

SOUTHEAST ALASKA TRIBAL TOXINS



A Partnership to Monitor Harmful Algal
Blooms

Projects and Programs



- Southeast Alaska Tribal Toxins (SEATT)
- Southeast Alaska Regional Ocean Acidification Monitoring (SEAROAM)
- Sitka Tribe of Alaska Environmental Regulatory Lab (STAERL)
- Integrated *Alexandrium* Cyst bed Mapping in Southeast Alaska (IACSEA)



WHY DO WE NEED SEATOR

- Support SE partnered Tribes working on climate change related impacts on the marine environment
- Outreach, community access to data, training
- **UNIFIED CREDIBILITY**



WHY A PARTNERSHIP?



A **Common Concern** about subsistence clam resources

↳ No assistance from AK state agencies



STA reached out to SE Tribes



FY 15 EPA IGAP funds for baseline phytoplankton

↳ Create an early warning system



SouthEast Alaska Tribal Toxins

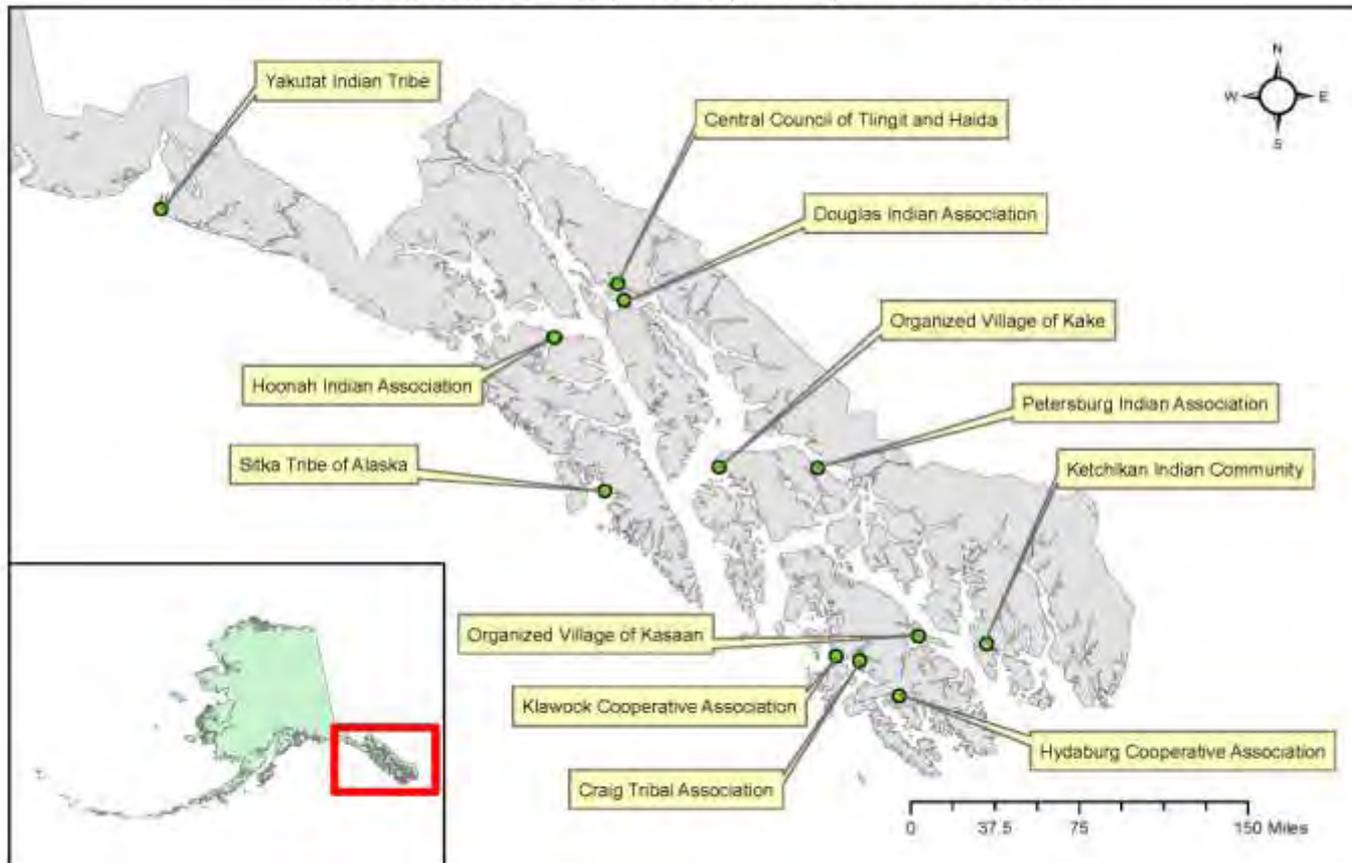
November 2013



SOUTHEAST TRIBAL PARTNERS



Southeast Alaska Tribal Toxins (SEATT) Partner Locations



Traditions and Culture



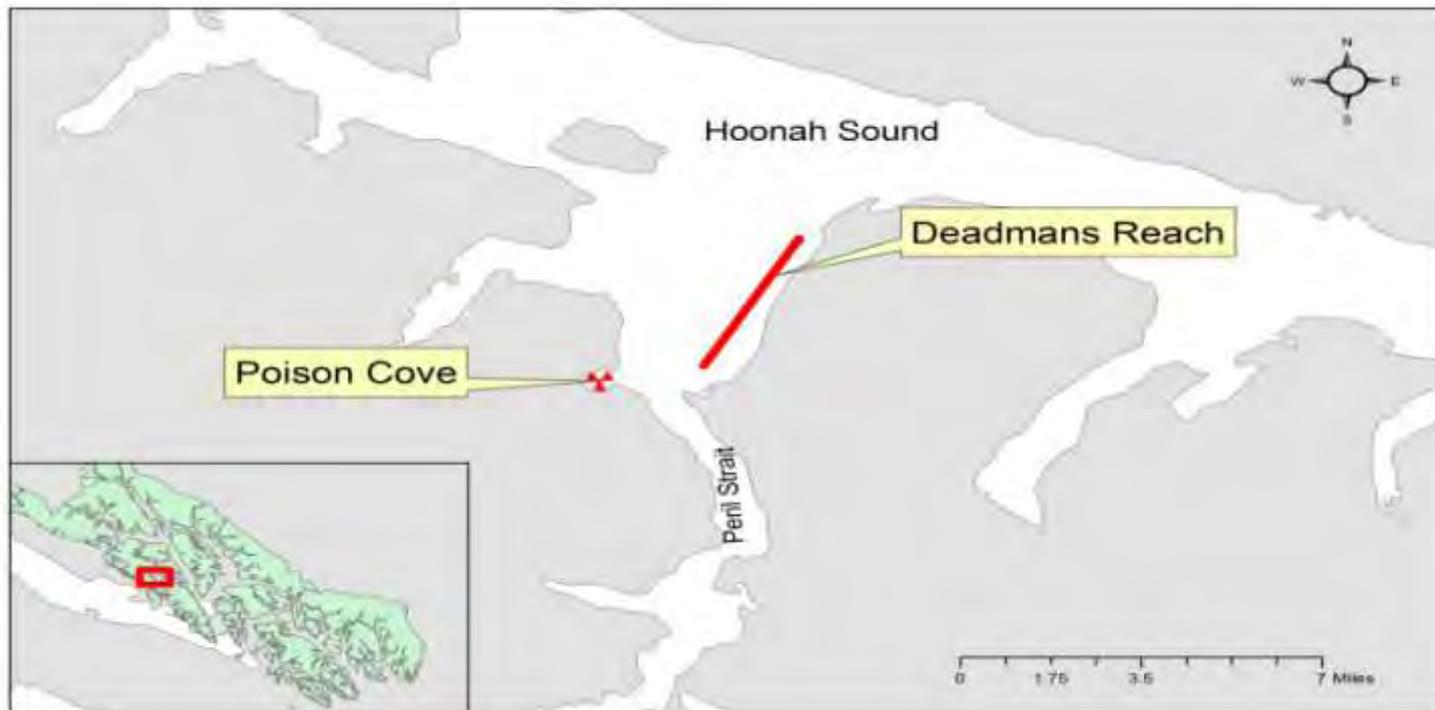
- Subsistence user groups play **toxin roulette** when harvesting bivalves in Alaska.
- Coastal Alaskan Native populations are 12 times more likely to be affected by PSP than the Caucasian community because of the greater use of subsistence foods (Gessner and Schloss, 1996).



