

Examining the Role of Community and Citizen Science in Oregon Marine Reserves



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and Citizen Science

About this report

This report was prepared for organizations, agencies, and other partners that engage with community and citizen science along Oregon's coast. It complements a similar report highlighting the role of community and citizen science in California's marine protected area implementation prepared for the California Department of Fish and Wildlife to inform the MPA Decadal Management Review (see [here](#)).

This project and report provide an overview of current and past community and citizen science programs and activities along the Oregon coast, and highlight those engaging in work within marine reserve boundaries. We highlight the collaborative nature of these monitoring, research, engagement, and education activities, and the cumulative impacts and contributions that have been made over the years, based on available information. Finally, we offer brief recommendations that may help to strengthen the role and utility of community and citizen science efforts in the adaptive management of Oregon's Marine Reserve Program.

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Cover Graphic Images

Front cover (from top then left to right): Courtesy of ODFW (2), CoastWatch, and COASST (2).

Design

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Overview & Highlights

Community and citizen science (CCS), which refers to the wide range of ways that nonscientists participate in science processes, has played a role in marine reserve monitoring throughout the State of Oregon for more than a decade. Led by a team of researchers at the Center for Community and Citizen Science at the University of California, Davis, this report highlights the breadth and depth of ways in which CCS efforts have contributed to marine reserve program priorities and goals as well as participant contributions and outcomes.

Since 2008, the Oregon Department of Fish and Wildlife (ODFW) has managed Oregon's Marine Reserve Program, which was established by Executive Order No. 08-07 to conserve marine habitats and biodiversity. Driven by prioritizing conservation, research, and communities, state officials partnered with local communities to identify five marine reserve sites within Oregon's state waters. Through these partnerships and collaborative efforts including public involvement practices, the state is able to scientifically monitor the marine reserve system to inform ongoing adaptive management and conservation.

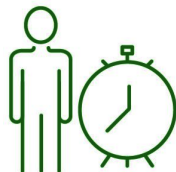
The ODFW Marine Reserves Program has a focus on studying both ecological and human dimensions of the reserves. There is a wide variety of studies, methods, and activities developed and implemented in order to effectively monitor and manage the reserve system over the long term. Each of Oregon's five marine reserves is unique, and there are different associated conservation aims and outcomes along with different impacts to people and communities at each site.

Since their establishment, Oregon's marine reserves have provided many benefits to natural systems, biodiversity, ocean users, and coastal communities. These and other goals of the marine reserve program have been accomplished through a variety of efforts and partnerships, including the utilization of CCS approaches to administer monitoring, research, engagement, and education activities.

We examined the CCS efforts of 6 programs that have been a key part of coastal monitoring and engagement activities within or adjacent to Oregon's marine reserves. Since 2009 they have involved:



7,000
Data Collection
Participants






101,000
Volunteer
Hours







458
Monitoring
Sites



21,600
Outreach Event
Attendees

	Activities	Years Active	Marine Reserve(s) Active Within	Number of OR Sites (# in Reserves)	Number of Participants (# in Reserves) (2009 to 2022)	Hours of Participant Effort (Hours in Reserves) (2009 to 2022)
Coastal Observation and Seabird Survey Team (COASST) 	The largest beached bird network in the world that involves volunteer monitoring of carcass identification along beaches from Washington to northern California.	1999 to Present	RR, CP, OR, CH, CF	141 (13)	2,665 (475)	49,702 (8,859)
CoastWatch 	A citizen monitoring program that engages volunteers in a variety of citizen science projects by adopting mile-long segments of Oregon's coast, observing and reporting natural changes and human-induced impacts.	1993 to Present	RR, CP, OR, CH, CF	122 (20)	122 (20)	13,154 (1,280)
Oregon Coast Aquarium 	Organized intertidal BioBlitz events in collaboration with the five Marine Reserve Community Groups in which volunteers observe and document as many species as possible over a short time period.	2018 to Present	RR, CP, OR, CH, CF	Not applicable. Sites of observed species found along all coastal reserve boundaries.	2,880	1,220
Oregon Department of Fish and Wildlife (ODFW)** 	The hook-and-line survey uses volunteer anglers to catch and release fish in and out of reserves to collect and track accurate length and weight measurements. Other volunteer monitoring activities include intertidal observations and SCUBA dive surveys.	2011 to Present	RR, CP, OR, CH, CF	14	682	15,752 (7,320)

	Activities	Years Active	Marine Reserve(s) Active Within	Number of OR Sites (# in Reserves)	Number of Participants (# in Reserves) (2009 to 2022)	Hours of Participant Effort (Hours in Reserves) (2009 to 2022)
Partnership for Interdisciplinary Studies of Ocean Systems (PISCO) ⁻ 	Researchers at Oregon State University engage volunteers in pH monitoring for detecting and characterizing the progression of ocean acidification.	2016 to Present	RR, CP, CH, CF	Detailed data unavailable.		
Portland Audubon ⁺ 	Members of the public collect observation data to better understand the ecology of coastal birds and other wildlife as well as the habitats they depend on.	2012 to Present	RR, CP, OR, CF	119	140	4,880
The Nature Conservancy ⁺ 	Train volunteers to conduct surveys in the rocky intertidal to monitor sea star population health as part of the effort to assess long-term impacts of Sea Star Wasting Syndrome.	2013 to Present	CP, OR, CH	Detailed data unavailable.		
Surfrider's Blue Water Task Force ⁻ 	Surfrider chapters use this volunteer water testing program to raise awareness of local pollution problems and to bring together communities to implement solutions.	1984 to Present	RR, CP, OR, CH, CF	62 (6)	443 (80)	16,188 (1,566)

* Program and activities funded by the State agency responsible for managing the Reserve Network.

