

WA Dept of Fish & Wildlife

WA Dept of Health

WA Dept of Ecology

Quinault Indian Nation

Makah Tribe

UW School of Oceanography

UW Olympic Natural Resources Center

Pacific Shellfish Institute

Battelle Marine Science Lab

Saigene Corp.

National Centers for Coastal Ocean Science

Northwest Fisheries Science Center

Olympic Coast National Marine Sanctuary

Dept. of Fisheries & Oceans, Canada



The Olympic Region Harmful Algal Bloom partnership (ORHAB) formed in June 1999 out of local residents' shared frustration. Inexplicable and sudden outbreaks of toxic episodes caused by domoic acid and Paralytic Shellfish Poisoning (PSP) were becoming more frequent, wreaking havoc in the region's tourism industry and in commercial shellfish businesses. Beginning in the early 1990s, communities up and down the coast became frustrated as razor clam season openings became less and less reliable. Tourists by the thousands began to go elsewhere rather than risk disappointment after hours of driving to reach coastal beaches. New algal blooms appeared in waters that supported the region's \$30 million dollar commercial shellfish industry. The upheaval caused by so much uncertainty was affecting a wide range of residents. Sharing a common need to better understand the underlying

**Origin of ORHAB**

ing dynamics of these destructive events, a regional partnership formed of tribal and non-tribal community leaders, state and federal resource managers and researchers, and businessmen. Together they joined to form ORHAB—a regional forum to collaboratively seek answers. Like rural communities everywhere, ORHAB participants value self-sufficiency and self-reliance. They first looked around to find local talents and new partners. They next determined what was lacking and created a vision for achieving

full self-sustaining local capacity. Funding was sought from the National Oceanic and Atmospheric Administration (NOAA)'s Monitoring and Event Response to Harmful Algal Blooms (MERHAB) program. Five years of federal funding will catalyze the creation a permanent local monitoring program to reduce the impacts of toxic blooms on the welfare of coastal communities.



Photo courtesy of WDFW  
Thousands of local residents and visiting tourists stalk the wild and delicious razor clams along WA's coastal beaches. Toxic algal blooms have disrupted this important draw for coastal tourism costing local business hundreds of thousands of dollars.

**Building Self Reliance**

Local monitoring efforts must be grounded on the broader base of a credible scientific framework. State and federal health codes demand extremely high levels of accuracy. Locals must acquire the capacity to make reliable predictions of the onset and duration of toxic bloom events. Professional scientists will determine the environmental parameters most useful to track. ORHAB will then employ the most cost effective instruments

to monitor the relevant factors. Ongoing regional collaboration will supply the expertise to continue this multifaceted monitoring program. Each participant will have a different and valued role in the overall effort. Local field staff will continue to collect samples. Technicians will perform lab analysis. University scientists will conduct large scale studies and train samplers. Remote sensing experts will interpret satellite

images. Managers will feed information into the regulatory decision-making. The fruits of all these efforts will be brought together during ORHAB meetings. The results are already emerging: ORHAB's partners have built strong working relationships and brought about improvements in management. The value of ORHAB to the people of the region will make it indispensable.

# Real Accomplishments

Previous decisions, conveyed through the media, have caused confusion about the safety of coastal resources, frustration at the interruption of recreational trips and commercial operations, and an erosion of public confidence in state and tribal resource management. The quick, coordinated action made possible by the ORHAB partnership, provided toxin analysis data confirming the safety of the clams to decision-makers in time for them to ensure a safe commercial and recreational harvest. For future algal blooms, proactive testing through ORHAB will give managers the ability to limit beach closures to those areas impacted by toxins.

## Management Accomplishments

- Brought together research professionals from different agencies – tribal, state, federal, and private – into a cooperative, multi-disciplinary project.
- Increased communication between resource managers and research scientists to create the most effective HAB monitoring program for the WA coast. This has resulted in a greater number of beach openings for razor clam harvest.
- Led the WDOH to relax the state regulatory threshold for closing the recreational razor clam harvest, bringing state standards into conformity with federal standards. In the past, state standards had been more stringent due to uncertainties about the timing and location of domoic acid outbreaks.

## Scientific Accomplishments

- Led to an understanding of the timing and species composition of *Pseudo-nitzschia* blooms. During the first 2 years of ORHAB, we have observed both May and September blooms of *Pseudo-nitzschia*, the organism that produces the toxin domoic acid.
- Increased our knowledge of the environmental conditions influencing the duration of *Pseudo-nitzschia* blooms at the coast. This helps us understand why razor clams become toxic in some years but not in others.
- Began the development of a model that describes *Pseudo-nitzschia* bloom transport from the Juan de Fuca eddy (a possible harmful algal bloom initiation site) to the WA coast. This will assist in the ability to predict *Pseudo-nitzschia* blooms.
- Used satellite imagery to “track” the movement of Juan de Fuca eddy waters throughout the growth season

## Regional Capacity Building & Stakeholder Outreach

- Trained Olympic coast locals in all sampling protocols required for monitoring phytoplankton, domoic acid, and environmental parameters.
- Convened regular meetings to modify the cooperative workplan to serve the practical needs of managers.
- Delivered timely information to officials, stakeholders, political leaders, and general public about HAB events and the value of monitoring.

# Real Partnership



WA Dept. of Ecology  
estuarine studies



WA Department.  
Fish & Wildlife  
beach & nearshore  
sampling



Makah Tribe  
beach & nearshore  
sampling



UW School of Oceanography  
oceanography & plankton ID



WA Dept. Health  
shellfish tissue analysis



NW Indian College  
training



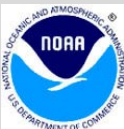
Pacific Shellfish Institute  
cell culture



Battelle Marine Lab  
remote sensing



Quinault Indian Nation  
beach & nearshore sam-  
pling



Northwest Fisheries Science  
Center  
project management, toxin  
sampling & analysis



UW ONRC  
outreach



Olympic National  
Marine Sanctuary  
moorings & cruises

**Saigene®** marker techniques

For More Information, please call: Dr. John Wekell, NOAA NWFSC, 206-860-3388 / [john.c.wekell@noaa.gov](mailto:john.c.wekell@noaa.gov)  
Outreach Coordinator: Dr. Miranda Wecker, UW-ONRC 360-484-7128/ [mwecker@u.washington.edu](mailto:mwecker@u.washington.edu)