

# *The State of Oregon*

# **Ocean Acidification and Hypoxia Action Plan**

*Presentation to Oregon Sustainability Board*



*Dr. Shelby Walker*  
*Oregon Sea Grant*



**Oregon Coordinating  
Council on Ocean  
Acidification & Hypoxia**

# OREGON OBSERVES

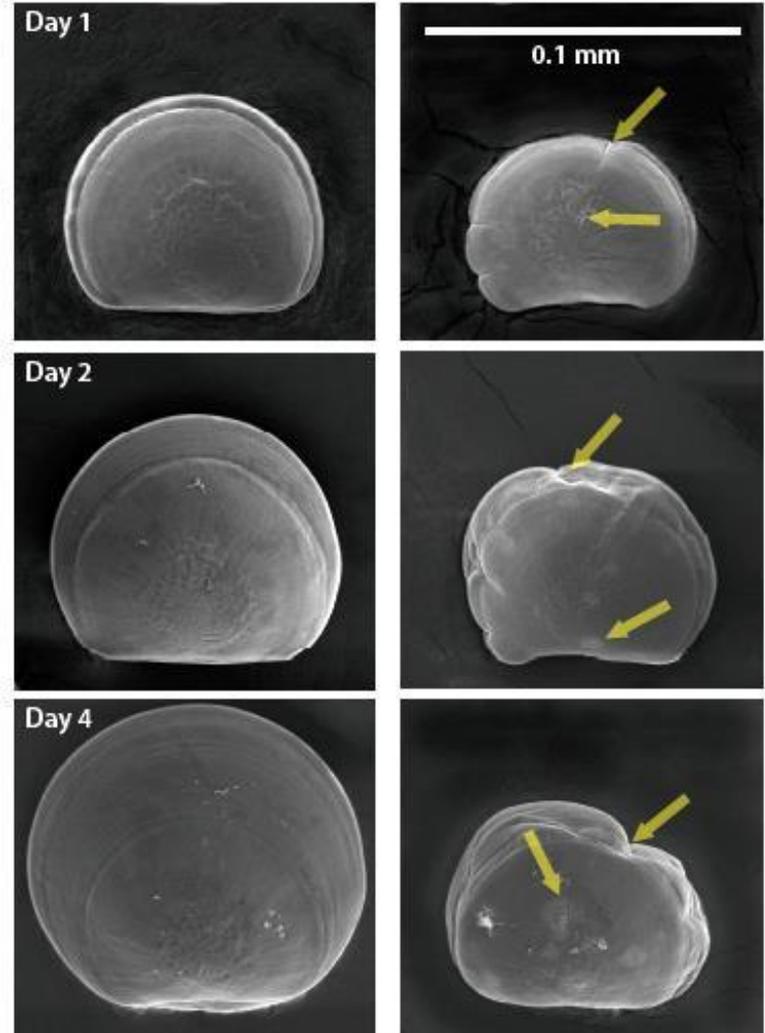
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# OCEAN ACIDIFICATION

