Oregon's Coordinating Council on Ocean Acidification and Hypoxia

Why we need it
Where we are

Oregon Department of Fish and Wildlife

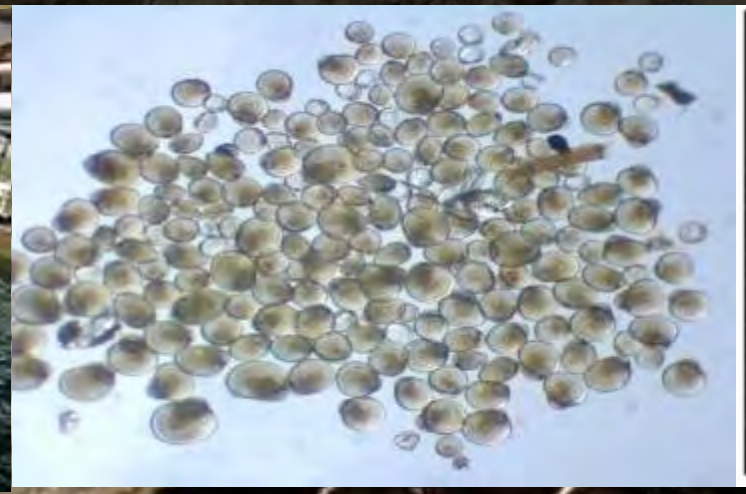
Caren Braby, Co-Chair
Charlotte Regula-Whitefield, Council Staff

