Apr 4th, 2:00 PM - 2:15 PM

Reanalysis of continuous shellfish monitoring data in pursuit of temporal and spatial patterns of paralytic shellfish toxins in the Puget Sound/Salish Sea

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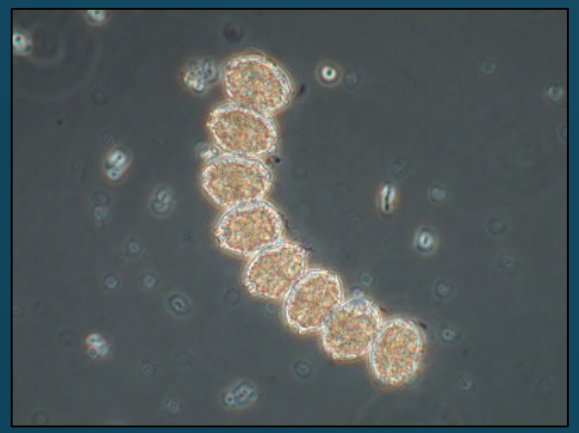
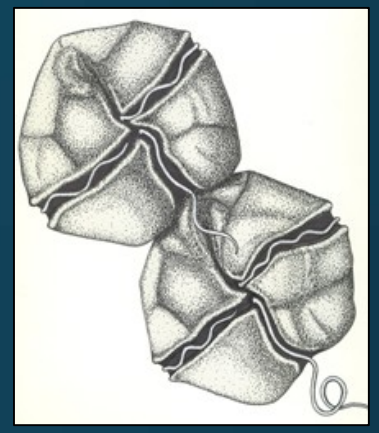




