

WEST COAST GOVERNORS ALLIANCE on OCEAN HEALTH

CALIFORNIA OREGON WASHINGTON

Ocean Acidification as a WCGA priority area

The problem

The oceans are a global carbon sink and as atmospheric CO₂ levels have risen the oceans have absorbed approximately 30% of this carbon (Sabine et al. 2004). The absorption of CO₂ by the oceans results in waters that are more acidic, which will affect the ability of organisms to calcify and alter the physiology of marine species. Global ocean pH levels have already fallen from 8.2 to 8.1 (a tenfold change since pH is on a log scale) since pre-industrial levels and are expected to fall 0.3 to 0.4 units by 2100 (Orr et al. 2005). A recent meta-analysis of the effects of ocean acidification on marine species found overall negative but variable impacts (Kroeker et al. 2010). The effects of ocean acidification may be larger in eastern boundary upwelling systems such as the California Current System, which could leave marine communities on the West Coast more vulnerable. Upwelling, which brings deeper water that is more acidic to the surface, can create pH levels not predicted for decades to be experienced now in our coastal waters (Feely et al. 2008).

Regional Research Priorities

The WCGA recognizes ocean acidification as a new and emerging issue in ocean and coastal policy and management that requires a coordinated and regional approach. In 2008 when the WCGA assembled its Action Plan, specific research areas were not included in the priority areas. Instead, the WCGA supported efforts by West Coast Sea Grant programs to identify West Coast regional marine research and information needs. The West Coast Sea Grant programs released a regional report that was developed through an intense stakeholder engagement process in each of the three states. The Executive Committee of the WCGA used this report as a starting point to identify 3-5 regional research priorities. To do this, the WCGA Executive Committee interviewed ten scientists to assess relative priority of the research areas identified by the research report. Ocean acidification has clearly emerged as an area of concern that would benefit from a regionally cooperated effort.

Efforts by the three West Coast States

Washington: In recognition of the impacts of ocean acidification, Washington recently convened a Blue Ribbon Panel to document the current state of knowledge and identify ways to reduce impact of acidification on Washington's natural resources, especially farmed shellfish. In November 2012, the Blue Ribbon Panel released a summary report with recommendations for the state of Washington and in response Governor Gregoire released Executive Order 12 07 directing the WA Department of Ecology and other cabinet agencies to implement the early actions of the Panel's key findings including

establishing a new Center for Ocean Acidification at the University of Washington and allocating \$3.31 million to ocean acidification early actions.

Oregon: Oregon recognizes the need to formulate California Current-wide initiatives to frame the science and management questions related to ocean acidification impacts on Oregon's natural resources, ocean-dependent industries, and communities. Oregon is home to the Whiskey Creek Shellfish Hatchery on Netarts Bay, a West Coast and international supplier of oyster larvae to the shellfish industry, which has been impacted directly by ocean acidification. The state of Oregon is in discussions with the state of California to collaborate formally in the Ocean Protection Council OA panel (discussed below). The Oregon Governor's office will be convening OA scientists at Oregon State University and managers from relevant state agencies to formulate an Oregon-focused effort that will build on and complement the work already completed by Washington State and underway in California.

California: California and the West Coast are on the front lines for impacts from ocean acidification. In recognition of this, California has identified ocean acidification as a key concern, and the Secretary for Natural Resources as Chair of the California Ocean Protection Council has directed its science advisor to work with the Council's Science Advisory Team to empanel experts to address California's information needs on the issue. Further, the Ocean Protection Council's science advisor has participated in and led an emerging 3-state collaborative, the California Current Acidification Network (C-CAN), to promote communications and idea exchange among scientists and stakeholders across California, Oregon and Washington.

Partners

C-CAN: C-CAN is a collaborative effort between members of the West Coast shellfish industry and scientists to explore what is causing shellfish losses on the Pacific coast, what role ocean acidification and other factors might be playing in this problem, and how to adapt to these changes in order to sustain West coast shellfish resources.

IOOS: The federal Integrated Ocean Observing System's (IOOS) monitoring of acidifying oceans is helping both the economy and environmental understanding. Information from NOAA's Ocean Acidification Program and real-time data from offshore IOOS buoys act as an early warning system for shellfish hatcheries. These data signal the approach of cold, acidified seawater one to two days before it arrives in the sensitive coastal waters where larvae are cultivated. The data enable hatchery managers to schedule production when water quality is good.

National Ocean Policy

Resiliency and adaptation to climate change and ocean acidification is one of the nine priority areas of the National Ocean Policy (NOP). Within this priority area, the NOP identified the need to assess the vulnerability of coastal and ocean environments and communities to climate change ocean acidification. The WCGA realizes that a regional effort by the three West Coast states will be imperative to assess vulnerability to and mitigate future effects of ocean acidification on the West Coast.

WCGA Priorities

Because of the broad-scale impacts of ocean acidification, the added vulnerability of the West Coast and the ability to advance a priority of both state and federal partners, the WCGA has added ocean acidification to its priority areas. The WCGA will work with its partners to further the ability of the West Coast to understand and address impacts of ocean acidification.

References

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