## Whiskey Creek Shellfish Hatchery Netarts Bay, Oregon



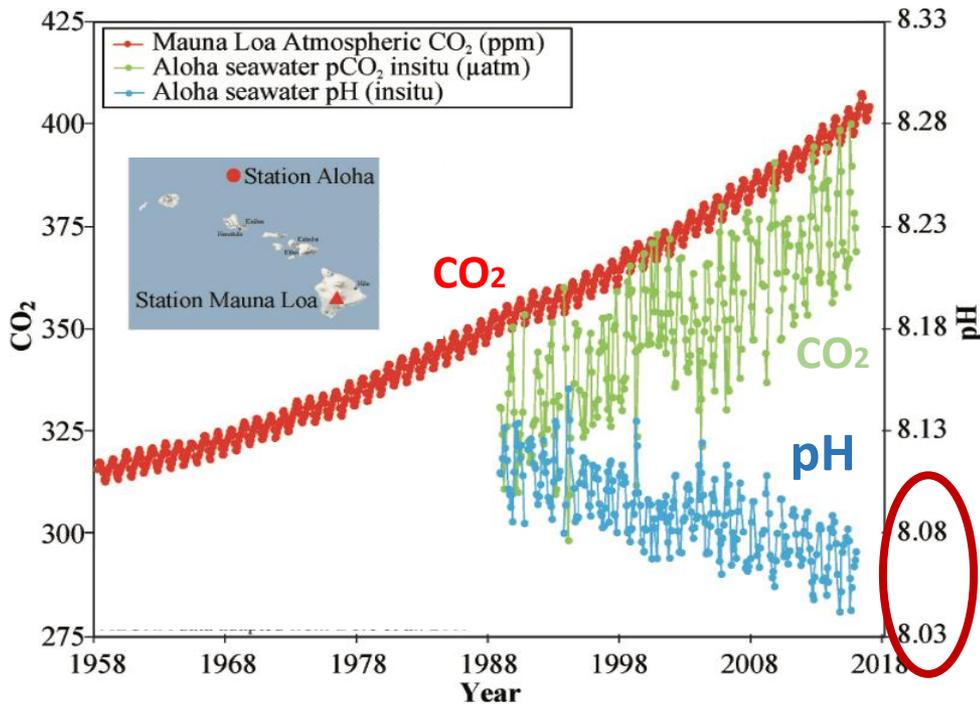
Three examples of damage to oyster larvae from ocean water acidity and low available carbonate, compared with healthy larvae on left. Micrograph by OSU



# OCEAN ACIDIFICATION

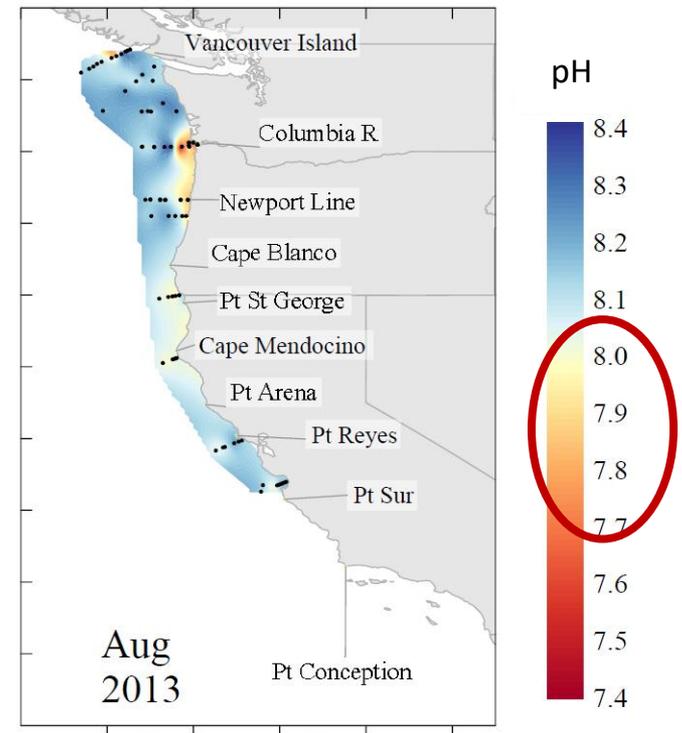
Increased  $\text{CO}_2$  and  $\text{CO}_2/\text{pH}$  = Ocean Acidification

Sea surface  $\text{CO}_2$  and pH time series, Hawaii



NOAA PMEL Carbon Program:  
Mauna Loa Data adapted from Dore et al. 2009

Sea surface pH values, West Coast



Feely et al. (2016) *Estuarine, Coastal and Shelf Science*

# HYPOXIA

Hypoxia = 1.4 mL/L

2007

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## Low-oxygen zone found again off Oregon Coast