Spatial and temporal trends of annual PST initiation in Puget Sound, WA

Margaret Taylor

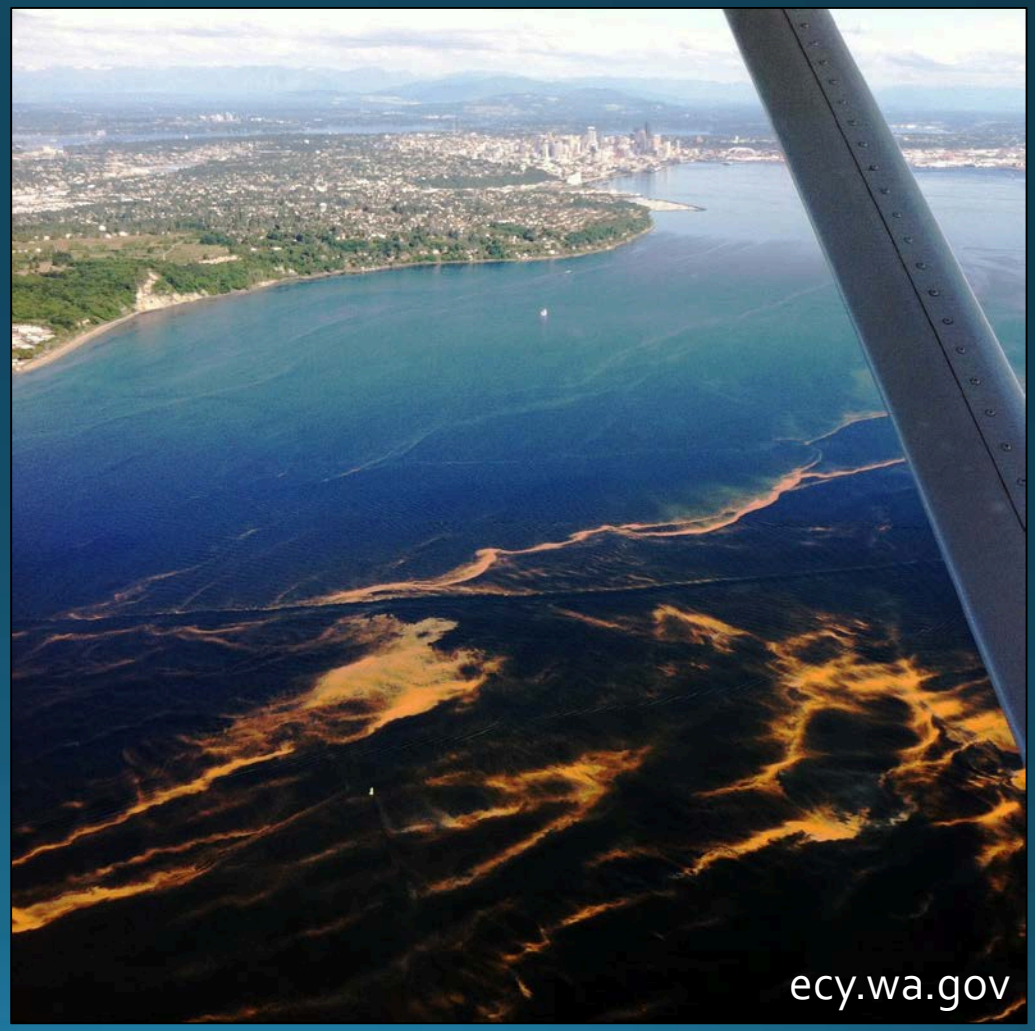
Huxley College of the Environment – WWU

Salish Sea Ecosystem Conference 2018

Harmful Algal Blooms:

"colonies of algae that grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds"

- National Oceanic and Atmospheric Admin. (NOAA)