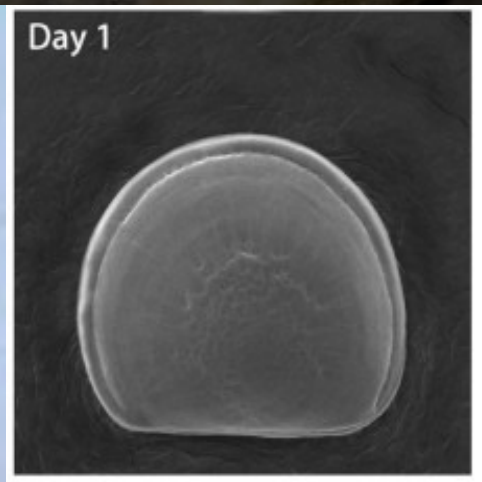
Oregon State University

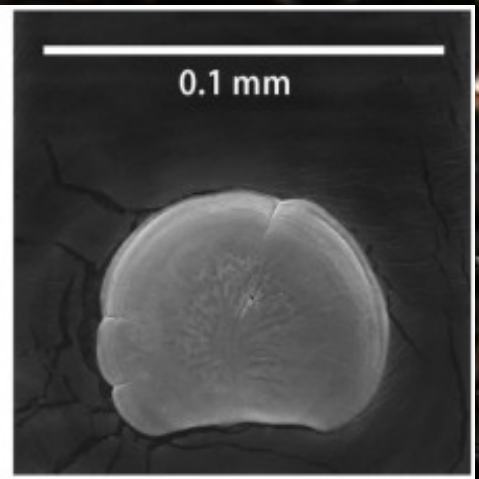
Jack Barth, Co-Chair

West Coast shellfish aquaculture: $270 Million annually

Whiskey Creek Shellfish Hatchery: 2007 larval class failures





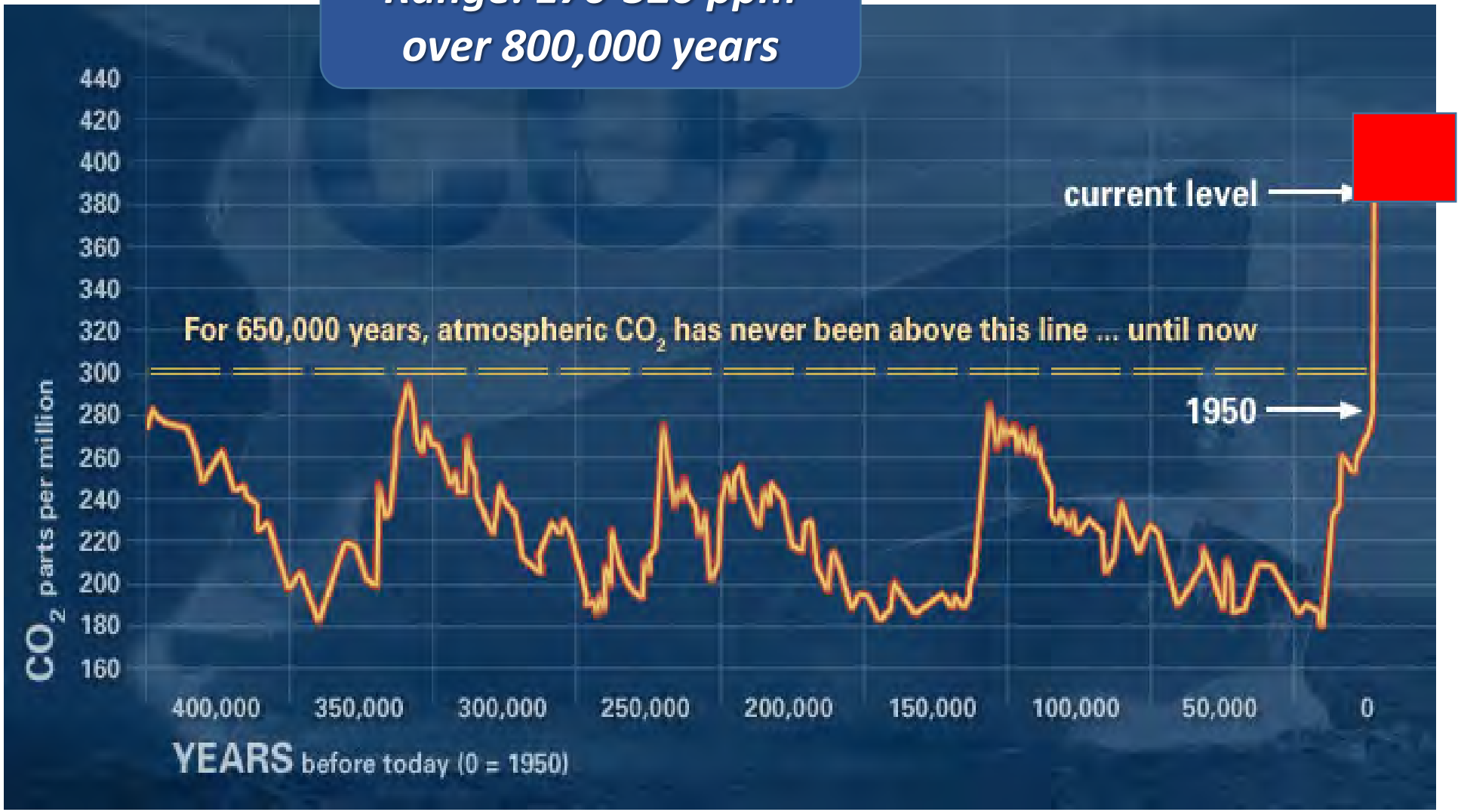


West Coast shellfish aquaculture: $270 Million annually

