



Ocean Acidification in Washington State

From Knowledge to Action

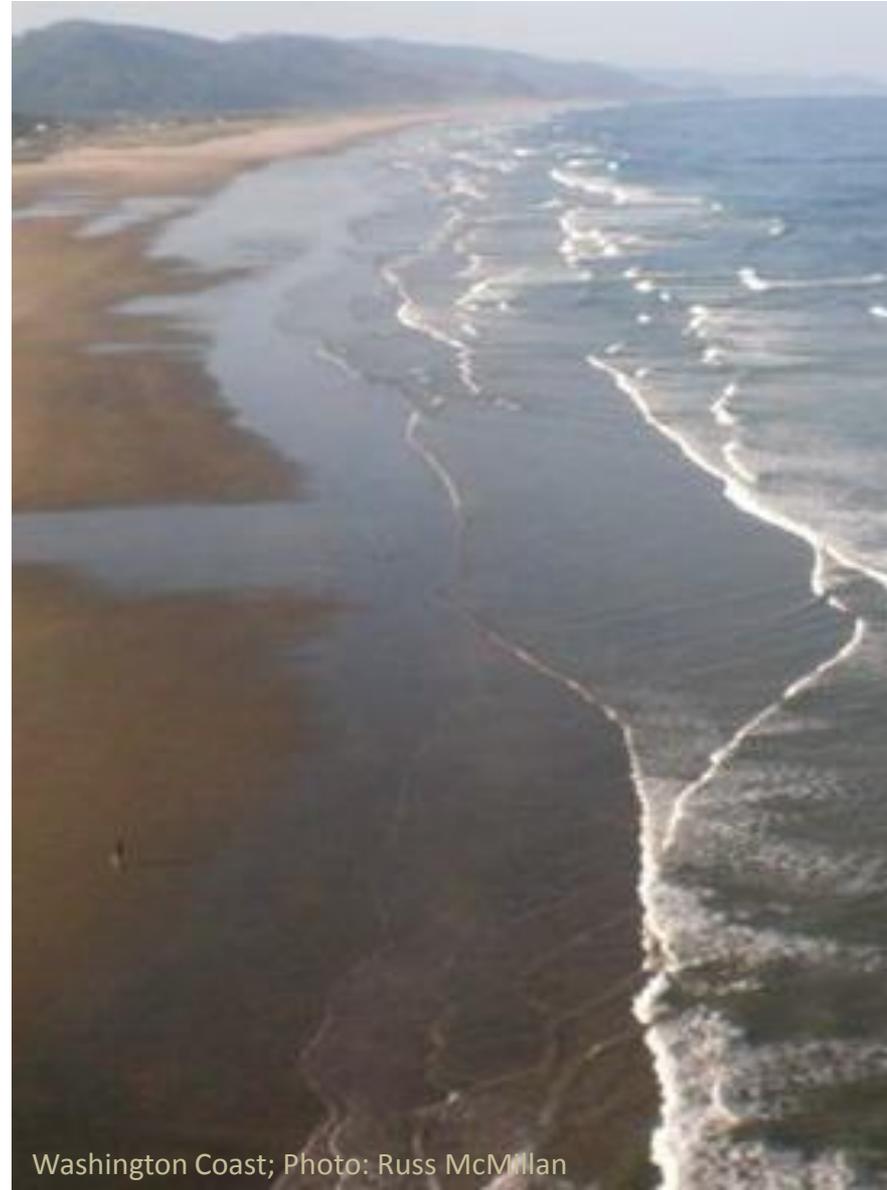
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Washington Department of Ecology

Washington is Particularly Vulnerable to Acidification

A combination of regional factors can exacerbate acidification caused by global CO₂ emissions:

- Coastal upwelling of CO₂-rich waters
- Runoff of nutrients and organic carbon from land
- Decay of organic matter in subsurface waters
- Emissions of acidifying gasses (NO_x and SO_x)



What's at Stake for Washington's Economy?



The most productive commercial shellfish industry on the West Coast generating \$270 million annually and accounting for almost 85% of U.S. West Coast sales (including Alaska).

Impacts to marine food webs could affect Washington's seafood industry, which generates over 42,000 jobs in Washington and contributes at least \$1.7 billion to gross state product.

What's at Stake for Washington's Tribes?