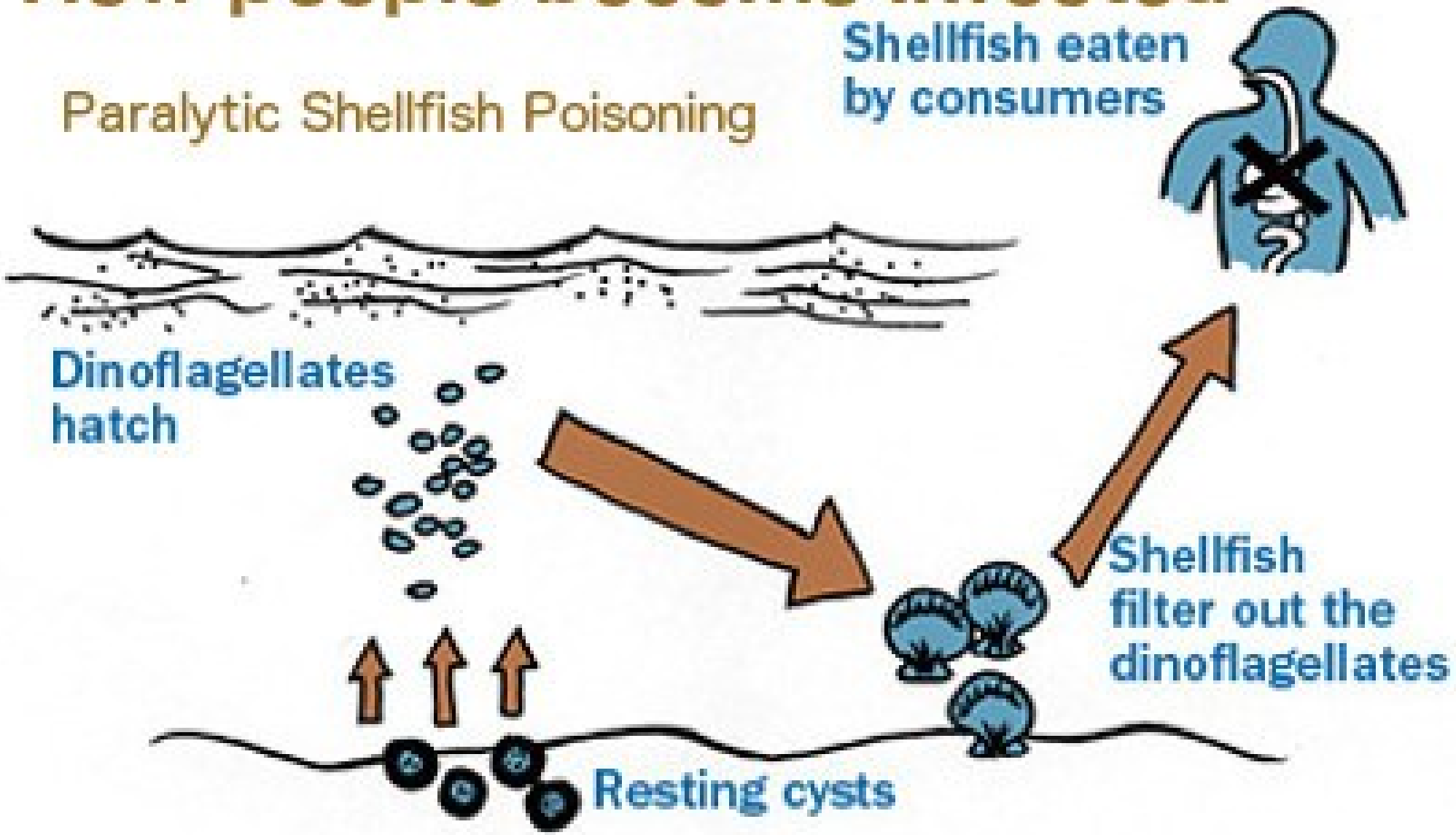


Alexandrium catenella

KingCounty.gov

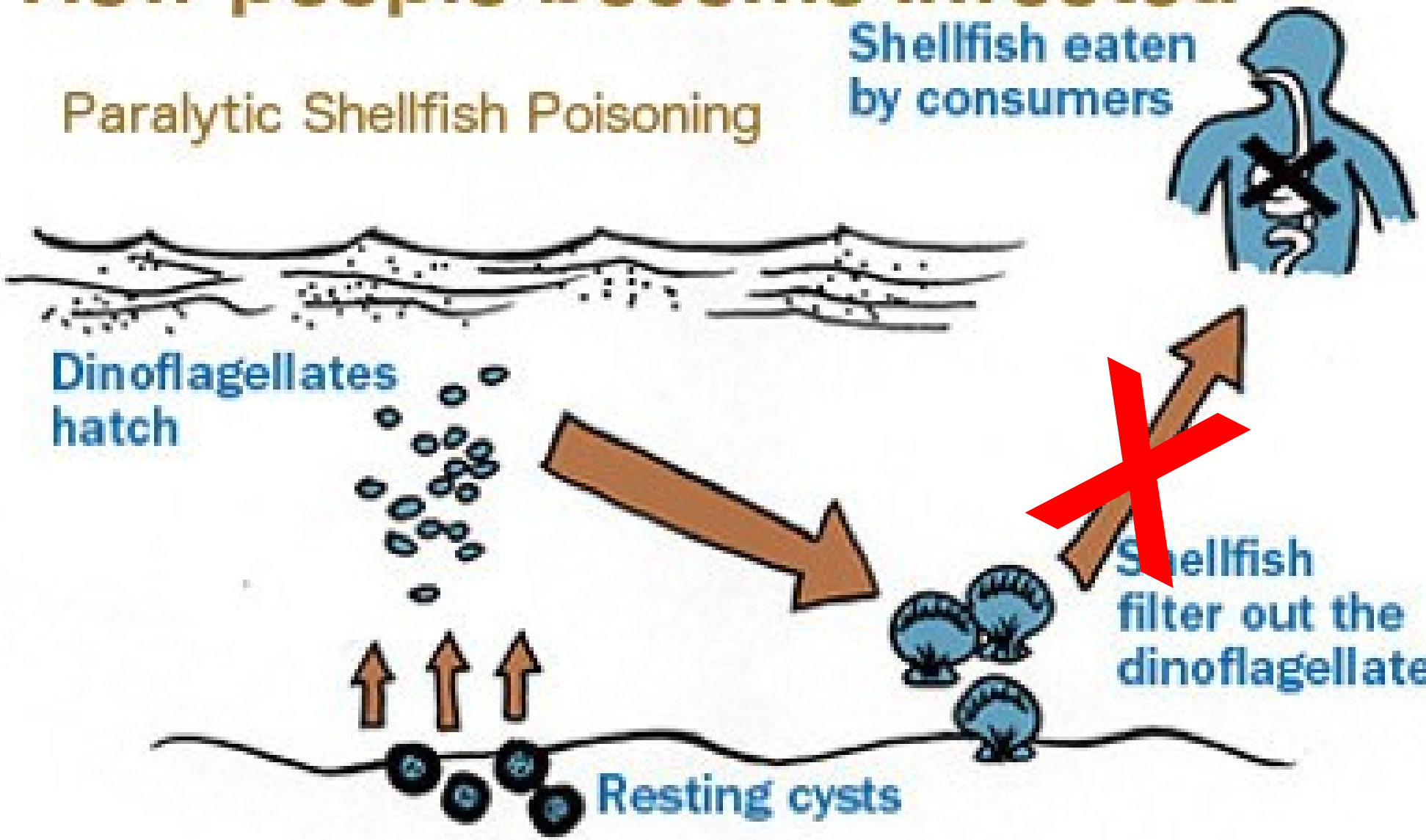
How people become infected