WILD POPULATIONS:
Pteropod pitting measured in situ

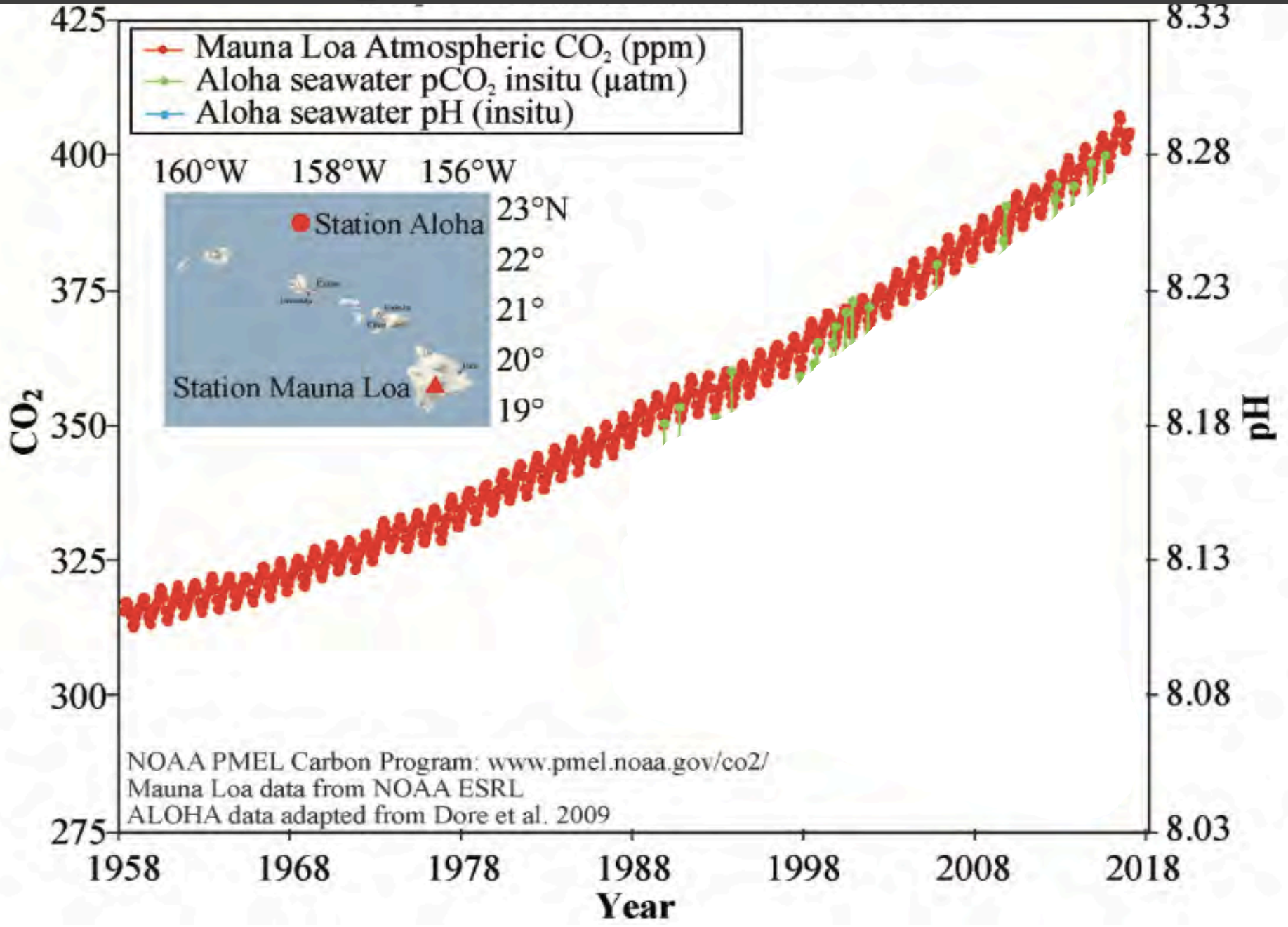
Increased CO_2 = warming

Range: 170-320 ppm over 800,000 years



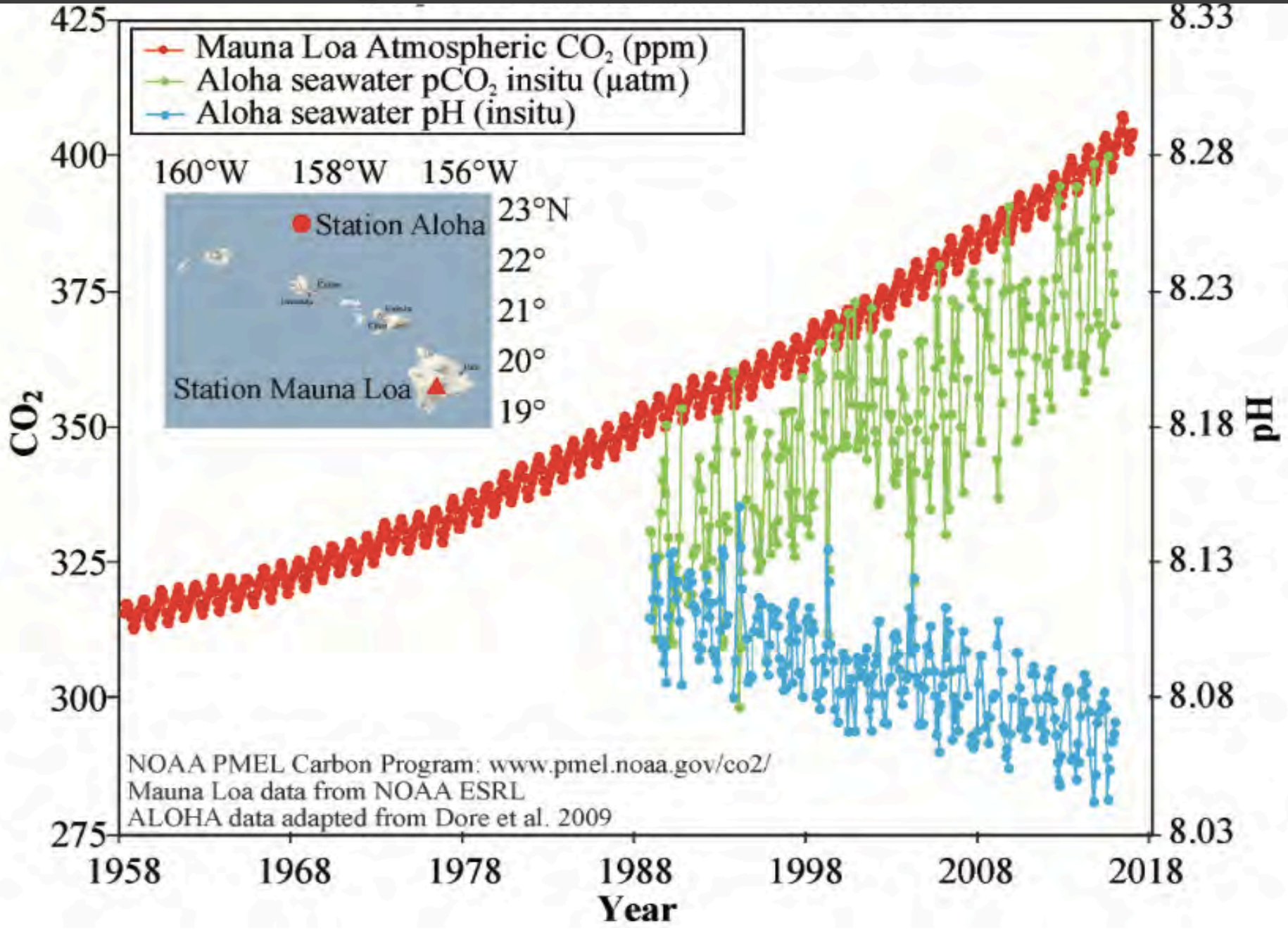
Temperature change (light blue) and carbon dioxide change (dark blue) measured from the EPICA Dome C ice core in Antarctica (Jouzel et al. 2007; Lüthi et al. 2008).