Originally published July 31, 2007 at 12:00 am | Updated July 31, 2007 at 2:03 am

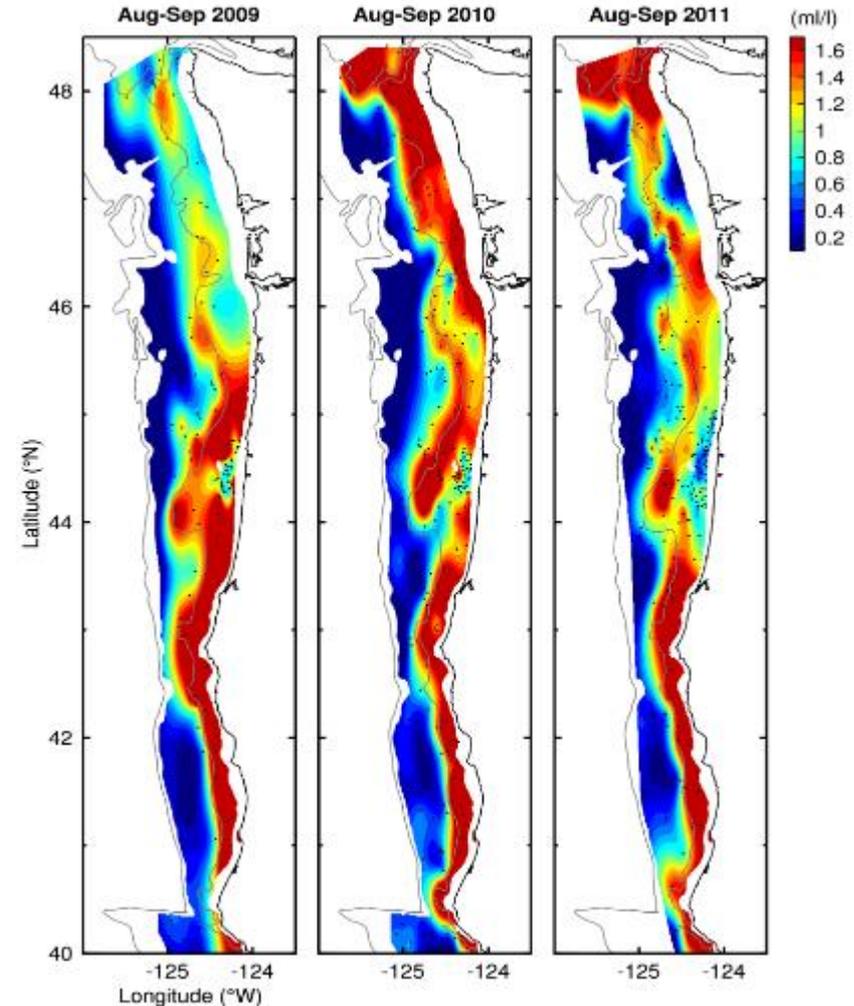


2018

HOME ABOUT US TV RADIO NEWS MUSIC & CULTURE EVENTS SUPPORT

## Oregon Now Has A Hypoxia Season, Just Like A Wildfire Season

By Kristian Fedou-Yencil September 18, 2018

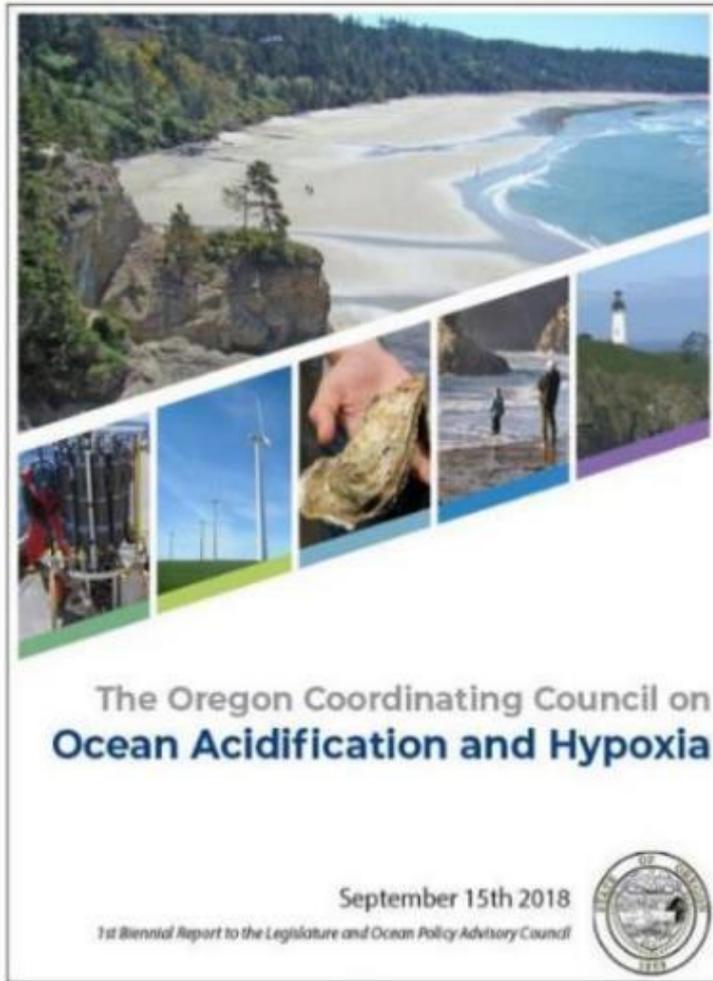


Keller et al. (2017) Marine Ecology Progress Series

# OREGON CONVENES

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# OREGON'S COORDINATING COUNCIL ON OAH



- Oregon Senate Bill 1039 (2017)
- OAH Council Report (2018)
- Governor's Oregon OAH Action Plan (2019)



# GUIDING PRINCIPLES



**Excess CO<sub>2</sub> is the key problem, and there are State actions that can address it**



**Benefits for ecosystems and human communities**



**Oregon focused actions**



**Complement existing management frameworks**



**Actions targeted for Oregon, the region, and globally**



**Recommendations are only a starting point**

# OVERARCHING THEMES



## THEME 1

Strengthen OAH science, monitoring, and research



## THEME 2

Reduce causes of OAH



## THEME 3

Promote OAH adaptation and resilience



## THEME 4

Raise awareness of OAH science, impacts, and solutions



## THEME 5

Commit resources to OAH actions

# OREGON ACTS

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# INTERNATIONAL ALLIANCE TO COMBAT OCEAN ACIDIFICATION

## Members endorse a Global Call to Action

1. Advance scientific understanding
2. Reduce causes
3. Explore adaptation and mitigation
4. Expand public awareness
5. Build sustained international support



