



Marine Resources Program Overview

The Marine Resources Program (MRP) studies and manages the animals and habitats found in the ocean and estuarine waters of Oregon. Oregon has 363 miles of coastline and 1,410 miles of tidal shoreline, and our authority and influence extends from this shoreline out to 200 nautical miles off of the coast. Oregon's diverse marine resources support commercial fisheries that annually contribute more than \$500 million in personal income to Oregon. In addition, saltwater sport fishing contributes more than \$200 million to the state. The natural beauty of the Oregon coast attracts millions of visitors each year who enjoy tidepooling, whale watching and other marine wildlife viewing opportunities.

Generally, the MRP assesses and manages Oregon's marine habitat, biological resources and fisheries, with primary jurisdiction and authority in Oregon's Territorial Sea (from shoreline to three miles). In addition to direct responsibilities in state waters, the MRP shares co-management responsibility with state, federal, regional and international decision-makers who together develop management strategies that affect Oregon fish and shellfish stocks, fisheries, and marine habitats. The program's work focuses on three major categories:

- I. Marine resource management (policy and regulation)
- II. Fisheries monitoring and sampling
- III. Research and assessment of species and habitats

The MRP headquarters are in Newport, co-located on Oregon State University's Hatfield Marine Science Center campus. The MRP also has offices along the coast in Astoria, Charleston, and Brookings, and staff housed in other ODFW offices in Tillamook, Gold Beach and Corvallis. Staffing consists of about 60 permanent and 60 seasonal staff. The annual program budget is nearly \$9 million: about 25 percent comes from federal sources, 10 percent from state-generated General Fund and Lottery Fund combined and the bulk of the remainder from sport and commercial fishing license sales.



ODFW's management responsibility extends to 200 nm offshore.

I. Marine Resource Management

Marine resource management deals with a complex of issues including biological resources, human uses of the natural environment, and conflict arising between uses. The MRP staff includes biologists, ecologists, social scientists, policy advisors, fishery management specialists, technical data specialists, data collectors and managers, and public outreach specialists. The policies that guide our work come from a variety of sources, including the Oregon Fish and Wildlife Commission, the Oregon state legislature, the Oregon governor and the federal government. We also have ties with international management groups, most notably with fishery agreements between Canada and the US. Most broadly, our work in marine resource management may be divided into two areas: fishery resource management, and non-fishery resource management.

Fishery Resource Management

The Oregon coast supports many fisheries, including groundfish, shellfish, coastal pelagic species (such as sardines), highly-migratory species (such as albacore tuna), and ocean salmon. ODFW is authorized, by the state legislature in statute and the Oregon Fish and Wildlife Commission through administrative rule, to administer the regulation, harvest and management of commercial and sport fisheries. The MRP implements this authority for marine fisheries based on a mixture of criteria including landings, value, and management importance or concern. These fisheries are managed at the federal level through the [Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 \(MSA\)](#), which forms the framework around which all coastal states regulate fisheries in both state and federal waters. Federal and international law has established an area from shore to three miles, which generally falls under state jurisdiction for fishery management, and from three miles to 200-nautical-miles offshore, where federal authority establishes fishery regulations. For information about specific commercial fisheries, see the Commercial Fisheries Background.



Freshly-harvested Dungeness crab on the Newport docks.

In some cases, the MSA delegates full authority (in state and federal waters) to state management (such as commercial Dungeness crab and pink shrimp fisheries). States may set overriding fishery regulations as long as they are viewed as more conservative than those set in the federal process. Oregon is a member of the [Pacific Fishery Management Council](#) (comprising Oregon, California, Washington and Idaho), and the [North Pacific Fishery Management Council](#) (Alaska), the [Pacific States Marine Fishery Commission](#) (Oregon, California, Washington, Idaho and Alaska), and participates on the [International Pacific Halibut Commission](#). All of these groups make recommendations that result in federal review, approval and adoption of fishery regulations.