Increased CO_2 = acidification

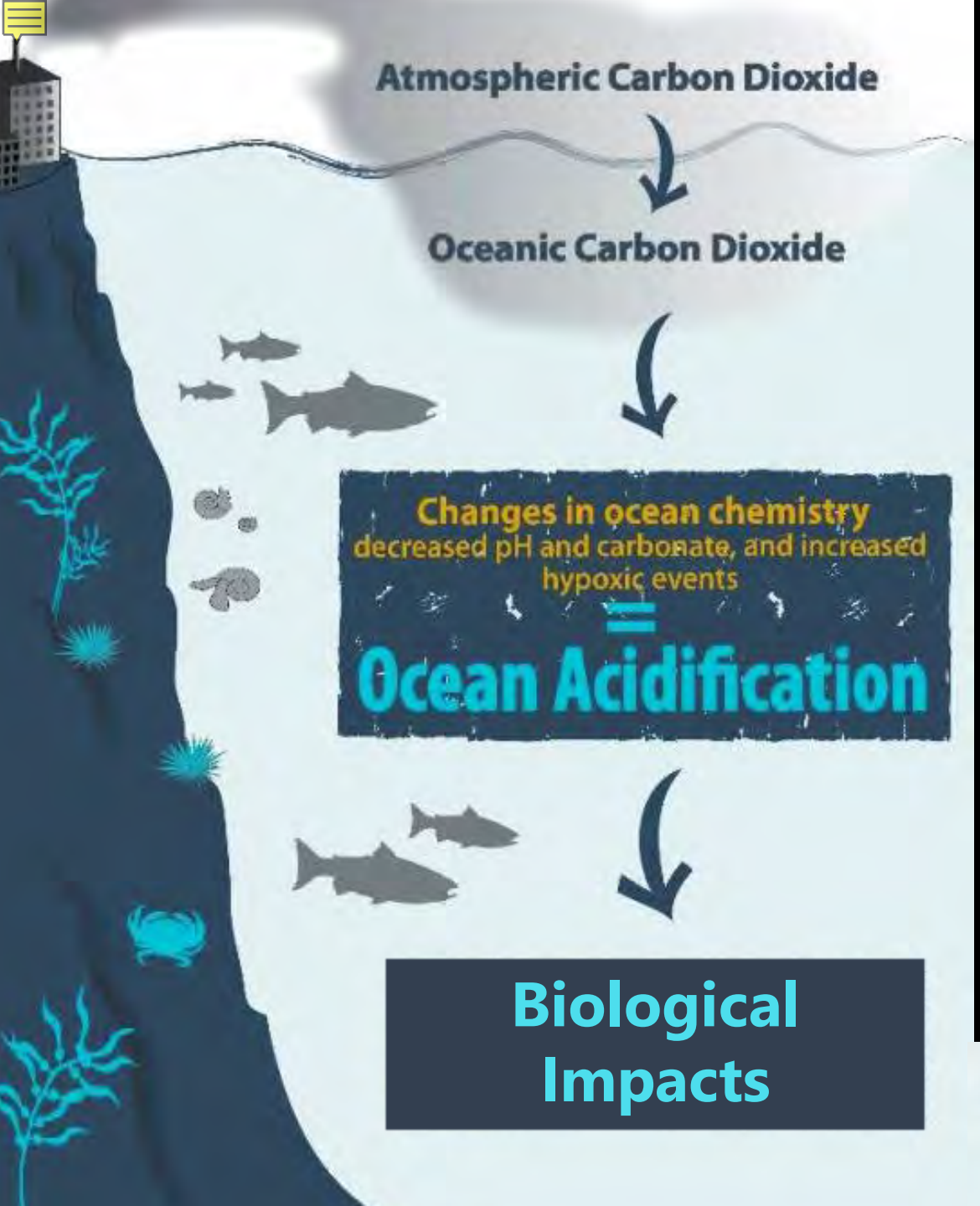


- Increasing CO_2 in atmosphere
- Increasing pCO_2 in ocean

Increased CO_2 = acidification



- Increasing CO_2 in atmosphere
- Increasing pCO_2 in ocean
- Decreasing pH in ocean