Continued identity and cultural survival of Washington's coastal tribes

- Washington tribes depend upon shellfish for food, income, and connection to their cultural heritage.

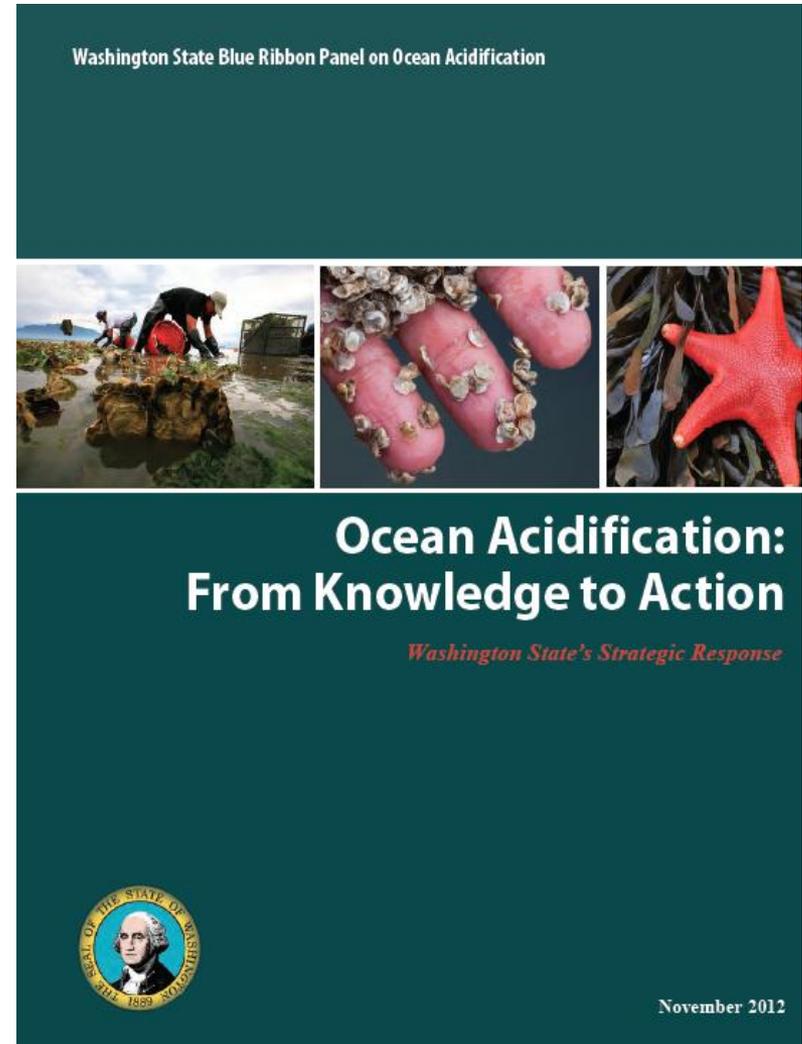
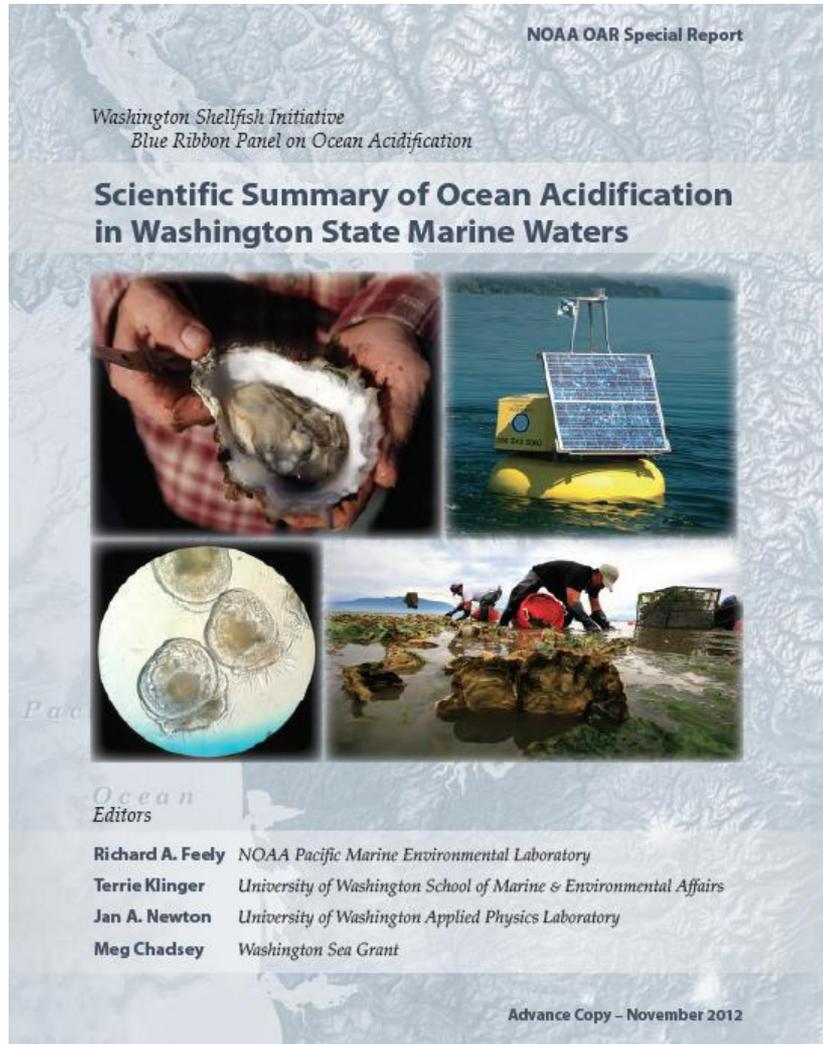
Developing the Response: The Blue Ribbon Panel on Ocean Acidification

