visitor bureaus.
- Develop a marine reserves best practices certification program for charter vessel operators.
- Docent led boat and hiking tours.
- Promote best practices for visitors, such as "leave no trace behind".
- Monitor and report potential regulations compliance violations to Oregon State Police.
- Develop and install interpretive signs.
- Provide a data portal for education materials.

Possible Project Leads: Friends of Cape Falcon Marine Reserve, Oregon Coast Visitors Association (OCVA), Chambers of Commerce

Existing Projects: Hospitality packet developed by the Friends of Cape Falcon Marine Reserve and OCVA.
Presentations given by the Friends of Cape Falcon Marine Reserve.

PARTICIPATORY PROJECTS

Community suggestions included the following ideas for projects that community members could contribute to. These projects would likely require external support to develop and lead.

- Ocean literacy curriculum developed around the Cape Falcon Marine Reserve.
- Exhibit for display at the Oregon Coast Aquarium
- Boundary markers.

Possible Project Leads: Educators, Oregon Coast Aquarium

APPENDIX A. WORKSHOPS AND SURVEY

In 2018 and 2019, ODFW conducted an online survey and a series of community workshops to gather input and ideas from north coast residents and other interested Oregonians. These were two tools used as part of ODFW's process in developing the management strategies for the Cape Falcon Marine Reserve. Input received was also used to identify activities and opportunities of interest to local communities above and beyond what is being carried out by ODFW, which was used to develop Chapter 9.

In this Appendix we provide an overview of what input was sought in the survey and during workshops, and provide a summary from each of the three workshops on the ideas and input provided by the attendees.

A. ONLINE SURVEY

ODFW held a survey from February-March of 2019, using an online survey tool by SurveyMonkey. We announced the survey via our monthly eNewsletter and in a Reserves News post on our website. In all we had 54 people participate in the survey. Here we provide a copy of the survey introduction and questions.

ODFW ONLINE SURVEY

Approximately 20 minutes to complete

This survey has been created for you to share your ideas and input with ODFW to help with development of the management plan for the Cape Falcon Marine Reserve. Your input will be used to help us develop communications and community engagement strategies that will be included in the management plan. These will be strategies that help keep locals and visitors up to date and informed, support ongoing scientific research, engage communities, and strengthen compliance and enforcement at Cape Falcon. The management plan will also document local community interests for projects above and beyond what is being carried out by ODFW. By highlighting the communities' interests we hope to attract additional research and resources, and to foster additional projects in and around the Cape Falcon Marine Reserve.

In this survey, ODFW wants to hear from you on:

- What are you most interested in about the Cape Falcon Marine Reserve and the ODFW Marine Reserves Program?

- How can ODFW best keep you informed and up-to-date on research, community engagement opportunities, and regulations?
- Do you have ideas for activities or projects above and beyond what is currently being carried out by ODFW for the Cape Falcon Marine Reserve? These might be projects around research, monitoring, outreach, community engagement, education, or economic development.

This survey will take approximately 20 minutes to complete. There are 10 questions, and some have multiple parts. We thank you for taking the time to share your input with us about Cape Falcon Marine Reserve.

SURVEY QUESTIONS

Questions 1-5 are focused on hearing what people are most interested in having information on about the Cape Falcon Marine Reserve and the ODFW Marine Reserves Program, and the best ways for communicating and sharing that information.

Question 1. What topics are of particular interest to you or what types of information would you like to have for the Cape Falcon Marine Reserve?

Question 2. What would you like to have more information on about the ODFW Marine Reserves Program?

Question 3. Are there particular products you would recommend be developed to help share these types of information with the public?

Question 4. In what town/city do you live?

Question 5. What are local ways that ODFW staff, or others, might best reach and share information with people in your local community?

Q5a. Local Groups/Organizations: Please list any specific local groups or organizations that ODFW might connect with to reach people in your community.

Q5b. Local Events: Please list any local area events that might provide opportunities to reach local audiences or visitors.

Q5c. Local Information Hubs and Channels: Where do you or people in your community frequently get your information? What are local sources or places for information? (e.g., a specific local newspaper or radio station, the bulletin board at the local library, an email distribution list or newsletter, a local person or group that people follow on social media)

Q5d. Other Ideas?