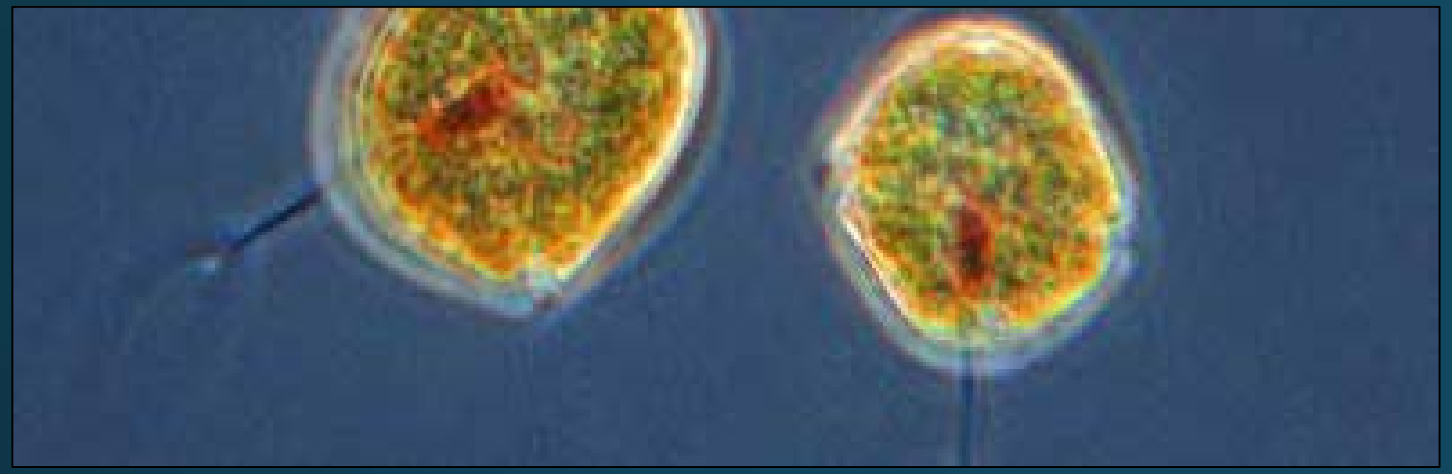
Paralytic Shellfish Poisoning



How people become infected

Paralytic Shellfish Poisoning



