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## **Marine Reserve Science and Monitoring Workshop**

Oregon Department of Fish and Wildlife, February 3, 2012

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### **Meeting Purpose**

The purpose of this meeting was to seek expert feedback on current and future ecological monitoring activities conducted by ODFW's Marine Reserves Program; including methodologies, sampling periodicity, and prioritization.

### **Workshop Summary**

The second Marine Reserve Science and Monitoring Workshop was held on February 3, 2012 in Corvallis as a follow-up to a successful first meeting in 2010. The meeting—led by ODFW and cohosted by COMPASS—sought expert feedback on the ecological monitoring scheme employed by ODFW for Oregon's two pilot marine reserves since 2010, and for future monitoring activities.

The meeting was attended by 31 invited west coast scientists and staff (and 13 ODFW scientists and staff) with expertise in marine reserve and marine protected area monitoring, as well as in the Oregon and west coast marine environment. The meeting was also open to the public and was attended by fishermen, students, marine reserve community team members, and members of interested organizations.

Attendees were briefed on the current status of Oregon marine reserves; of the monitoring methods used to construct ecological baselines for the Otter Rock and Redfish Rocks pilot marine reserve sites; of the planned monitoring for three proposed marine reserve sites (Cape Falcon, Cascade Head, and Cape Perpetua); and overall long term monitoring at all sites. ODFW sought feedback on the proposed monitoring plans for the three new marine reserve sites and planned long-term monitoring. Discussion occurred after the presentation of each major sampling approach and in a break-out group session at the end of the day. Additionally, scientists were asked to record their ideas and questions on a worksheet throughout the day to turn in at the conclusion of the meeting.

The major segments of the workshop are summarized below and a list of attendees is included in Appendix A. A copy of the agenda can be found in Appendix B.

## **Introduction, Status, and Monitoring Design**

Alix Laferriere, ODFW Marine Reserves Research Project Leader, began the day with introductions and by outlining the goals of the meeting. She provided an overview of the ecological and research goals of Oregon marine reserves, the ecological research questions used to guide monitoring, and the overall monitoring design.

Cristen Don, ODFW Marine Reserves Program Leader provided an overview of the state policies that steer ODFW's monitoring of marine reserves and an update on the current status of marine reserve sites, including an introduction to Oregon's two pilot sites and three newly proposed sites.

Dr. Chris Goldfinger, Director of Oregon State University's Active Tectonics and Seafloor Mapping Lab, provided an update of the Oregon State Waters Mapping Program. The program began in 2009 and has now mapped 53% of Oregon's state waters using high resolution sonar. Products will be available to the public in the near future.

## **Oceanographic Assessment**

Ms. Laferriere provided a snapshot of ODFW's oceanographic assessment of Oregon marine reserves and comparison areas—including the use of oceanographic moorings and underwater platforms. The goals, as outlined, are to characterize the oceanography of each site and discern any major differences in the oceanography of marine reserve sites and associated comparison areas. Major discussion items included potential placement of instruments, which parameters to monitor, and how long to deploy instruments.

## **Visual Surveys**

ODFW uses several visual survey techniques including remotely-operated vehicle (ROV), video sled, video lander (drop camera), and SCUBA. Keith Matteson, ODFW Marine Reserves Assistant Project Leader, outlined two field seasons' worth of video lander and video sled surveys. Dozens of kilometers of sled tows and hundreds of lander drops have helped ODFW understand habitat and fish, invertebrate, and algal communities. Discussion included how to improve the instruments, where and when to sample, and how to deal with potential biases.

ODFW Marine Habitat Project Leader Mike Donnellan provided an overview of ROV surveys conducted as part of monitoring efforts. He provided specs on ODFW's ROV, outlined ROV pros and cons and sampling design, and discussed the 121 transects completed to date. The ROV is an effective tool for sampling certain fish and invertebrate communities as well as rocky reef habitat. Discussion

surrounding ROV work included the current sampling design, how to integrate ROV data with that from other methods (such as video sled and SCUBA), how often to sample, and what additional details to examine with the ROV.