The sun sets behind Oregon's rocky sentinels.

Non-fishery Resource Management

The MRP also works closely with state, regional and federal partners on developing policy and managing Oregon's non-fishery marine resources. Because of the nearshore environment's proximity to coastal communities, this narrow band of ocean has the highest use and as such requires special consideration in resource management. As part of

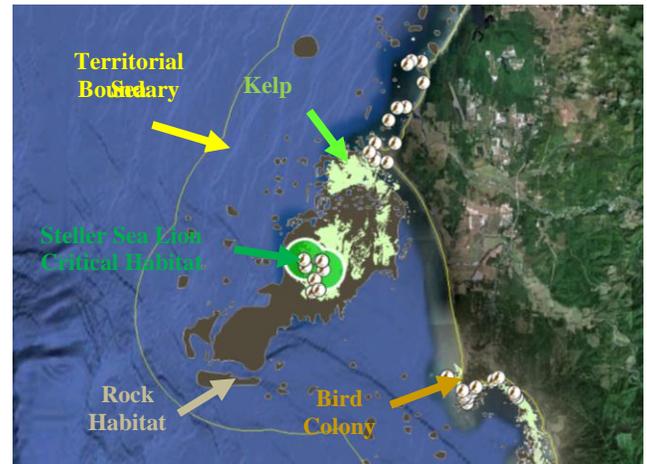
Oregon's Conservation Strategy, the MRP has developed the [Nearshore Strategy](#) document, which discusses the special resource issues and management challenges.

Within the nearshore and estuaries, the MRP is the state's resource expert on the fish, wildlife, and habitats and serves as both a regulatory body (for fishery prosecution and area closures for fisheries) and as an advisory body to other agencies who have jurisdiction over other aspects of Oregon's natural resource management. For example, the MRP reviews applications for coastal development projects (dredging, building, coastal armoring, etc.), providing guidance on whether a project has an unacceptable negative impact on Oregon's marine resources or how to minimize anticipated impacts. The MRP also serves this advisory role for projects that are proposed in federal waters (outside of 3 miles).

Oregon and the MRP are actively involved in marine spatial planning, consistent with the recent federal mandate for nationwide Coastal and Marine Spatial Planning (CMSP) efforts. Although the term CMSP is new, the MRP has been working towards marine spatial planning goals for many years. Essentially CMSP is a way of designating particular areas of the ocean for particular uses or combinations of uses (land use planning, as implemented in the ocean). Since the ocean is held in the public trust (and is not owned by individual citizens), the planning process for the ocean is a very public process, which poses a number of socioeconomic and ecological challenges.

The MRP worked with the public, academics, state agencies and [Ocean Policy Advisory Council \(OPAC\)](#), an advisory body on state ocean policy, to develop a new chapter in Oregon's [Territorial Sea Plan](#), in order to site wave energy areas in Oregon's nearshore. This multi-agency and multi-stakeholder effort considered socioeconomic issues and ecological issues in defining where to encourage development proposals. The MRP was primarily involved in documenting ecological resources for this broad effort, and developed the state's first electronically accessible compendium of ecological maps (the Nearshore Ecological Data Atlas, parts of which are displayed in [Oregon Marine Map](#)). In federal waters, the MRP is actively working with Oregon partners and

federal partners (primarily the Bureau of Ocean Energy Management) to responsibly site renewable energy projects offshore.



A sample map and datasets from the MRP's Nearshore Ecological Data Atlas, available online at [Oregon Marine Map](#).

As another example of on-going spatial efforts, the MRP staff was instrumental in implementing the state's first marine reserves, starting with two marine reserve sites at Redfish Rocks (near Port Orford) and Otter Rock (near Depoe Bay). Three new sites are currently being studied before full implementation: Cape Perpetua (2014), Cascade Head (2014) and Cape Falcon (2016). The MRP is continuing to implement marine reserves, with policy guidance from the state legislature, the Governor's office and OPAC.