Biological Impacts

Economic Impacts Commercial & Sport

Oregon's Coordinating Council on OAH

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



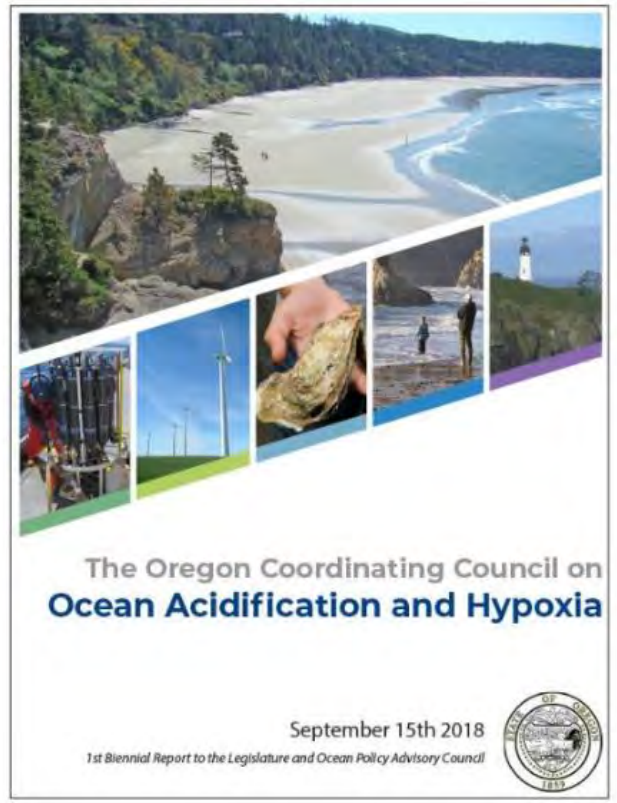












Bios:
Report p. 49

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

Themes:
Report p. 23

Theme 1

Strengthen Ocean Acidification and Hypoxia Science, Monitoring and Research

Identify and develop information critical for Oregon to understand, adapt to and mitigate OAH impacts.

<u>Recommendation 1.1</u> Expand and maintain a ***robust monitoring network*** that captures OAH oceanographic trends… and biological responses to OAH… through collaborative efforts in the State and West Coast region.

<u>Recommendation 1.2</u> Develop an ***OAH assessment and research plan*** for Oregon, to be implemented in collaboration with partners, that includes characterizing OAH vulnerabilities and adaptation/resilience strategies for Oregon ecosystem and socio-economic assets.

<u>Recommendation 1.3</u> Establish ***research priorities to inform decision-making on mitigation alternatives*** for excess CO_2 in marine waters… and OAH mitigation strategies (e.g., reduce pollutants that exacerbate OAH and biological impacts of OAH), to address the OAH vulnerability impacts to Oregon's ecosystem and human communities.

Theme 1: Report p. 26

Theme 2

Reduce Causes of Ocean Acidification and Hypoxia

Develop a coordinated approach for CO_2 and OAH management and mitigation, and implement strategies to reduce factors that cause or exacerbate OAH.

<u>Recommendation 2.1</u> Develop and implement ***aligned strategies between CO_2 and OAH management and mitigation*** efforts, to create a comprehensive and non-redundant approach to reduce excess CO_2 and OAH.

<u>Recommendation 2.2</u> ***Reduce water pollutants that amplify or exacerbate OAH impacts***, to make permanent improvements in water quality.

Theme 2: Report p. 30

Theme 3

Promote Ocean Acidification and Hypoxia Adaptation and Resilience

Support activities and initiatives that promote adaptation and resilience to increasing OAH conditions for Oregon's human communities and marine ecosystems.

<u>Recommendation 3.1</u> Incorporate OAH adaptation and resilience strategies into ***existing planning and decision-making frameworks*** to strengthen Oregon's marine ecosystems and human communities.

<u>Recommendation 3.2</u> Support ***new OAH resilience initiatives*** to sustain Oregon's habitats, species, and human communities.

Theme 3: Report p. 32

Theme 4

Raise Awareness of Ocean Acidification and Hypoxia Science, Impacts, and Solutions

Identify and advance opportunities to raise awareness of and communicate OAH science, impacts, and mitigation solutions.

<u>Recommendation 4.1</u> Develop and implement foundational ***communications and awareness strategies*** on OAH science, impacts, and solutions (e.g., 10-year plans), working collaboratively with partners.

<u>Recommendation 4.2</u> Develop ***audience-specific materials and strategies on OAH science, impacts and solutions*** to increase awareness and understanding in key audiences.

Theme 4: Report p. 34

Theme 5

Commit Resources to Ocean Acidification and Hypoxia Actions

Support a sustained, long-term approach to addressing OAH, including a policy declaration, funding for actions that require additional capacity, and reinforcement of Oregon's intellectual capital to meet future challenges.

Recommendation 5.1 Develop ***State policy and maintain policy expertise for addressing OAH*** science, adaptation, and mitigation priorities at the highest levels.

Recommendation 5.2 Develop and ***diversify the portfolio of funding sources*** for implementing Oregon's OAH science, adaptation, and mitigation priorities.