⁺ Program with activities explicitly aiming to monitor within marine reserves and/or comparison sites.

⁻ Program with activities incidentally occurring within or near marine reserve boundaries.

Where in the Reserve Network are CCS Programs Active?



All five of Oregon's marine reserves, including Redfish Rocks, Cape Perpetua, Otter Rock, Cascade Head, and Cape Falcon, have hosted multiple CCS programs and activities over the years. Five of the six programs highlighted in the table above, including CoastWatch, Surfrider's Bluewater Task Force, COASST, Oregon Coast Aquarium, and ODFW, have engaged in activities within the boundaries of all five of the state's marine reserves. PISCO has been active within all but Otter Rock while Portland Audubon has involved members of the public in monitoring within all but Cascade Head. The Nature Conservancy's sea star health monitoring activities have taken place within Cape Perpetua, Otter Rock, and Cascade Head.

Role and Impacts of Marine Reserve Community Groups

In collaboration with, and at times in addition to, the CCS programs and activities described above, many efforts are led by formalized community groups that partner closely with each of the five marine reserves. This is a mechanism to both build capacity for CCS, and coordinate CCS in relation to the reserves, which has been effective even with limited formal support for CCS monitoring from state and other sources. These Marine Reserve Community Groups engage community members and visitors in a variety of efforts and programming that contribute to broad outcomes related to marine reserve awareness, ocean literacy, and data contributions.



Some examples include:

- **Redfish Rocks Community Team:** Lead the *Redfish Rangers*, a team of volunteer interpretive docents devoted to providing education on the physical, ecological, and cultural aspects of the Redfish Rocks Marine Reserve. Also collaborate with Surfrider and PISCO to engage community members in these CCS activities in addition to organizing quarterly beach cleanup events.
- **Cape Perpetua Collaborative:** Coordinate a *Tidepool Ambassador Program* as well as a *Marine Reserve Ambassador Program*, and have volunteers conduct a visitor intercept survey to learn more about the demographics served and how to better reach them in addition to other community-based projects, presentations and outreach programs.
- **Friends of Otter Rock:** Organize a volunteer interpretive program focused on interacting with visitors on the ground, inspiring stewardship and raising awareness of Otter Rock Marine Reserve. The focus on interpretive programming includes the “What did you see?” whiteboard project, which asks visitors to jot notes about what they saw, observed, or wanted to know about the reserve.
- **Cascade Head Biosphere Collaborative:** Host tidepool bioblitz events in addition to leading the 4CAST Project initiative, a collection of projects and efforts that seek to better understand the way climate change is affecting coastline and local communities. Among these are art on the beach, Pheno-Cam photo diary of plant life cycles, sea star monitoring, and WRACK LINE ongoing iNaturalist species observation project.
- **North Coast Land Conservancy’s Cape Falcon Program:** Coordinate a *Tidepool Ambassador Program* in addition to helping organize an annual CoastWalk event, which is a fun, safe and hassle-free way for community members and visitors hike 30 miles of handpicked coastal hiking routes while raising funds and awareness in support of coastal habitat conservation. Also collaborate with TNC, PISCO, and the Multi-Agency Rocky Intertidal Network (MARINe) to engage community members in these CCS activities.

Recommendations

When considering changes that could benefit both CCS programs and the Marine Reserve Program, some common themes emerged. Synthesizing across the many conversations that were had with various leaders and individuals passionate about coastal conservation in Oregon, we offer the following recommendations:

- Regular tracking, reporting, and assessments of coastal CCS activities, as well as marine reserve outreach and education initiatives, would help to develop and maintain an accurate and up-to-date record of the impact and reach of the Marine Reserve Program via public involvement and community engagement.
- A standard reporting structure and protocol for tracking monitoring activities across programs and organizations could be useful in better understanding the data being collected, its potential utility for reserve managers and other decision makers, and for addressing potential areas of overlap or data gaps.
- Regular dialog between Marine Reserve Program staff, Reserve Community Group leaders, and CCS program leaders would help to address topics such as the utility of CCS-generated data, and the kinds of support that are particularly important for sustaining CCS projects.
- As more is learned about the impacts of CCS for participants and communities, that information can be leveraged to collaboratively develop formal strategies related to education and outreach, and diversity, equity and inclusion.
- ODFW and the Marine Reserve Program should examine opportunities to collaborate more widely with existing CCS projects that collect data, and conduct other activities relevant to marine reserve monitoring and engagement.