Questions 6-10 are asking about peoples interests for projects above and beyond what is being carried out by ODFW at Cape Falcon. We want to hear about your ideas for research, monitoring, outreach, community engagement, education, or economic development projects.

Question 6. Do you have recommendations for any additional ecological research projects that might be done at the Cape Falcon Marine Reserve by non-ODFW scientists or other experts?

Q6a. Recommended Projects: Please list any recommendations for ecological research projects.

Q6b. Possible Project Leads: Do you know of any particular scientists, programs, or institutions that might be able to lead such a project?

Q6c. Any Existing Projects: Do you know of any such projects that are already being done at or near Cape Falcon or that exist elsewhere?

Question 7. Citizen Science Projects: Do you have recommendations for any citizen science projects that might be done at the Cape Falcon Marine Reserve?

Question 8. Do you have recommendations for any additional social science or economics research projects that might be done in connection with the Cape Falcon Marine Reserve by non-ODFW scientists or other experts?

Q8a. Recommended Projects: Please list any recommendations for research projects.

Q8b. Possible Project Leads: Do you know of any particular scientists, programs, or institutions that might be able to lead such a project?

Questions 9. Outreach or Education Projects: Do you have any recommendations for outreach or education projects that might be led by the local community?

Q9a. Recommended Projects: Please list any recommendations for outreach or education projects.

Q9b. Possible Project Leads: Do you know of any particular groups or organizations that might be able to lead such a project?

Question 10. Economic Development Projects: Do you have any recommendations for economic devel-

02.13.19

Online Survey for Cape Falcon

Have an idea about how we can better communicate with north coast communities? Or an idea on a project you'd like to see happen a Cape Falcon? We're currently developing a site management plan for the Cape Falcon Marine Reserve and want to hear from you. **Read More**

Filed under: Cape Falcon, Announcements

opment projects that could be done in connection with the Cape Falcon Marine Reserve?

Q10a. Recommended Projects: Please list any recommendations for economic development projects.

Q10b. Possible Project Leads: Do you know of any particular groups or organizations that might be able to lead such a project?

B. COMMUNITY WORKSHOPS

ODFW held a series of management plan workshops in 2018. The workshops were held in the communities of Manzanita, Seaside, and Garibaldi. We had 38 community members participate in the workshops.

B.1 WORKSHOP OVERVIEW

Here we provide an overview of the workshop objectives, purpose, structure, and input sought. The section that follows is a summary of the ideas and input shared by participants for each of the three workshops.

WORKSHOP OBJECTIVES

ODFW is looking to:

- Listen and learn about what folks are interested in and how we can improve communications about the Cape Falcon Marine Reserve, including:
  - General information about the reserve
  - Research and monitoring activities and results
  - Rules
- Gather ideas on best ways we can be sharing this information with the local community
- Learn about ideas for projects or research important to community members beyond what is being carried out by ODFW
  - Projects may be for outreach, education, engaging community members, economic development, ecological research, or economics/social science research

PURPOSE: HOW INPUT & IDEAS WILL BE USED BY ODFW

This input will be used to develop strategies and actions included in the management plan that will be carried out by ODFW in support of scientific research, keeping locals up to date and informed, engaging communities, and supporting compliance and enforcement.

The management plan will also document local community interests for activities above and beyond what is being carried out by ODFW. By highlighting the communities' interests in the management plan, we hope to attract additional research and resources to foster future projects in and around the Cape Falcon Marine Reserve.

STRUCTURE AND INPUT SOUGHT: WORKSHOP AGENDA

6:00 pm Welcome and Introduction

6:15 pm Marine Reserves Presentation
An introduction to Oregon's marine reserves, the work of the ODFW Marine Reserves Program, and the Cape Falcon Marine Reserve

7:00 pm Mingle and Check-out Display Tables
Visit the display tables and ask questions of ODFW staff to explore more about Oregon's marine reserves and the ongoing research, communications, and community engagement happening at Cape Falcon.