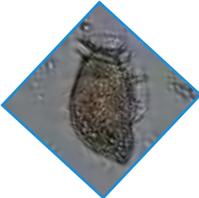
Poison Cove Party



PSP was first acknowledged as an environmental problem in 1799 when the crew of Alexander Baranof from the Russian American Trading Company ingested blue mussels containing high levels of PSP in southeast Alaska (Fortuine 1975).



HUMAN HEALTH SYNDROMES — Associated with Phytoplankton

SYNDROME	SPECIES AND TOXIN	SYMPTOMS
Amnesic Shellfish Poisoning (ASP)	 <i>Pseudo-nitzschia</i> Domoic acid	Permanent short term memory loss
Ciguatera Fish Poisoning (CFP)	 <i>Gambierdiscus toxicus</i> Ciguatoxin & Maitotoxin	Temperature Sensation Reversal
Diarrhetic Shellfish Poisoning (DSP)	 <i>Dinophysis</i> Okadaic acid	Diarrhea Nausea Vomiting
Neurotoxic Shellfish Poisoning (NSP)	 <i>Karenia brevis</i> Brevetoxin	Gastrointestinal and Neurological Problems
Paralytic Shellfish Poisoning (PSP)	 <i>Alexandrium</i> Saxitoxin	Loss of motor control

Who Regulates for PSP and toxins in Alaska?

- Alaska Department of Environmental Conservation follows FDA regulations for all commercially harvested shellfish in Alaska under the National Shellfish Sanitation Program



- Turn around time---data lag

What about subsistence users?

- Alaska has **NO SUBSISTENCE OR RECREATIONAL** regulatory testing.
- ADEC will not certify any intertidal harvest for subsistence use.



What does monitoring look like?



Other Partnerships doing HAB Monitoring



Olympic Region Harmful Algal Bloom (ORHAB) Partnership

- Tribes
- NOAA
- Volunteers
- Non-Profits
- Shellfish Growers



SoundToxins Partnership

- Tribes
- NOAA
- Volunteers
- Non-Profits
- Shellfish Growers

www.orhab.org



www.soundtoxins.org

Equipment and Training



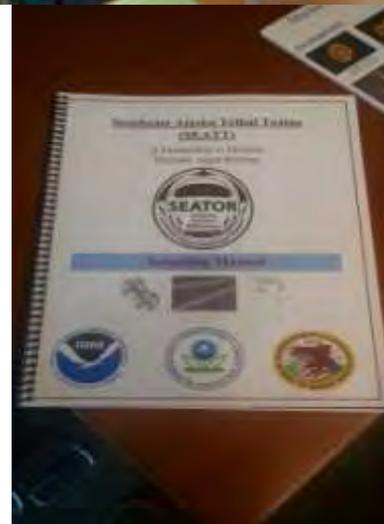
Equipment

- Digital Microscope with Camera
- Refractometer and Thermometer
- Phytoplankton Net
- Filtering apparatus
- Identification tools