Dr. Mark Carr from the University of California at Santa Cruz led a team of divers that completed SCUBA surveys of Oregon's pilot marine reserves in 2010 and 2011. Dr. Carr described how the divers surveyed fish, invertebrate, and algal communities and characterized habitat. He also presented findings from the team's surveys that detailed what they observed at Otter Rock and Redfish Rocks. Discussion following Dr. Carr's presentation included how to integrate SCUBA with other survey methods used by ODFW and where to use this technique in the future.

## **Research by Outside Institutions**

ODFW encourages outside research related to marine reserves. Student and University research can contribute to understanding of Oregon's nearshore marine environment and marine reserves evaluation as a potential management tool. Two such ongoing research projects were introduced to meeting participants.

Oregon State University Master's Candidate Tom Calvanese presented an update on his research in acoustically tagging and tracking of fish at Redfish Rocks Marine Reserve. Mr. Calvanese hopes to understand how fish species use the marine reserve by tracking their movements over time. By understanding how fish are using the marine reserve area and nearby habitat, his work hopes to inform marine reserve site configuration.

Dr. Kirsten Grorud-Colvert, also of Oregon State University, described her project exploring the recruitment of juvenile fish at Otter Rock Marine Reserve. Dr. Grorud-Colvert uses a moored mesh device to collect and count juvenile fish to understand which species the Otter Rock Marine Reserve might benefit. This method of monitoring juvenile fish recruitment is being considered for additional marine reserve sites.

## **Extractive Surveys**

Hook and Line surveys have been used by ODFW as a tool to acquire data on fish abundance, length, weight, and in some cases, age and sexual maturity. Alix Laferriere discussed this method and presented findings from the 2011 field season. Discussion surrounding this method included how frequently to conduct hook and line surveys, statistics, and where to conduct such surveys in the future.

ODFW's Scott Groth, Shellfish Biologist, highlighted red sea urchin surveys conducted at the Redfish Rocks Marine Reserve and comparison areas. Mr. Groth illustrated urchin catch trends over time in these areas, as well as the results of SCUBA surveys exploring urchin abundance and size distributions. Discussion

The last presentation of the day demonstrated ODFW's benthic quadrat surveys. These surveys were designed to examine the diversity and abundance of smaller marine invertebrates and algae. Ms. Laferriere gave an update on discussions of how to handle 2011 samples and Dr. Gayle Hansen, of Oregon State University's Hatfield Marine Science Center, highlighted her findings, which included several new algal discoveries for Oregon waters.

## **Synthesis and Discussion**

ODFW summarized their nine methods for constructing a baseline characterization and ongoing monitoring at Oregon's pilot marine reserves, as well as how the agency plans to proceed with future monitoring at the proposed new sites and over the long term. At the conclusion of this synthesis, scientists were asked to break into discussion groups and provide specific feedback on the methods they had spent the day hearing about and how best to employ them in the future. Specifically, ODFW sought and received input on where and how frequently to employ certain methods, how to improve and integrate existing methods, how to potentially collaborate with existing outside research, and cautions to exercise with monitoring in the future.

The 2012 Marine Reserve Science and Monitoring Workshop provided an invaluable opportunity for input from a large pool of expertise and strengthened communication between ODFW Marine Reserves staff and regional marine scientists. ODFW continues to receive valuable feedback from workshop attendees as it develops future monitoring plans.

ODFW and COMPASS thank all attendees for their time and continued support.