Developing marine resource management policy at the state, regional, and federal level requires an integrated approach, which values the consideration of multiple and sometimes conflicting priorities and goals. Oregon's first statewide planning goal ([Goal 1](#)) is to include a vigorous public process with all planning efforts. The MRP embraces Goal 1 in all of our management activities.



An MRP biologist evaluates sea lions in a trap on the Columbia River.

Pinniped Predation

ODFW is involved in predation control on multiple fronts, including marine species. There are two efforts for controlling predation by marine species: one for avian predators (e.g. cormorants) and one for pinnipeds (California sea lions, Steller sea lions). The avian predation program is managed outside of the marine resources program and so is not described here.

In 2006, the states of Oregon, Washington and Idaho jointly applied to the National Marine Fisheries Service under Section 120 of the Marine Mammal Protection Act for permission to permanently remove individual California sea lions that prey on threatened and endangered salmon and steelhead below Bonneville Dam. The MRP's Marine Mammal Program played a lead role in obtaining and implementing that authority. The Marine Mammal Program traps, tags and then monitors California and Steller sea lions that migrate into the Columbia River system, to identify individuals who are "destructive wastage predators" on endangered salmon and sturgeon stocks. Once identified, the individuals are either placed in new homes (aquariums and zoos) or are euthanized in order to protect the sensitive fish stocks. In addition to seeing positive behavioral shifts in the sea lion population in the Columbia (reduction in wastage predation), the pinniped program's work in the Columbia River has contributed greatly to our understanding of sea lion biology and behavior.

II. Fisheries Monitoring and Sampling

Fishery monitoring and sampling are critical to ensuring fisheries are sustainable and provide optimal opportunities to harvest fish.

Approximately 40 percent of the MRP's budget is devoted to a sophisticated sampling program that monitors both commercial and sport fisheries along the Oregon coast. MRP staff interview fishers and sample catches to determine the amount and kinds of fish caught and understand how the fisheries are conducted. They also gather biological information from the landed catch – for example, lengths, weights, and otoliths or other structures that can be used to determine a fish's age.

The information collected is used to monitor progress toward quotas, to inform stock assessments, and to assist in the development of management recommendations for the best use of Oregon's fishery resources.

After significant in-house processing and quality control, the MRP's fishery monitoring and sampling data are incorporated into two West Coast data systems: commercial fishery data into the Pacific Fishery Information Network (PacFIN, <http://pacfin.psmfc.org>), and sport fishery data into the Recreational Fishery Information Network (RecFIN, <http://www.recfin.org>). These two databases are managed by the Pacific States Marine Fisheries Commission and are used extensively in Oregon, Washington, and California regional fisheries management. Summarized data for the three West Coast states are available to the public on the PacFIN and RecFIN websites.

Ocean Sampling Project

The Ocean Sampling Project monitors ocean sport finfish fisheries through the Ocean Recreational Boat Survey (ORBS) project, and commercial ocean salmon fisheries through the Commercial Troll Salmon Project (CTSP). Approximately 30 seasonal staff interview returning ocean and estuary sport anglers to collect data including catch and fishing effort, recover coded wire tags (when present) from salmon, and gather biological data such as lengths and weights. In addition, total fishery effort is estimated by counting recreational

fishing vessels leaving from all major ocean access points.



Fishery sampler checks in a Pacific halibut from an angler in Newport.

The Ocean Sampling Project embraces new technologies and techniques that reduce costs, minimize data recording errors and shorten the time required to process the data and generate catch estimates.

One example of this is the use of video cameras to count recreational fishing boats. Stationed at several ports and positioned to view ocean access points, such as navigation channels between jetties, these cameras provide images that allow determination of the type of vessel (*i.e.*, sport vs. commercial), although individual persons and vessel names or identification numbers are indistinguishable. The digital recordings can be reviewed much more quickly than real-time counts can be conducted, allowing samplers to spend more time interviewing anglers and collecting biological samples.