7:20 pm Brainstorm Session

1. **What do you want to know about the Cape Falcon Marine Reserve**

May include:

a. General information about the reserve (e.g. site characteristics, the ecology)
b. Research and monitoring activities and results (ecological or economics/social science)
c. Rules or enforcement
d. Activities to do in and around the site (non-extractive uses)
e. Other

2. **Best ways for ODFW to be sharing this type of information with the local community**
   a. Products
   b. Local groups/events
   c. Local pathways or channels
      (e.g. local newspaper, local radio station, chamber of commerce, local library)

3. **Projects or research important to community members beyond what is being carried out by ODFW**
   a. Projects may be for research, monitoring, outreach, community engagement opportunities, education, or economic development

   b. Projects should fall under one of the following three categories:

i. **Community Suggested Research**
Research or monitoring of interest to the community to be carried out by non-ODFW scientists. This research would likely be led by an agency or academic institution due to complexity and/or expense. (1) Eecological research projects. (2) Social science/economics (human dimensions) studies

ii. **Community Led Projects**
The community provides all support, personnel, and resources needed to develop and perform the project.

iii. **Participatory Projects**
Project made available locally that is likely to require resources and/or expertise beyond the community's capacity to develop and lead. Community members participate in the project.

c. Possible project leads?

d. Do you know of any such existing project currently happening?

8:15 pm Adjourn

B.2 WORKSHOP SUMMARIES

CAPE FALCON MANAGEMENT PLAN WORKSHOP
NOTES FROM PUBLIC INPUT
October 25, 2018 - Pine Grove Community House - Manzanita, OR

WHAT DO YOU WANT TO KNOW ABOUT THE CAPE FALCON MARINE RESERVE?

- What other states have marine reserves and how does Oregon compare?
- What university will write the draft report due to the State in 2023?
- More about the process of getting the report written including conflicts of interest
- How were sites, including Cape Falcon selected and the process to determine locations
- What is your outreach plan? Is there signage / more signage in the future? Do you do presentations? etc.
- Highlight of "fun facts" such as which is the largest reserve, what is unique about Cape Falcon Marine Reserve
- Do the other reserves have Friends groups? Do they coordinate and work together?
- List of the species found in the Cape Falcon Marine Reserve when ODFW conducts research
- How much presence does ODFW have in local schools? What outreach projects does ODFW do?
- Does ODFW research the seabirds?
- What partnerships do you have and how do they work together?
- More information about the comparison areas associated with the Cape Falcon Marine Reserve site.

BEST WAYS FOR ODFW TO BE SHARING THIS INFORMATION WITH THE LOCAL COMMUNITY

- Signs: regulatory signs, outreach signs in the community
- Partner with local groups to share information. Example provided was the Friends of Cape Falcon Marine Reserve (Community Led Project)
- Vacation Rentals – put material at hotels, vacation rentals, etc. (in room books). Educate property / business owners. Group suggested partnering with local organizations to do this work. (Community -Led Project)
- Engage with state parks as they create a state parks beach ambassador program – share about parks and the Cape Falcon Marine Reserve. Volunteers run program to share information. Connect with park manager in the Nehalem Unit.
- Teach people about what is under the water. Example – recent run of 'Virtual Tour' presentations

led by ODFW and co-hosted by Friends of Cape Falcon Marine Reserve.

- Videos with narration and facts about what is being documented in the Cape Falcon Marine Reserve
- A list of plants and animals using the Cape Falcon Marine Reserve. Share during outreach, compare lists between sites and present
- Share information about the reserve using mobile device in some way. Potentially via videos on the phone.
- Use popular destinations, like Short Sand Beach in Oswald West State Park, to communicate to the public about marine reserve. Placed trained docents, signs with information and QR codes linked to a video or other information.