**Appendix A**  
**Attendees to 2012 Marine Reserve Science and Monitoring Meeting**

**Kelsey Adkisson**, Oregon Department of Fish and Wildlife  
**Jack Barth**, Oregon State University  
**Jenna Borberg**, Oregon Sea Grant  
**Caren Braby**, Oregon Department of Fish and Wildlife  
**Stephen Brandt**, Oregon Sea Grant  
**Jim Burke**, Oregon Coast Aquarium  
**Tom Calvanese** Oregon State University  
**Mark Carr**, University of California at Santa Cruz  
**Jenn Casselle**, University of California at Santa Barbara  
**Francis Chan**, Oregon State University  
**Cristen Don**, Oregon Department of Fish and Wildlife  
**Michael Donnellan**, Oregon Department of Fish and Wildlife  
**Chris Eardley**, Oregon Sea Grant/ Oregon Department of Fish and Wildlife  
**Jeff Feldner**, Oregon Sea Grant  
**Dave Fox**, Oregon Department of Fish and Wildlife  
**Tess Freidenburg**, California Ocean Science Trust  
**Jim Golden**, Golden Consulting  
**Chris Goldfinger**, Oregon State University  
**Elise Granek**, Portland State University  
**Kirsten Grorud-Colvert**, Oregon State University  
**Scott Groth**, Oregon Department of Fish and Wildlife  
**Erin Hall**, Oregon Department of Fish and Wildlife  
**Bob Hannah**, Oregon Department of Fish and Wildlife  
**Gayle Hansen**, Oregon State University  
**Sarah Henkel**, Oregon State University  
**Jan Hodder**, Oregon Institute of Marine Biology  
**Greg Krutzikowsky**, Oregon Department of Fish and Wildlife  
**Alix Laferriere**, Oregon Department of Fish and Wildlife  
**James Lindholm**, California State University at Monterey Bay  
**Keith Matteson**, Oregon Department of Fish and Wildlife  
**Kristen Milligan**, Oregon State University  
**Melissa Murphy**, Oregon Department of Fish and Wildlife  
**Steve Murray**, California State University at Fullerton  
**Karina Nielson**, Sonoma State University  
**Bill Peterson**, NOAA Fisheries  
**Heather Reiff**, COMPASS  
**Steve Rumrill**, Oregon Department of Fish and Wildlife  
**Alan Shanks**, Oregon Institute of Marine Biology  
**Rick Starr**, California Sea Grant/Moss Landing Marine Laboratories  
**Brian Tissot**, Washington State University  
**Joe Tyburczy**, Oregon State University  
**Dick Vander Schaaf**, The Nature Conservancy  
**Liz Whiteman**, California Ocean Science Trust  
**Craig Young**, Oregon Institute of Marine Biology

## Appendix B-Meeting Agenda



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#### **Meeting Purpose**

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#### **Agenda:**

8:00 **Informal Meet & Greet:** coffee and light breakfast will be provided

8:30 **Meeting Introduction & Agenda**

Alix Laferriere, Oregon Department of Fish & Wildlife

8:50 **Marine Reserves Current Status**

Cristen Don, Oregon Department of Fish and Wildlife

9:00 **Mapping Oregon State Water Update**

Dr. Chris Goldfinger, Oregon State University

9:10 **Monitoring Design**

Alix Laferriere, Oregon Department of Fish & Wildlife

9:40 **Oceanographic Assessment**

Alix Laferriere, Oregon Department of Fish & Wildlife

10:00 **Coffee Break**

10:15 **Habitat and Biota Visual Surveys**

**Video Lander:** Keith Matteson, Oregon Department of Fish & Wildlife

**Video Sled:** Keith Matteson, Oregon Department of Fish & Wildlife

**Remotely Operated Vehicle,** Mike Donnellan, Oregon Department of Fish & Wildlife

**SCUBA,** Dr. Mark Carr, University of California, Santa Cruz

**Visual Survey Discussion**

12:15-1:15 **Lunch for Meeting Participants with Special Presentations**

12:50: **Recruitment,** Kirsten Grorud-Colvert, Oregon State University

1:00: **Acoustic Tagging,** Tom Calvanese,

**1:15 Extractive Surveys**

**Hook and Line:** Alix Laferriere, Oregon Department of Fish & Wildlife

**Focused Benthic Surveys:** Alix Laferriere, Oregon Department of Fish & Wildlife

**Sea Urchin Surveys:** Scott Groth, Oregon Department of Fish & Wildlife

**2:45-3:00 Coffee Break**

**3:00-3:30 Monitoring Activity Synthesis & Proposed Sampling**

**3:30-4:15 Work Sessions to Discuss Proposed Sampling & Periodicity**

**4:15-5:00 Presentation of Work Session and Further Discussion**

**5:00-6:30 Scientist Mixer:** refreshments provided