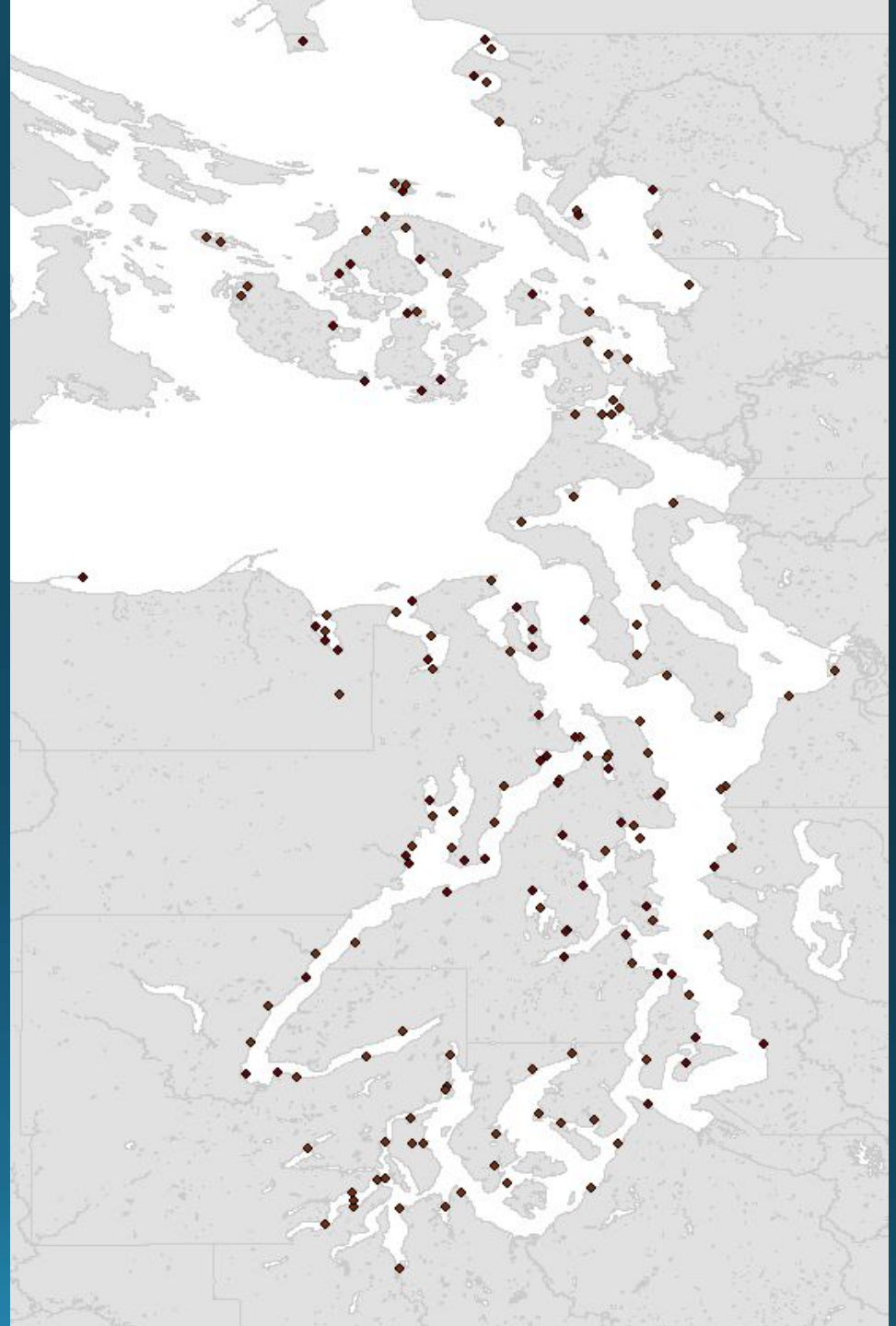


Can we describe trends in *location* and *timing* of annual PST initiation?

Washington State Department of Health (DOH)