LOCAL PATHWAYS OR CHANNELS ODFW MIGHT USE TO SHARE INFORMATION WITH THE LOCAL COMMUNITY

- Clatsop County / Tillamook County cable access stations.
- Radio – Manzanita Radio; KMUN; Coast Radio; KLCC
- BBQ List serve for reaching local groups about new information and events.
- OPB – do more segments on the marine reserves and research
- Portland should be a target audience for outreach
- Online news outlets –
    - Pioneer – local online paper expressed interest in highlighting a series of articles on the Cape Falcon Marine Reserve
    - Oregon Coast Beach Connection (online news outlet)
- Papers- Headlight Herold, North Coast Citizen, Daily Astorian and sister papers
- Connect with Oregon Coast Visitor Association (See community led projects for ongoing work)
    - Community indicated that a project is ongoing coastwide with OCVA and includes ODFW but is led by community groups working to educate about the marine reserves along the coast. The participates at the meeting encouraged partners to reach out for feedback from businesses and visitors. Evaluate the end users of this reserve. Partners include Friends of Cape Falcon MR, OCVA, Cape Perpetua Collaborative, Friends of Otter Rock MR, Friends of Cascade Head MR, Redfish Rocks Community Team, Surfrider, TNC, Audubon Society of Portland, CoastWatch, Coast Range Association, Oregon Coast Visitor Association, Outdoor Project.
- Engage with Travel Oregon
- City of Manzanita has a quarterly newsletter that may be able to share information about the Cape Falcon Marine Reserve
- ODFW hosts a local forum every year. Example could be the Pine Grove Community Center
- Other specific groups to engage with? CoastWatch, Coast Range Association, Oregon Shores Conservation Coalition, and local groups including North Coast Land Conservancy, Lower Nehalem

Watershed Council, Haystack Rock Awareness Program

COMMUNITY SUGGESTED RESEARCH

- Water quality monitoring of runoff into the marine reserve. This should include monitoring for pesticides and septic systems (Falcon Cove septic contamination noted).
    - *Ongoing research identified*: Surfrider Foundation Blue Water Task Force, ODEQ water quality monitoring
- Seabird monitoring within the marine reserve. Duplicate this research within designated comparison areas.
    - *Ongoing research identified*: Audubon Society of Portland is currently monitoring seabirds within the Cape Falcon Marine Reserve with USFWS and local partner Friends of Cape Falcon Marine Reserve and Haystack Rock Awareness Program.
    - *Potential partners and leads*: USFWS, Oregon State Parks, Friends of Cape Falcon Marine Reserve, Audubon Society of Portland, organization working in comparison areas.
- Quantify and evaluate existing sandy bottom species
- Process and gather data from other organizations like CoastWatch, USFWS aerial surveys, and OSU's ocean acidification data monitoring.
    - *Ongoing research identified*: Oregon State University (Dr. Francis Chan) is monitoring for changes in ocean chemistry (pH and temperature) at all five marine reserve sites, USFWS research, COASST seabird monitoring
    - *Potential partners and leads*: Listed above
- Conduct research at Tillamook Head as a reference area (community noted that this location was a suggested reserve site prior to Cape Falcon's designation)
- Evaluate the impacts of increased visitation on Falcon Cove and the other access points to the marine reserve. Consider positive and negative impacts of visitation. Evaluate the impacts of land-based pollution.
- Education in schools
- Partner on an event that brings kids to Short Sand Beach for an educational event. Include an opportunity to train educators to lead the school groups in activities ahead of time to ensure proper messaging from ODFW.
    - Potential partners include: State Parks, local Friends group, ODFW.
- What is the increase impact on the community due to the marine reserve? (possible Community Led Project)

COMMUNITY LED PROJECTS

- Water quality monitoring for example looking at herbicide run off in water and animals
    - *Ongoing research identified*: Surfrider Foundation Blue Water Task Force, ODEQ water quality monitoring

    - *Potential partners and leads*: Local volunteers, Surfrider, ODEQ
- Seabird and waterfowl research within the marine reserve including snowy plover.
    - *Ongoing research identified*: Audubon Society of Portland conducts cormorant, black oyster and pelican monitoring within the marine reserve using various community partners and volunteers
    - *Potential partners and leads*: Local volunteers, Friends of Cape Falcon Marine Reserve, other local organization with interest including land trusts, Haystack Rock Awareness Program, Audubon Society of Portland, COASST, CoastWatch
- Winter bird monitoring from shore – a great citizen science opportunity.
    - *Potential partners and leads*: Local volunteers, Friends of Cape Falcon Marine Reserve, other local organization with interest including land trusts, Portland Audubon
- Marbled Murrelet Citizen Science Research project. Example provided was Cape Perpetua Marine Reserve.
    - *Ongoing research*: Unsure what but may be some
    - *Potential partners and leads*: Local volunteers, Friends of Cape Falcon Marine Reserve, Oregon State Parks, other local organization with interest including land trusts, Audubon Society of Portland
- Participate in CoastWatch: King Tide program and Mile walkers
    - *Ongoing research identified*: Some local citizen already engaged
    - *Potential partners and leads*: Local volunteers, Friends of Cape Falcon Marine Reserve, Oregon State Parks, other local organization with interest including land trusts, Haystack Rock Awareness Program
- Connect and engage with Oregon Coast Visitors Association (OCVA), local businesses and vacation rentals. The participates at the meeting encouraged partners to reach out for feedback from businesses and visitors. Evaluate the end users of this reserve.
    - *Ongoing*: Community indicated that a project is ongoing coastwide with OCVA and includes ODFW but is led by community groups working to educate about the marine reserves along the coast.
    - *Partners*: Friends of Cape Falcon MR, OCVA, Cape Perpetua Collaborative, Friends of Otter Rock MR, Friends of Cascade Head MR, Redfish Rocks Community Team, Surfrider, TNC, Audubon Society of Portland, CoastWatch, Coast Range Association, Oregon Coast Visitor Association, Outdoor Project.
- Local groups communicate with elected officials to share about marine reserve findings and work.