Recommendation 5.3 Strengthen Oregon's ***OAH intellectual capacity*** and support the integration of OAH research priorities into academic planning.

Theme 5: Report p. 38

Actions Recommended for Immediate Attention

- Support and maintain Oregon's monitoring of OAH oceanographic metrics and biological response metrics (Actions 1.1.a/c)
- Incorporate OAH into CO_2 management and mitigation discussions in the state (Action 2.1.b)
- Support new initiatives to promote natural ecosystem resilience (Actions 3.2.a/b)
- Keep legislators and policy-makers up-to-date on the science, impacts of and solutions for OAH (Action 4.2.a)
- Develop high-level policy guidance for the state's government agencies on prioritizing OAH in agency workload (Action 5.1.a)

Short List:
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Oregon Department of Fish and Wildlife

Caren Braby, Co-Chair
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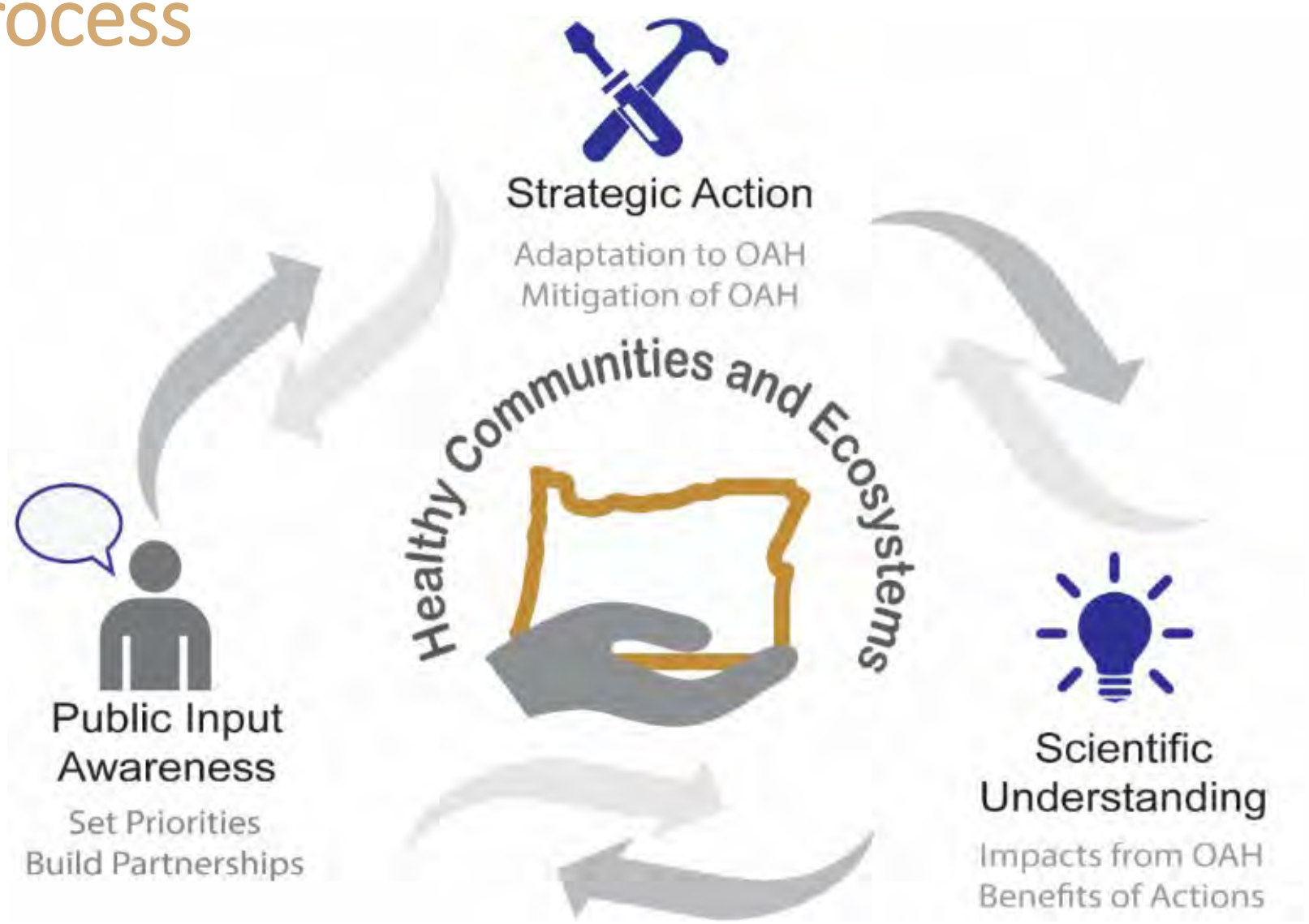
Oregon State University