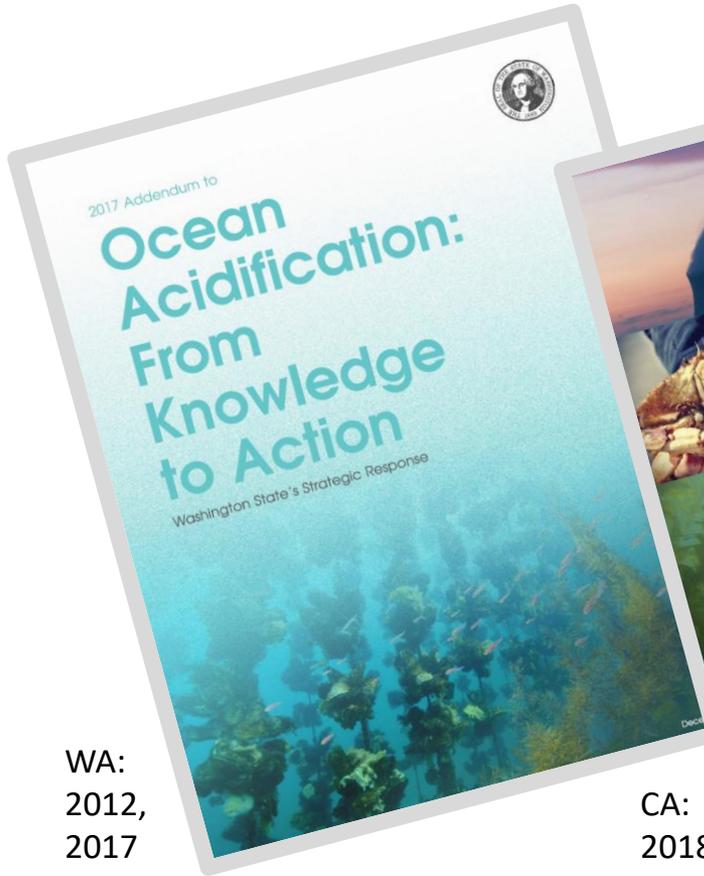
Mayor Ted Wheeler



Nisqually Indian Tribe



# WEST COAST OA(H) ACTION PLANS



WA:  
2012,  
2017



CA:  
2018



OR:  
2019

## *1. Advance Scientific Understanding*

# **Invest in Oregon's monitoring network to document oceanographic and biological conditions, and socio-economic vulnerabilities relating to Ocean Acidification and Hypoxia (OAH)**



*Fund Oregon's existing oceanographic research reference sites*



*Invest in monitoring of Oregon's ocean life*



*Fund socio-economic vulnerability assessments*

## 2. Reduce Causes

# Develop and integrate strategies to reduce causes of excess carbon dioxide (CO<sub>2</sub>) and Ocean Acidification and Hypoxia (OAH)



*Establish communication and coordination pathways with state agencies*



*Support research to reduce excess CO<sub>2</sub> and OAH stressors*



*State agencies implement measures to reduce excess CO<sub>2</sub> and OAH stressors*

### 3. Create Resilience

## Support activities and initiatives that promote adaptation and resilience to Ocean Acidification and Hypoxia (OAH), for Oregon's human communities and ecosystems



*Identify strategies to maintain native shellfish stocks and SAV*



*Support data collection, synthesis, and modeling to promote resilient ecosystems*



*Agencies develop Best Management Practices, based on current research*

## 4. Raise Awareness

# Communicate Ocean Acidification and Hypoxia (OAH) science, impacts, and solutions to raise awareness and support decision-making



*Build communications plan and outreach materials for OAH science, impacts, and solutions*



*Provide timely updates to inform decisions on how best to invest in OAH*



*Evaluate the effectiveness of OAH communication tools*

## *5. Build Sustained Support*

# **Mobilize agencies to address Ocean Acidification and Hypoxia (OAH) priorities**



*Governor's policy urges state agencies to consider OAH priorities in current work*



*Governor's Office provides OAH leadership, coordination, and policy guidance*



*State agencies implement measures to fill gaps*

# INTERSECTIONS WITH OREGON SUSTAINABILITY BOARD

## EXAMPLES

- ✓ Encouraging agencies to address OAH priorities in regular planning process
- ✓ Engaging with state agencies to address excess CO2 and OAH stressors such as
  - Water quality, carbon offsets, habitat conservation
- ✓ Supporting research leading to recommendations for reducing excess CO2 and OAH stressors
  - Integrating strategies into agency planning

# OregonOcean.Info



**Oregon State**  
University

*Comments or Questions? Please contact  
Council Co-Chairs*

*[Jack.Barth@oregonstate.edu](mailto:Jack.Barth@oregonstate.edu) or [Caren.E.Braby@state.or.us](mailto:Caren.E.Braby@state.or.us)  
or Council Staff*

*[Charlotte.M.RegulaWhitefield@state.or.us](mailto:Charlotte.M.RegulaWhitefield@state.or.us)*