Shellfish Safety Program

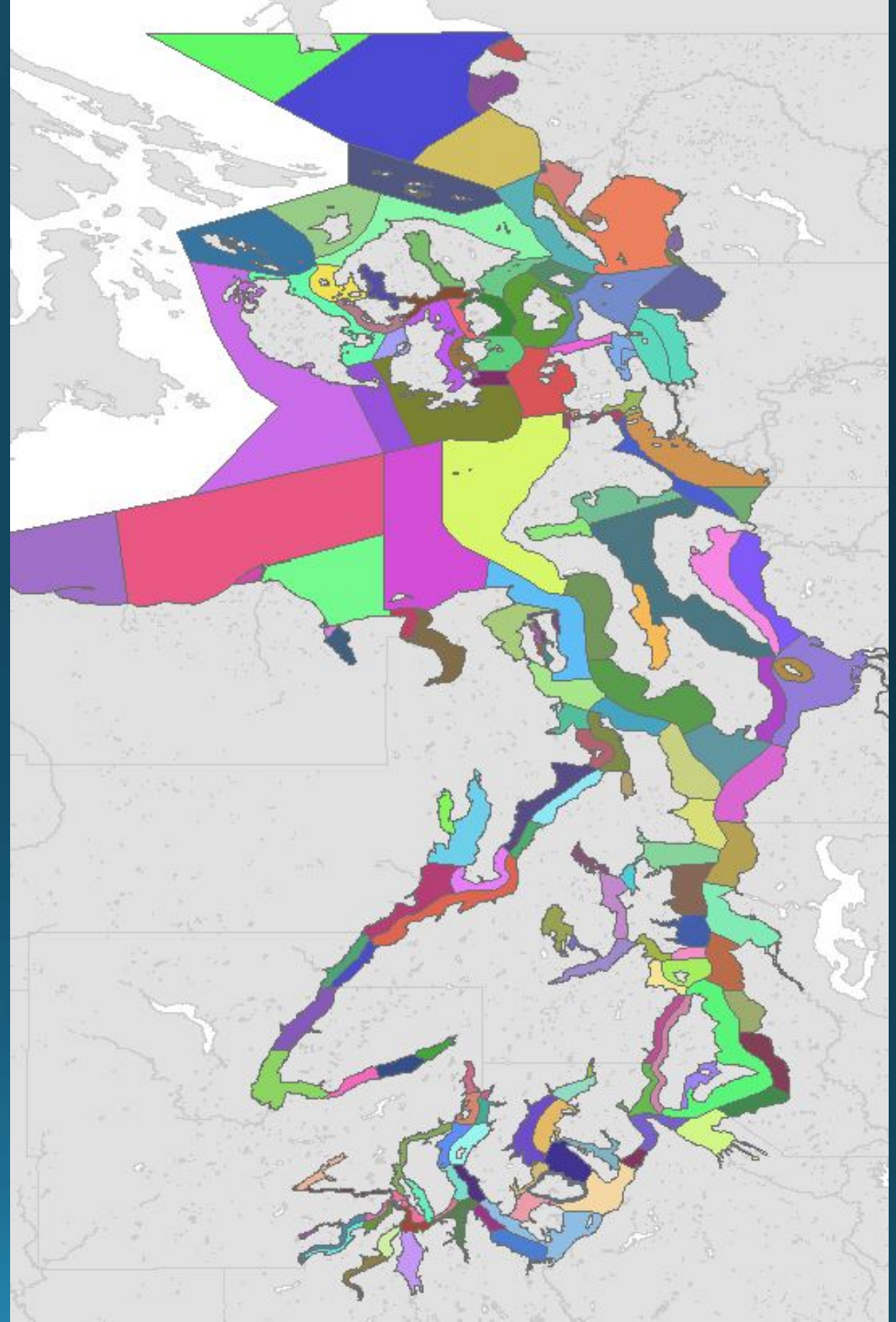
- 20 years: 1998 – 2017
- Over 50,000 data points



Washington State Department of Health (DOH)