Jack Barth, Co-Chair

www.OregonOcean.info/index.php/ocean-acidification

OAH Council Process



Process:
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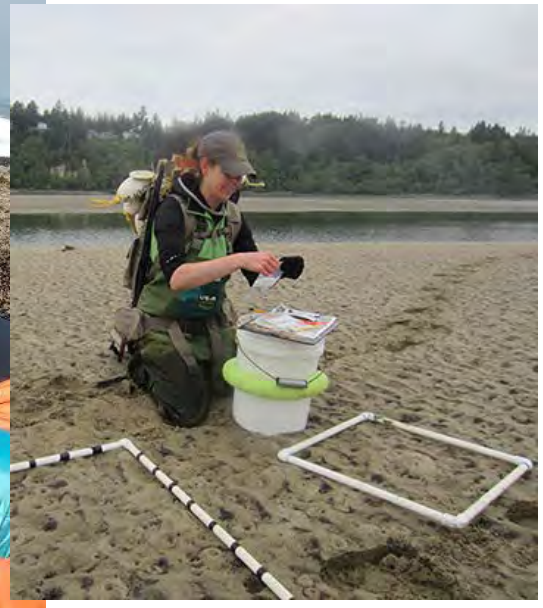
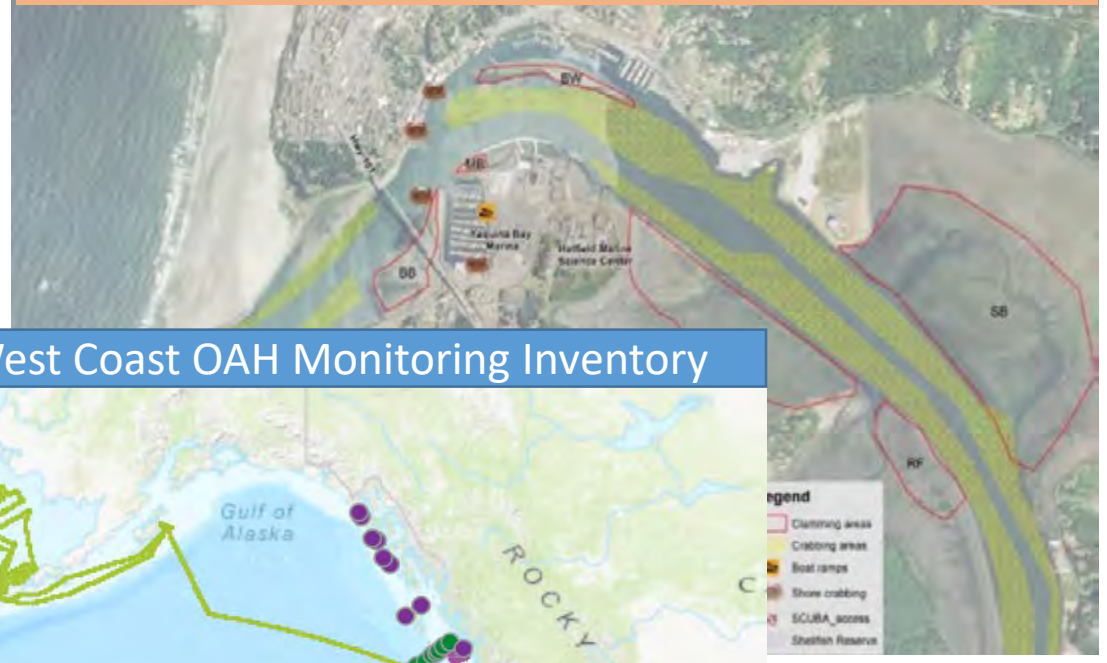
1. Science:
Measure & document trends, populations
Make data accessible