PARTICIPATORY PROJECTS

- Marine Debris – how to get visitors to dispose of trash appropriately; pick up trash, be a good steward
- Senior projects at the high schools could address some of the research questions or other suggestions from the community

NOTES FROM THE "MARINA"

- Surfrider Foundation has a water quality testing lab at Seaside High School
- Address lack of infrastructure to support the increase in visitation due to marine reserves. How can the lack of facilities impact marine reserves? Engage high schools, community colleges to help like Tillamook Bay Community College (?)
- Be mindful of how marine reserves are promoted and do not push people to places that cannot handle the use

COMMENT CARDS

- Some higher visibility info (posters and/ or banners) for visitor centers or chambers of commerce
- Along with water testing for pesticides, test for herbicides, sewage, etc. Also test fish in the reserve for the above.
- Very concerned about "dead zones" off our coast. Good to hear some oxygen monitoring is being done. Also concerned signage at beaches isn't explicit enough about exactly what is allowed and where (crabs and "inverts" – what does that mean?)
- Connect with Ocean Conservancy Non-profit (Portland) https://oceanconservancy.org

Photo: Charlie Plybon

CAPE FALCON MANAGEMENT PLAN WORKSHOP
NOTES FROM PUBLIC INPUT

November 6, 2018 - Best Western Plus Ocean View Resort - Seaside, OR

WHAT DO YOU WANT TO KNOW ABOUT THE CAPE FALCON MARINE RESERVE?

- Anything in the presentation surprise you?
    - New Crab research in Cape Falcon. Questions: How do you deal with crab molting (i.e. do you lose equipment due to molting)
    - The extensive monitoring ongoing in the five marine reserve sites building scientific knowledge of the nearshore ocean in Oregon. Questions: How does this research compare with the work by ODFW to collect data for fish management decisions?
- Seal colony; any studies of impact of the reserve on marine mammals.
- Data gaps, in specific marine birds, and why do these gaps exist
- More information about the interactions/linkages between organisms, oceanographic conditions, and ecosystems
- How to research and recognize the nonmarket benefits of marine reserves (i.e. non-extractive). How can the community best communicate about these benefits?
- Are you monitoring nearshore currents? This directly affects nearshore ecosystem
- More information about hypoxia and dead zones, in general and how they are changing overtime.
- More information about research
- Species found during research
- Changes in visitor demographics; what are we learning from those kinds of surveys
- Use more visuals in presentation including videos
- General information about what is seen on the beach
- Inventory of what is living in the marine reserve (a field guide of species)

BEST WAYS FOR ODFW TO BE SHARING THIS INFORMATION WITH THE LOCAL COMMUNITY

- Visual markers onshore about reserve boundaries
- Share about marine reserve outcomes and research at local speaker series: World of Haystack Rock, Lower Nehalem Watershed Council, Nature Matters, Listening to the Land (Necanicum Watershed Council), Tillamook Bay Watershed Council, CoastWatch
- Engage retirees – suggestions for reaching include word of mouth, newspaper, facebook.
- Communication Portals: Radio (KMUN; Ship report), local listservs (northcoast BBQ), Next Door (online information sharing platform), Flyers (Fort Gorge, coffee shops etc.), Newspapers (Coast Weekend, Hipfish, Daily Astorian), Social Media (Facebook), NANOOS (online data sharing portal)