Training

- Workshops in Sitka
- Sampling Manual
- Videos
- Site Visits

Updates to www.seator.org



2015 PN bloom



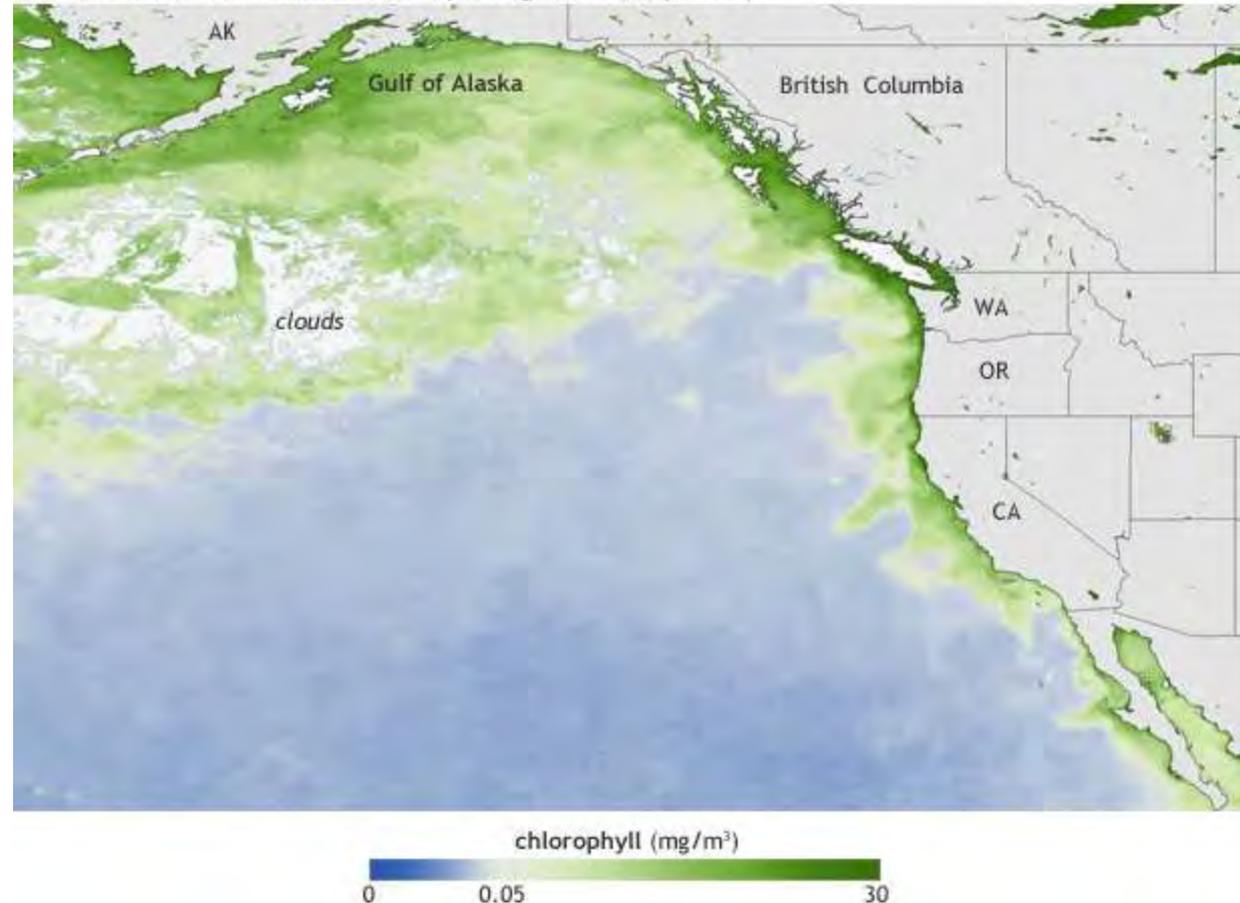
Began in early May 2015

Largest bloom spatially to date

Lasted months instead of 1-2 weeks

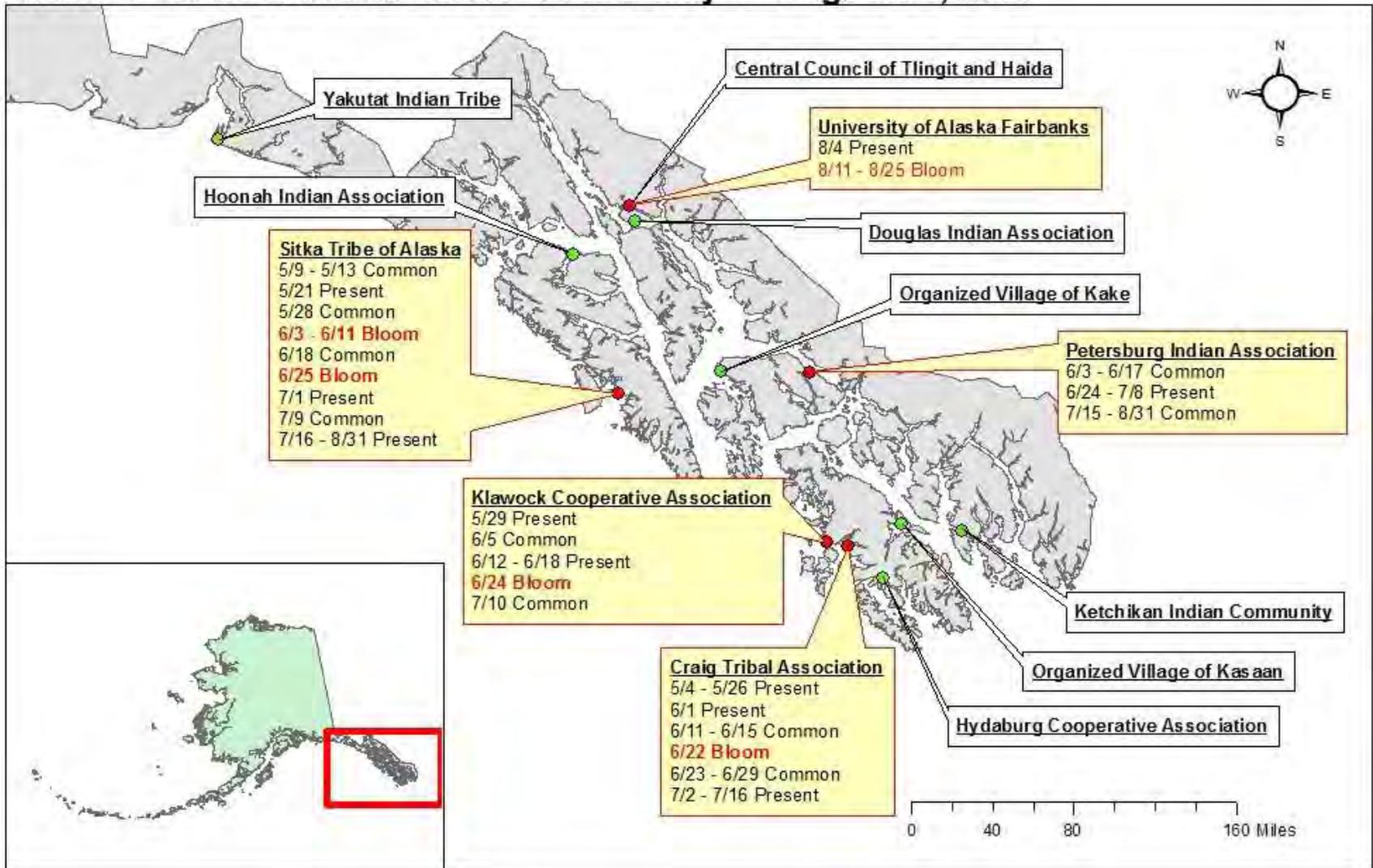
Closed shellfish beds in all 4 west coast states

Satellite-based estimate of ocean plant growth (July 2015)



Average chlorophyll concentrations (milligrams per cubic meter of water) in July 2015. The darkest green areas have the highest surface chlorophyll concentrations and the largest amounts of phytoplankton—including both toxic and harmless species. NOAA Climate.gov map based on Suomi NPP satellite data provided by [NOAA View](#).

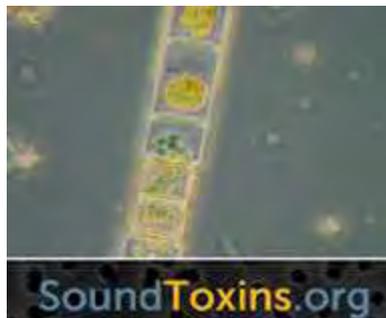
SEATT *Pseudo-nitzschia* Observations: May 1 - August 31, 2015





Where does all the data go?

