



Date: February 7<sup>th</sup>, 2020

To: The Honorable Michael Dembrow, Chair  
Senate Committee on Environment and Natural Resources  
Oregon State Legislature

**Testimony by Co-Chairs of the Oregon Coordinating Council on Ocean Acidification & Hypoxia  
Dr. Jack Barth and Dr. Caren Braby**

Good afternoon Chair Dembrow and members of the Committee,

As the Co-Chairs of the legislatively created Oregon Coordinating Council on Ocean Acidification and Hypoxia (or “OAH Council”), we appreciate the opportunity to provide you with comments on Senate Bill 1554, which is implementing several of the recommended priorities established in the OAH Council September 2018 report and the Oregon OAH Action Plan (2019-2025). In December 2018 and February 2019, we testified to this committee, describing the history of the OAH Council, the process we took in developing the recommendations contained in our September 2018 report, and how we established priorities for near-term actions described in the Oregon OAH Action Plan. Today, we provide you with a description of how the projects outlined in SB1554 relate to these OAH action priorities to help inform your decision-making.

**Background on Ocean Acidification and Hypoxia (OAH) in Oregon:**

Oregon is among the first places in the world to observe direct impacts of the compounding stressors of ocean acidification and hypoxia (OAH), due to our unique geographic and oceanographic context. Starting in the mid-2000s, low oxygen (hypoxia) began to be observed in Oregon’s coastal waters and Oregon became one of the first places in the world to observe direct impacts of ocean acidification in our shellfish hatcheries. When CO<sub>2</sub> is absorbed by seawater, chemical reactions occur that lower its pH (making the seawater more acidic), making it more difficult for shell-forming species to build shells. All along the West Coast, OAH events are continuing to intensify in duration and magnitude, and there are now signs that they are undermining the rich ocean and estuarine ecosystems’ food webs.

Understanding and addressing intensifying OAH conditions here in Oregon is critical to our understanding of larger regional climate change impacts and addressing these impacts with carbon management strategies. Oregon’s coastal economies rely on our vibrant marine ecosystem. Our nearshore waters are home to sport and commercial fisheries, all of the State’s mariculture operations, and contain critical nursery grounds for economically important species including rockfish, oysters, salmon, pink shrimp, and Dungeness crab.

In 2017, the Oregon Legislature provided critical leadership in facing the challenges of OAH, by passing Senate Bill 1039, thus creating the Oregon OAH Council. In response to growing

concerns, The State recently adopted Oregon's OAH Action Plan in 2019, which was created as the State's roadmap for OAH Actions over the next 6 years (2019-2025). Oregon's OAH Action plan builds on the recommendations and actions developed by the OAH Council in the Oregon 2018 OAH legislative report, but adds specific steps for implementation, making it a meaningful way to invest in our future, to better adapt to and mitigate the problems we are already seeing, and which will worsen in the decades to come.

**OAH Council Recommendations and SB1554:**

Oregon OAH Action plan identifies several key actions from the 2018 Oregon OAH Report that warrant immediate attention. To begin implementation of the OAH Council's recommendations, and other important ocean issues, SB1554 describes OAH related projects for direct appropriation to the Oregon Department of Fish and Wildlife, Oregon State University, as well as to the Oregon Ocean Science Trust to distribute via competitive requests for proposals (RFP). This work will help demonstrate that local actions are meaningful in fighting the global challenges of climate and ocean changes.

These projects fall into three themes: 1) ocean monitoring, 2) ecosystem resilience initiatives, and 3) communications. Appended to this testimony is a detailed description of the connection between the OAH Council recommended priorities and the projects in SB1554. We also note which projects in SB1554 were originally recommended by the Oregon Shellfish Task Force.

**Concluding Remarks:**

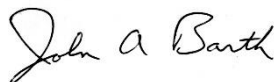
As Co-Chairs to Oregon's OAH Council, we have taken on the charges set forth in SB1039 with a sense of urgency and importance, knowing that we have the remarkable opportunity to help prepare Oregon's marine ecosystems for the changes that are occurring and will occur, as well as prepare the coastal economies that rely on a healthy marine ecosystem. Throughout the OAH Council process, we have taken a collaborative, science-based approach to developing our recommendations and encouraging public input and participation.

The investment opportunities outlined in SB1554 will make a difference in our understanding of ocean acidification and hypoxia (OAH) science, our ability to assess impacts and provide solutions, and to communicate the urgency of this issue to Oregon's citizens and leaders.

Thank you for your consideration of these comments and we welcome any questions.

Sincerely,

John Barth, PhD



Executive Director  
Marine Studies Initiative  
Oregon State University

Caren Braby, PhD



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Oregon Department of Fish and Wildlife

## **Description OAH Council recommended priorities and relationship to the projects listed in SB1554**

### **2019 Action Plan Theme 1: Advance scientific understanding to address OAH vulnerabilities**

- **SB1554, Section 1.1:** \$100,000 for intertidal OAH monitoring at Oregon marine reserves to capitalize on Oregon existing investment in marine reserves as scientific reference sites, by co-locating new OAH monitoring sites at marine reserves.
- **SB1554, Section 1.2:** \$300,000 for subtidal OAH monitoring at Oregon marine reserves to capitalize on Oregon existing investment in marine reserves as scientific reference sites, by co-locating new OAH monitoring sites at marine reserves.
- **SB1554, Section 1.3:** \$100,000 for establishment of OAH monitoring at Yaquina Bay which is one of the 4 most important estuaries in Oregon, both ecologically and economically.
- **SB1554, Section 2.1:** \$420,000 for expended for the shellfish and estuarine assessment of coastal Oregon project (SEACOR) to expand the team's resources to increase the frequency of assessments, so that trends in shellfish and eelgrass will be captured more frequently.
- **SB1554, Section 3.2:** \$100,000 for augmentation of sampling along the Newport Hydrographic Line in order to support research on OAH.
- **SB1554, Section 3.3:** \$100,000 for expended to support monitoring for ocean acidification using Burke-O-Lator systems at key sites along Oregon's coast and at key industry sites.

### **2019 Action Plan Theme 3: Support resilience to OAH in Oregon's ecosystems and estuaries**

- **SB1554, Section 1.4:** \$140,000 for ecosystem modeling of submerged aquatic vegetation to help identify resiliency goals for Oregon's estuaries.
- **SB1554, Section 1.5:** \$25,000 for development of recommendations, through workshops or seminars, for maximizing abundance of wild shellfish, cultured shellfish and submerged aquatic vegetation in estuaries in Oregon.
- **SB1554, Section 1.6:** \$150,000 for cooperative research to develop and document best management practices for mariculture to also achieve eelgrass and estuary resilience.
- **SB1554, Section 1.7:** \$180,000 for funding research on wild and cultured shellfish species and OAH impacts; increase our understanding including reproduction, recruitment, location of source populations, and connectivity.
- **SB1554, Section 2.2:** \$50,000 for expended estuary mapping of for long-term documentation of OAH impacts on native Olympia oyster beds for long-term monitoring and protection to promote this OAH-resilient species.
- **SB1554, Section 3.1:** \$170,000 for expended to support the Molluscan Broodstock Program (MBP) at the Hatfield Marine Science Center to restore native populations and promote commercial cultivation of the native Olympia oyster.

### **2019 Action Plan Theme 4: Share OAH science, impacts, and solutions to raise awareness**

- **SB1554, Section 1.8:** \$65,000 for a communications plan and strategy for outreach and education on OAH impacts, science and solutions and to develop communications materials on the science, impacts and solutions for OAH that will be useful in policy decision-making.