- ODFW website links to partners with additional information or opportunities to engage including community partners listed below.
- Partners that could help share information: Oregon Shores Conservation/Coast Watch, Local surf shops, Clatsop Community College, Lower Nehalem Watershed Council, Necanicum Watershed Council, local high schools, Community Recreation District, Tourism Commissions, Whale Watch volunteers (could share information at whale watching locations), North Coast Wildlife Rehabilitation Center, Seaside Aquarium, Marine Mammal Stranding Network, Friends of Cape Falcon Marine Reserve, North Coast Land Conservancy, SOLVE
- Using technology to engage people and keep up to date on oceanographic data and ecological changes
- Visuals and infographics already produced very useful (continue to provide)
- Share messages about linkages to land and give larger context
- Signage at viewpoints
- Gather/consolidate data gathered by various groups to tell story
- Invasive species
- Linkage to native American cultures
- Engage OR State Parks: Participatory project involving community partners, help build capacity for parks, increase messaging.
- Use Cape Falcon Marine Reserve to communicate about larger scale ocean processes. The defined area of the reserve makes it feel more attainable then talking about the larger ocean.
- Appreciate the Spirit of Discovery Document discussing the research happening at the Cape Falcon Marine Reserve and reference areas.
- Engage with Tribes – Native Americans model can be a good tool for engaging and communicating. Local tribes include Confederated Tribes of Grand Ronde, Clatsop – Nehalem Tribe, Confederated Tribes of the Siletz Indians

COMMUNITY SUGGESTED RESEARCH

- Impacts of the reserve on seal and sea lions
- Marine birds; their usage of/presence in reserves
- Micro-organisms and their links via food web to other organisms (holistic view of ecosystem)
- Monitoring indicators of productivity within the marine reserve using new technology. Share this information in real time. This should include parameters that indicate
- of productivity like chlorophyll
- Research that can look at the land-sea interface from the summit to the sea. This should include the connection with the proposed Rainforest Reserve, a 3500 acre site with rare plant and animal species only found at these isolated rocky tops and is connected to the marine reserve through a conservation corridor and habitats formed by the same geologic processes.

COMMUNITY LED PROJECTS

- Strategic capacity building with Oregon State Parks so they are able to share ecological information
- Already in place: Audubon bird surveys (BLOY, Pelicans, and nesting seabirds); ODF marbled murrelet, Haystack Rock Awareness Program citizen science on nesting birds, USFW seabird

PARTICIPATORY PROJECTS

- Docents at Short Sands and look outs
- Whale Watch Spoken Here docents informed about marine reserves or community groups encouraging marine reserve volunteers to engage in the whale program.
- iNaturalist programs

COMMENT CARDS

- Partners Lewis and Clark Nation Historic Park, Tillamook Bay Community College, ENCORE (peer senior education in Astoria), Senior Centers including Bob Chisholm Community Center in Seaside and Astoria Senior Center
- How to get information out: Encore – organization for retired folks – they arrend all kinds of classes conducted by experts and members from their own group – organized through Clatsop Community College – Leah Olsen, Dave Zunkel
- Engage community around the Cape Falcon Marine Reserve reference site near Cape Meares and Rockaway Beach. Groups that actively work in this area include the Friends of Netarts Bay Watershed Esturay Beach and Sea (WEBS).
- I would also love to see a more detailed map of the reference site on your website. I'd like to know which reefs are use for research comparison areas. Would also like to know when research happens.
- Engage local schools in evaluating data and perhaps building research equipment (i.e. the video lander). Use locally within reserve and at reference sites.
- Engage partners for funding assisting including Friends of Cape Falcon Marine Reserve.
- Engage Cultural Heritage Groups like Garibaldi Cultural Heritage Initiative at Piers End/ Old US Coast Guard Station
- Engage with Upward Bound at Clatsop Community College, Libraries, Cannon Beach Arts Association (Create collaborative art/ nature projects)

CAPE FALCON MANAGEMENT PLAN WORKSHOP
NOTES FROM PUBLIC INPUT
November 28, 2018 - Garibaldi City Hall - Garibaldi, OR

WHAT DO YOU WANT TO KNOW ABOUT THE CAPE FALCON MARINE RESERVE?