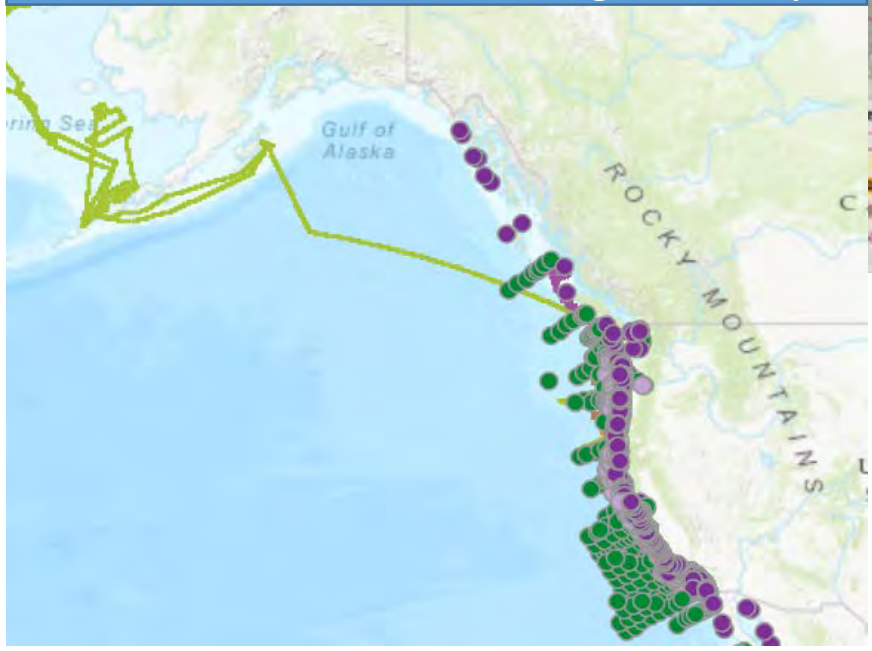
Intertidal Surveys



Clamming & Crabbing Maps



West Coast OAH Monitoring Inventory

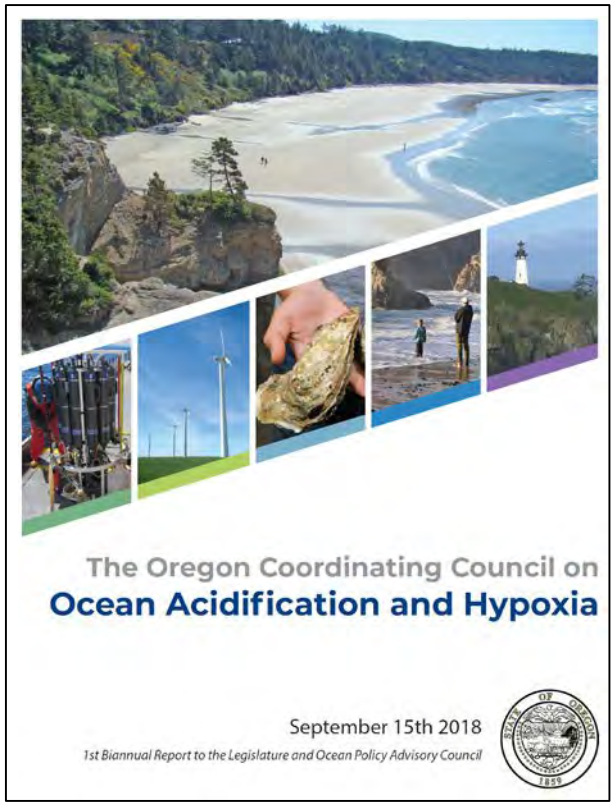


2. <u>Reduce causes</u>:
   Carbon dioxide emissions
   Water quality & quantity

3. Resilience:
   Ecosystem and Economics
   Submerged vegetation


4. Communication, Awareness:
Science, impacts, solutions
Would you like
to try an
experimen

5. Sustained approach: Invest in Oregon's planning and expertise



- Policy
- Funding
- Academic excellence

For more information on Council:
https://www.oregonocean.info/index.php/ocean-acidification

State-Province-Federal OAH Monitoring Inventory

(2016-2018; soon to be released)

Pacific Coast
COLLABORATIVE

Leadership now
for a sustainable tomorrow

West Coast Ocean Acidification & Hypoxia Science Panel

Regional alignment on status of knowledge and needs for OAH research and monitoring
Roadmap for action
Dialog between scientists and management
(2013-2016)

JOINT Task Force

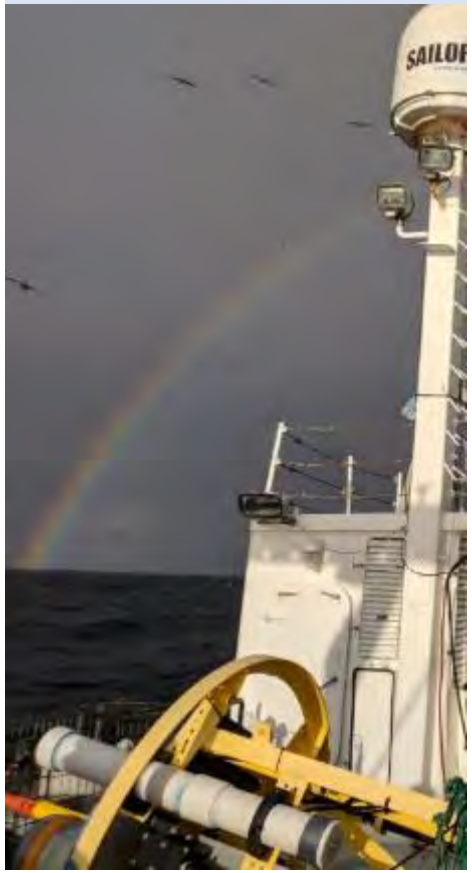
Regional OAH Monitoring Inventory
PCC-Interagency Working Group on OA
(2016-present)

OA ALLIANCE

Policy framework for generating actions locally and globally
Members build OAH Action Plans (2016-present)

Climate Change Solutions

SCIENCE MONITORING



REDUCE CAUSES

RESILIENCE

COMMUNICATION

SUSTAINED APPROACH