Commercial Finfish Sampling

The Commercial Finfish Sampling project collects information on commercial groundfish and albacore tuna fisheries, including catch composition and biological data such as size, sex, reproductive maturity and age structures. Seven permanent and seven seasonal staff work in ports along the Oregon coast, sampling catches at fish processing plants, buying stations, or onboard vessels. Staff also collect completed logbooks from fishermen, and provide information on topics such as current regulations, upcoming public meetings or other opportunities for public involvement in fishery management, fish biology, etc.

Developing and maintaining relationships with commercial fishing industry members is a valuable service provided by the on-the-ground biologists. As time allows, they also conduct and/or assist with fishery research projects, which provide additional information that is not traditionally available from fisheries but that helps support fisheries management.



Black rockfish are an important component of Oregon's sport and commercial fisheries.

Shellfish Fisheries Sampling

Oregon's bays and estuaries are popular areas for sport shellfish harvest, including both clams and bay crabs. MRP monitors the sport bay clam and crab fisheries in most of Oregon's major bays and estuaries. This work includes interviewing sport fishermen, sampling their catch and estimating overall fishing effort on these resources. The goal of this monitoring effort is to further understanding of the sport clam and crab resources and factors affecting the sustainability of

these resources. ODFW staff also conduct biological sampling of the commercial bay clam fisheries in Tillamook Bay.

On the open coast, razor clams are highly sought after by both sport and commercial fishermen, especially on our most productive Clatsop county beaches. The Clatsop beaches (an 18-mile stretch from the South Jetty of the Columbia River to Tillamook Head) account for more than 90 percent of Oregon's razor clam harvest and effort. Staff interview recreational and commercial harvesters to obtain data on effort, catch, age composition and harvest area. Staff also collect information on clam age and length, conduct discard analysis, and conduct stock assessments on the Clatsop beach. ODFW also collects razor clams coastwide on a monthly basis for our partner agency, Department of Agriculture, which tests clam tissue for biological toxins from harmful algal bloom phytoplankton species.

III. Research and Assessment

The MRP conducts research and monitoring studies to address both ecological and fishery issues. More specifically, data collected by the MRP researchers help support fishery management decision-making and helps better understand the nearshore environment habitat and inhabitants.

Fishery Research

Fishery-related research supports fishery management and assessing the health of fish stocks (stock assessment). MRP research over the past decade lead the way on understanding and reducing catch of unwanted species (bycatch). Bycatch of sensitive species in a fishery presents a management challenge that often results in restricting the overall allowable catch of the primary species targeted by the fishery in order to protect the sensitive species. Reducing bycatch can therefore allow managers to maintain or increase access to the targeted species. One notable example of the MRP's work in this area is with the pink shrimp fishery where bycatch of eulachon (listed as a threatened

species under the federal Endangered Species Act) could have restricted the fishery. The MRP conducted research projects to modify shrimp trawl nets and test the modification to ensure they reduced bycatch of eulachon. This work was instrumental in not only allowing the continuation of this important fishery while addressing conservation concerns for eulachon, but also contributed toward certification of the Oregon pink shrimp fishery by the Marine Stewardship Council as a sustainable fishery.

In addition to developing ways to reduce bycatch, the MRP also conducted research aimed at reducing mortality of bycatch fish species that need to be returned to the ocean because of regulatory or other reasons. Rockfish are especially vulnerable to mortality when released because their gas-filled swim bladder often expands and ruptures, causing internal damage as the fish are brought to the surface. This condition is referred to as baurotrama and often results in the fish dying. MRP conducted extensive research to understand the effects of baurotrama, how different species respond to the effects and methods to increase survivability from baurotrama. The research resulted in the development and acceptance of rockfish descender devices, which can be used to increase survival of rockfish by dropping them to a depth where the pressure relieves the baurotrama symptoms. The MRP uses special cages for holding individual fish at depth to study short-term survival of a wide variety of nearshore species and capture conditions. Fishery managers use the survival rates to improve estimates of fishing impacts on sensitive species such as yelloweye rockfish. These improved estimates meant increased fishing opportunity for anglers, while still addressing the conservation concerns for the sensitive species.