- Research needs to be linked into other efforts around non-consumptive ecotourism – missing that link to operative services that can connect that link
- Want to see more data about the history of the fishing that was taking place in the area
- Want to hear more about studies before they happen and how to be involved while they are happening
- Ocean acidification – what is happening? What are we learning from Cape Falcon Marine Reserve? How is it linked to other marine reserves or areas and research in these places?
- Want to be informed of big events
- Plans for outreach to the community
- Provide a portal for real-time data to be shared. For example, it would be great to hear back about the hook and line surveys and other monitoring results in real time rather than waiting for the long-term reports
- Interested in research that would help industry/agency/policy makers accurately calculate stock assessments/fish populations
- What information is there about the connectivity of the marine reserve sites? What are we learning from these reserves?
- Inform for volunteer needs, opportunities to help and be involved. How do you communicate this information?
- What is being seen under water?
- Oregon Marine Reserves are a coastwide experiment. At what point does the experiment end? When will the results be shared?
- Could the reserves expand or contract?

ANYTHING IN THE PRESENTATION SURPRISE YOU?

- $1.9 million program budget from general fund
- You can fish from the shore in the area of the Shoreside MPA
- SCUBA dive surveys are outsourced

BEST WAYS FOR ODFW TO BE SHARING THIS TYPE OF INFORMATION WITH LOCAL COMMUNITY

- FACT, FINE, SOORC

- PSA's – radio? KTIL suite of radio stations, BBQ list serve
- Schools Presentations - TBCC, High Schools, Middle Schools. Does ODFW got to the schools, talk to the kids about it?
    - Science clubs (ROV classes)
    - Marine biology classes
    - Outdoor school
- Northcoastbbq.com
- Tillamook County Fair, Booth
- Social media – exposure of info with balance – not "loving a place to death" but knowing what is going on and appreciating being informed, share a stewardship-based message
- Adult education – engage with the Explore Nature Partnership
- Portal for sharing citizen Science data and ODFW data

BEST WAYS FOR THE PUBLIC TO SHARE WITH ODFW?

- Offer a yearly meeting to provide updates on work and findings
- Meetings, advertise, flyers on docks
- Host a collaborative meeting focused on partnership/opportunities for collaboration, create an interactive suite of opportunities to engage more than once per year.
- Engage with NGOs to help host workshops, create partnership with ODFW, shift toward a workshop format over a presentation

PROJECTS OR RESEARCH IMPORTANT TO COMMUNITY MEMBERS BEYOND WHAT IS BEING CARRIED OUT BY ODFW

- Port of Nehalem – socio economic + history research and inclusion
- Invasive species – find out what is there, setup an Early Detection Rapid Responses system
- Research that contributes to fisheries stock assessments
- Impacts of El Nino/ La Nina on the area
- Oceanographic data: temperature, oxygenation, salinity, trends over time, link to species composition changes
- Connect monitoring going on through other programs: i.e. Citizen Science projects, many on going.
- Tagged crab – info on this research
- Information provided by location and in a variety of languages
- Photographic information, digital share

- Human impact – i.e. Short Sands – high use area economic and environmental impacts, +/- impacts of visitation to areas around the Cape Falcon Marine Reserve from both an environmental, economic, and personal standpoint
- More info on the basic biology of our native ocean life i.e. "how long does a sea stars live", "what do different rockfish eat"
- Share historical data on the area. Included historical fishing areas, Port of Nehalem use of the area.
- There needs to be a process by which the community is brought in
- Use sonar and video to find fish and ID them

CURRENT RESEARCH

- Buoys 20+ out for 6 months at a time. What is being monitored?
- Mounted cameras will soon be in place in all the marine reserves

COMMENT CARDS

- A kiosk similar to the one at Cape Meares Lighthouse on US 101, the Devils Punch Bowl (Cauldron?) parking lot, explaining Cape Falcon Marine Reserve.

OTHER COMMENTS/QUESTIONS

- Invasive species? Do you have monitoring goals that highlight invasive species?
- Is there any data prior to the Marine Reserves coming out of the community of Nehalem? There are a lot of traditional grounds in that area that don't feel represented. A good start would be marinas along the Nehalem River/Bay.
- How will ODFW include the work and research of other agencies to supplement, enhance data? How much credibility is given to programs like Citizen Science?
- When will we conclude this "experiment" of the Marine Reserves. When do we see results? Expansion or contraction of the reserve?

OREGON
Fish & Wildlife

Marine
Resources

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