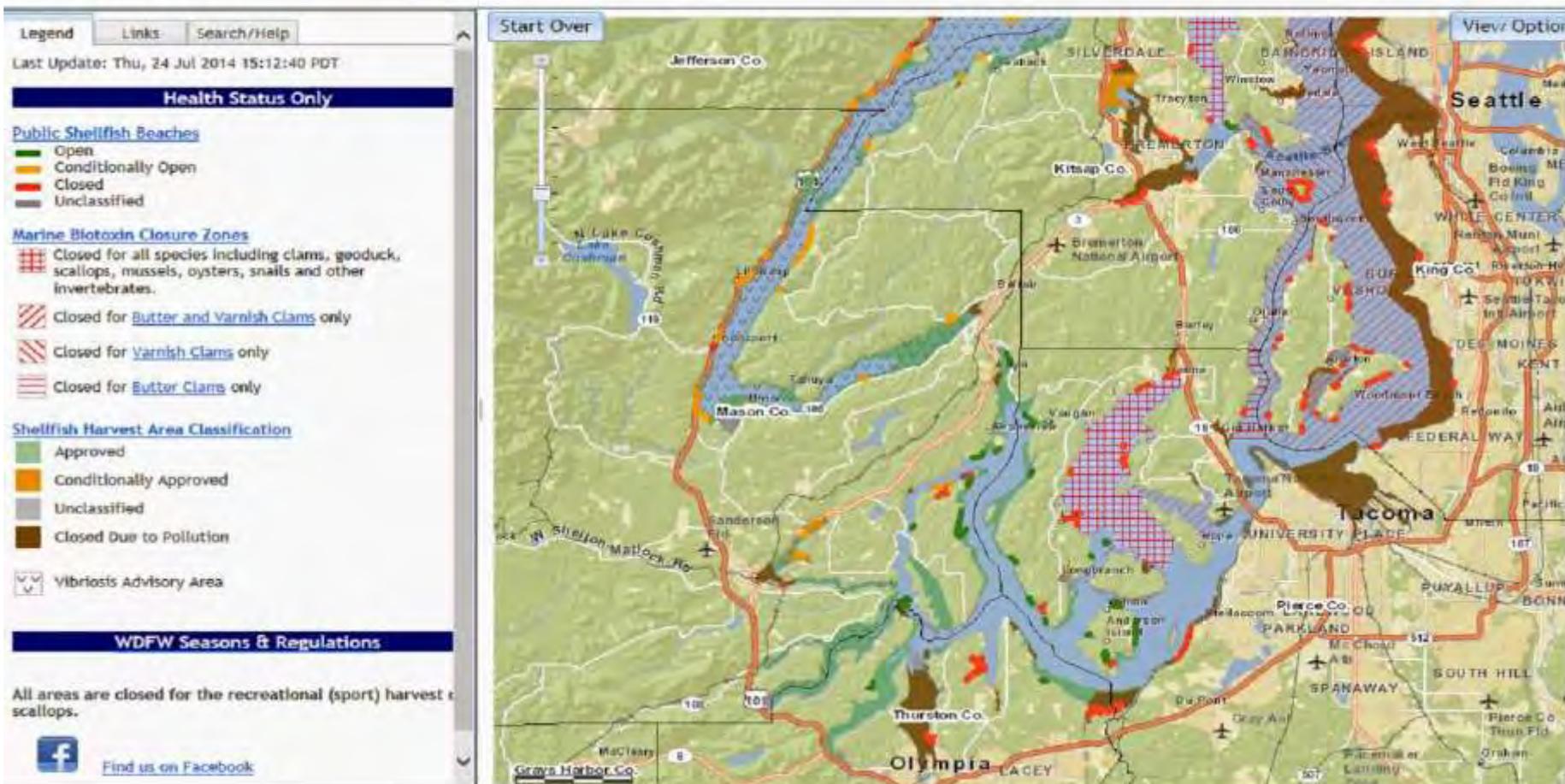
- SoundToxin Database and Phytoplankton Monitoring Network (NOAA)
 - National database for all monitoring groups
 - Used by researchers, shellfish growers, and resource managers for early warning system



Interactive Mapping Tool



Washington State Department of Health Shellfish Safety Information





Benefits for REAL Time Monitoring

- EARLY WARNING system
- Develop forecasting tools
- Provide outreach to Tribal and Non-Tribal Citizens about the potential for health risk related to subsistence harvest.
- Coordinate with local and state health departments

➤ **Credibility**



Ketchikan *noctiluca* bloom 2009

Sitka Tribe of Alaska Environmental Regulatory Lab (STAERL)



- Developed to support SE Tribes (SEATT) with shellfish toxin analysis.
- Provide **regulatory** data to Tribes and communities to assess their vulnerability to risk associated with biotoxins.
- **Tribes can use STAERL to develop subsistence shellfish management plans**





FUNDING

- **SEATT:** EPA IGAP -\$20K/Tribe/year (~\$250/yr)
- **SEATT:** EPA IGAP workshops-\$150K (STA)
- **SEAROAM:** BIA Climate Change Program-\$210K (STA)
- **SEATOR** site/SEATT training: BIA Climate Change Program-\$50K (STA)
- **STAERL:** ANA Environmental Regulatory Enhancement Program-\$580K (STA)
- ***IACSEA:** NOAA Coastal Resilience Program-\$860K (STA/UAF) (pending)

\$1.5 million as of FY16 (*or \$2.4 million)



Other Partners



- NOAA –Northwest Fisheries Science Center and Charleston Marine Biotoxin Program/PMN
- University of Alaska Fairbanks School of Fisheries and Ocean Science
- Southeast Alaska Regional Dive Fisheries Association (SARDFA)
- Washington State Department of Health Marine Biotoxin Program
- Alaska Department of Environmental Conservation (EHL)

Questions or Comments?



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