- Convened by Governor Christine Gregoire in February 2012.
- A first-of-a-kind comprehensive state-level effort to address ocean acidification.
- Charged with reviewing the best available science, and producing a set of recommendations to guide Washington's response.
- Scientists, decision makers, industry, tribal representatives, and conservation community representatives produced a comprehensive set of actions.



Gov. Gregoire and Bill Dewey of Taylor Shellfish Company discuss growing and harvesting techniques for oysters in the tide flats in Samish Bay.

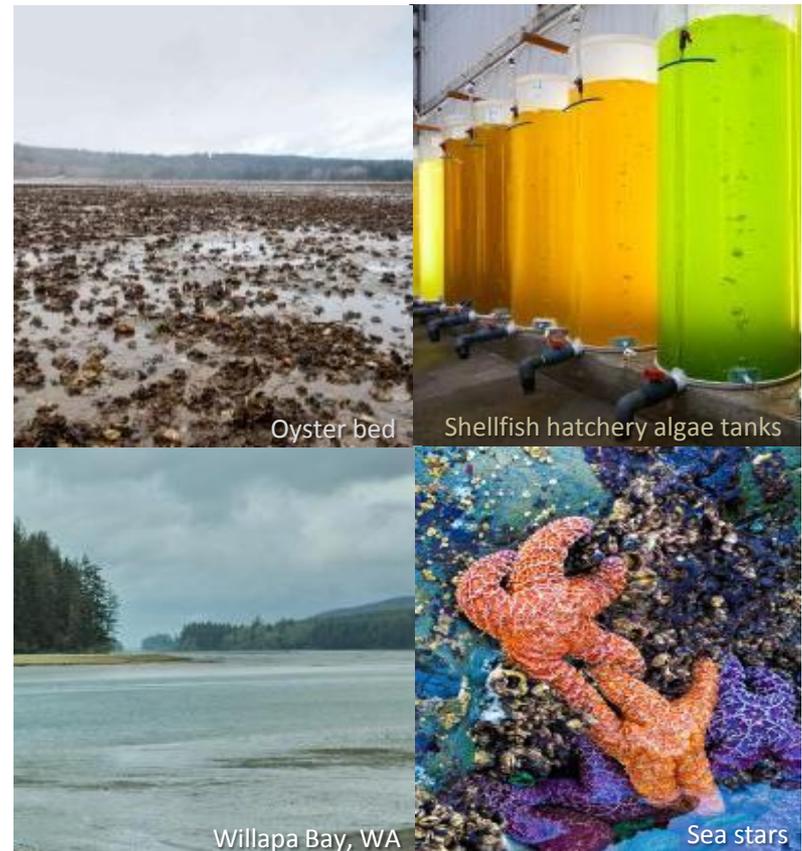
Washington State Panel Reports



Panel Recommendations

42 recommendations, including 18 *Key Early Actions*, that will:

1. Address CO₂ emissions;
2. Reduce local land-based pollutants;
3. Foster adaptation and mitigation;
4. Increase research and monitoring;
5. Inform, educate, and engage the public; and
6. Maintain a coordinated focus on ocean acidification.