Fishery managers require information on the population status of harvested species in order to make well-informed management decisions. While the federal government assesses the status of many important ocean fishery species, there remain a number of state-managed species with incomplete knowledge of their population status. The MRP developed species life history information such as population age composition and age of female fish maturity for several poorly-understood species. Stock assessment scientists used this information to improve their understanding of population

status. In addition, the MRP conducts stock assessments on some shellfish species under state management, including bay clams, razor clams, and sea urchins. The MRP is currently testing visual survey tools to directly assess the population of nearshore rocky reef fish species, which currently are not well represented in federally-sponsored stock assessments.



A biologist readies the ODFW remotely operated vehicle (ROV) for launch.

Nearshore Ecosystem Research

The MRP's research to address ecological issues focuses on assessing, inventorying, and monitoring of marine habitat and selected non-fishery species. Knowledge of the location and function of marine habitats is still incomplete compared with terrestrial habitats. The MRP works both independently and in collaboration with others to map, inventory and describe both nearshore and estuarine habitats. The MRP conducted some of the first detailed mapping efforts for Oregon's nearshore marine habitat using advanced sonar technologies. These have since been greatly expanded by Oregon State University and others so that now about 50 percent of Oregon's Territorial Sea has been mapped in detailed.

The MRP conducts surveys of habitats using a variety of tools to characterize their biological and physical composition and to understand the relationship between habitat characteristics and managed fish species. The MRP also conducts detailed assessment of bay clam habitat in Oregon's estuaries, and is working collaboratively with other agencies to update the state's estuary habitat maps and develop a complete inventory of Oregon's ocean and estuary shoreline habitats.

The MRP's marine reserves program implements an ongoing monitoring effort designed to understand the effects of marine reserves on the marine environment and on people. This information will be used to evaluate marine reserves as a management tool in the future. Marine reserve ecological monitoring focuses on characterizing the habitat, oceanography, and species that exist at each site, and determining whether or not prohibiting extractive activities changes the environment over time. Marine reserve human dimensions monitoring focuses on determining social, cultural and economic changes for ocean users and communities that result from marine reserves implementation. In addition to providing insight on the specific effects of marine reserves, the monitoring effort is proving to be a vital resource in augmenting the general understanding of Oregon's nearshore environment, coastal economy and ocean users.



Oceanographic instruments bolted to the seabed at Redfish Rocks Marine Reserve.

The MRP is also responsible for monitoring and managing marine species that are not harvested. As an example, MRP monitors and conducts research on seals and sea lions. Ongoing population monitoring documented the recovery of seals and sea lions in Oregon since the passage of the federal Marine Mammal Protection Act in the 1970s. The MRP's ongoing research on the population status and reproductive output of Oregon's Steller sea lion population (listed as threatened under the federal Endangered Species Act) contributed to the planned de-listing of this species in the near future.

As marine resource management moves toward more complex issues of marine spatial planning and consideration of the broader ecosystem, there

is an increasing demand to gather existing information from various scientific and socioeconomic disciplines into comprehensive, accessible data bases. The MRP developed the Nearshore Ecological Data Atlas (NEDA) to begin consolidating data from numerous internal and external sources to accomplish this goal. The MRP will continue to build NEDA in the coming years to continually improve our ability to support marine resource management decisions with the best available science.



MRP biologists attach a monitoring device to a harbor seal.

For more information about the Marine Resources Program, fishery regulations, fishery monitoring, research, and more, please see our regulations book and our website:

<http://www.dfw.state.or.us/MRP/>