Recommendations to Reduce Local Land-Based Contributions

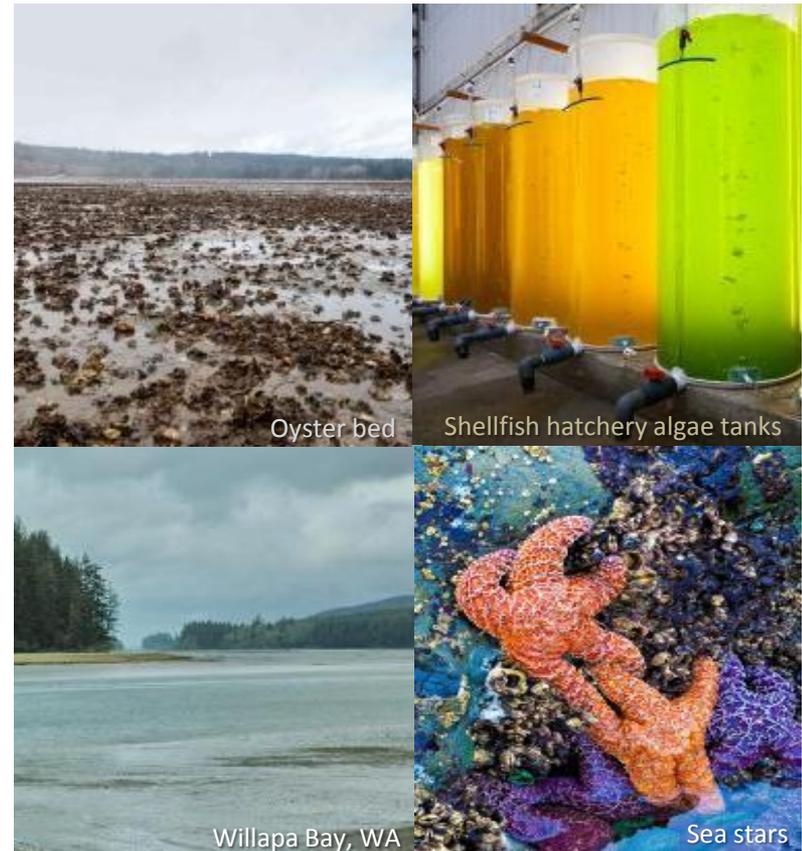
- Request EPA assess water quality criteria relevant to ocean acidification
- Strengthen and augment existing pollutant reduction actions to reduce nutrients and organic carbon
- Adopt legislation that will allow sewer connections in rural areas



Capitol Building, Olympia

Recommendations to Reduce Local Land-Based Contributions, cont.

- Impose stringent controls on point sources contributing significantly to acidification
 - If determined necessary as result of additional research, monitoring, and modeling; and
 - Funding of advanced treatment technologies has been identified.



Response by the Governor and Legislature

- Executive Order 12-07 – directs agencies to implement the Panel's recommendations
- Creation of Washington Marine Resources Advisory Council (Engrossed Senate Bill 5603) to coordinate and advise on ocean acidification
- Creation of Center on Ocean Acidification at the University of Washington to coordinate research and monitoring and suggest strategies to mitigate local effects
- \$1.82 million funding for the Center



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Other News

West Coast Collaboration

- MOU between California and Oregon establishing the West Coast Ocean Acidification and Hypoxia Science Panel:
 - Interdisciplinary West Coast Panel, includes WA and B.C.
 - Builds on the work of WA Blue Ribbon Panel
 - WA UW Center is represented

Potential Litigation under Clean Water Act

- Center for Biological Diversity is urging EPA to reconsider the approval of WA and OR's lists of impaired waters because of the threat of ocean acidification.

For More Information...

Washington Department of Ecology :
<http://www.ecy.wa.gov/water/marine/oceanacidification.html>

NOAA Pacific Marine Environmental Laboratory:
<http://www.pmel.noaa.gov/co2/story/Ocean+Acidification>