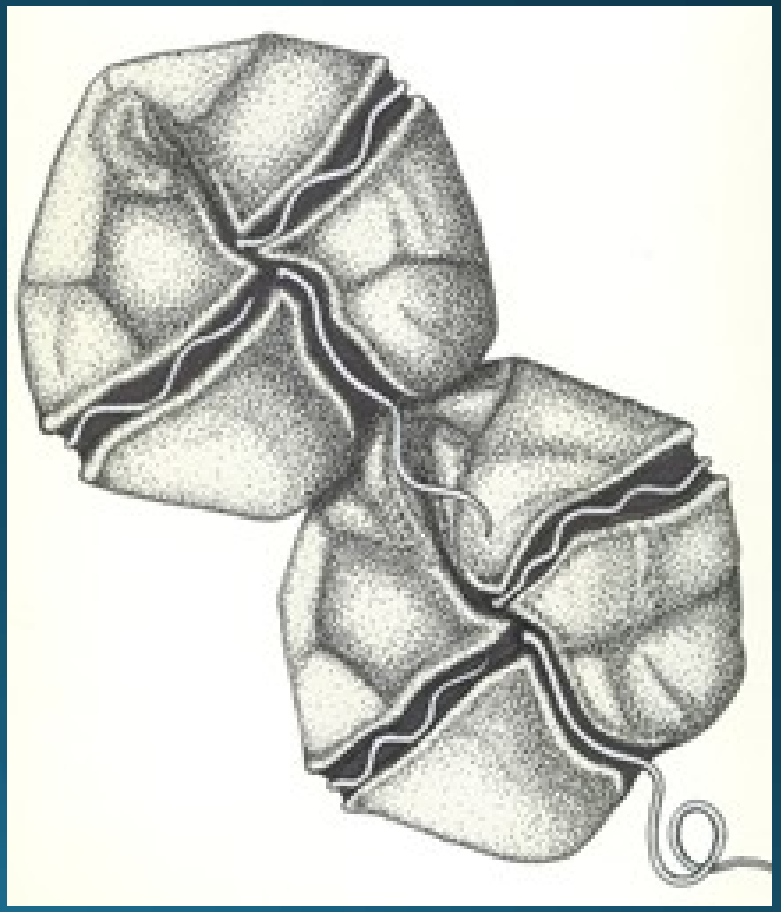
Shellfish Safety Program

- WDOH Closure Zones
- Focus on first annual detections

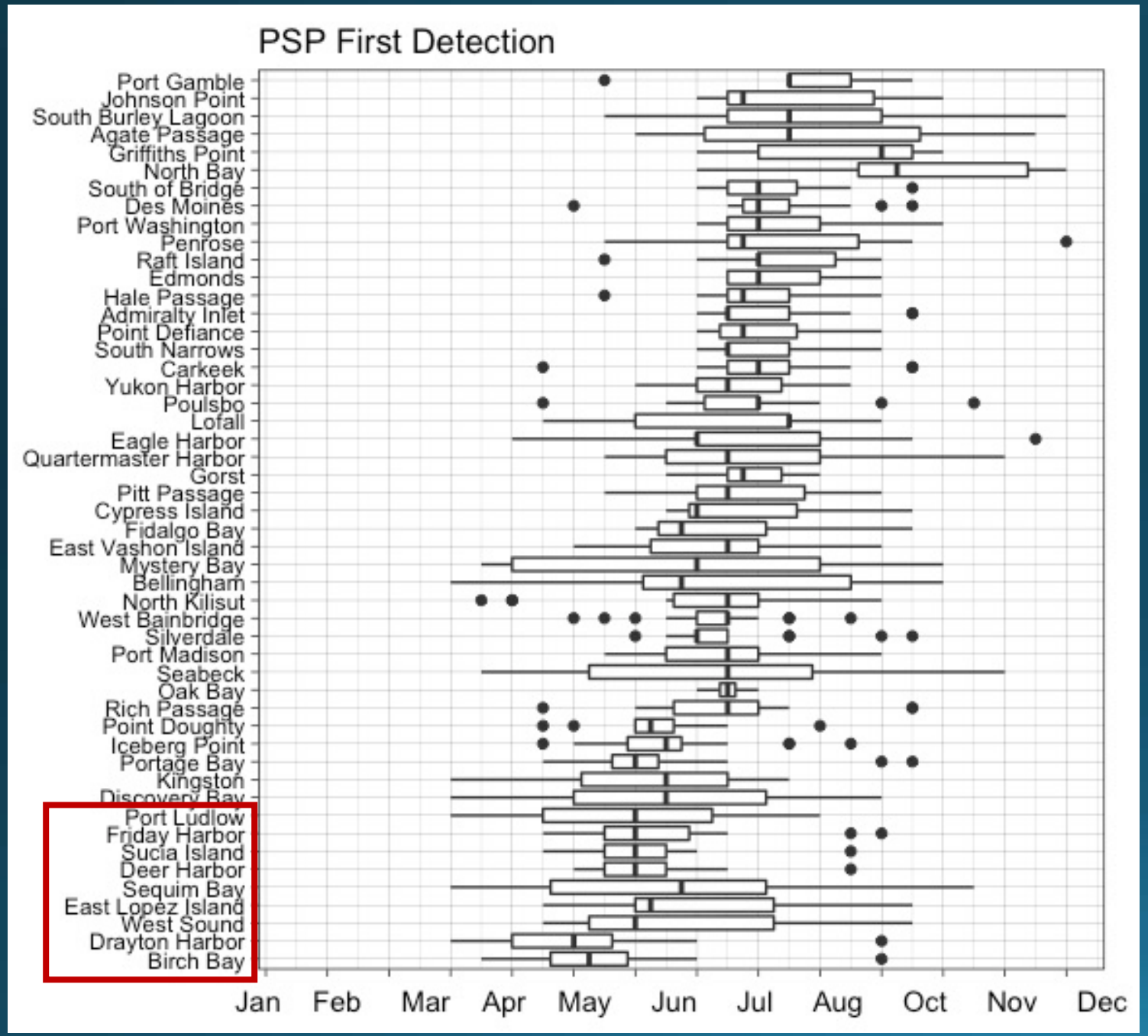


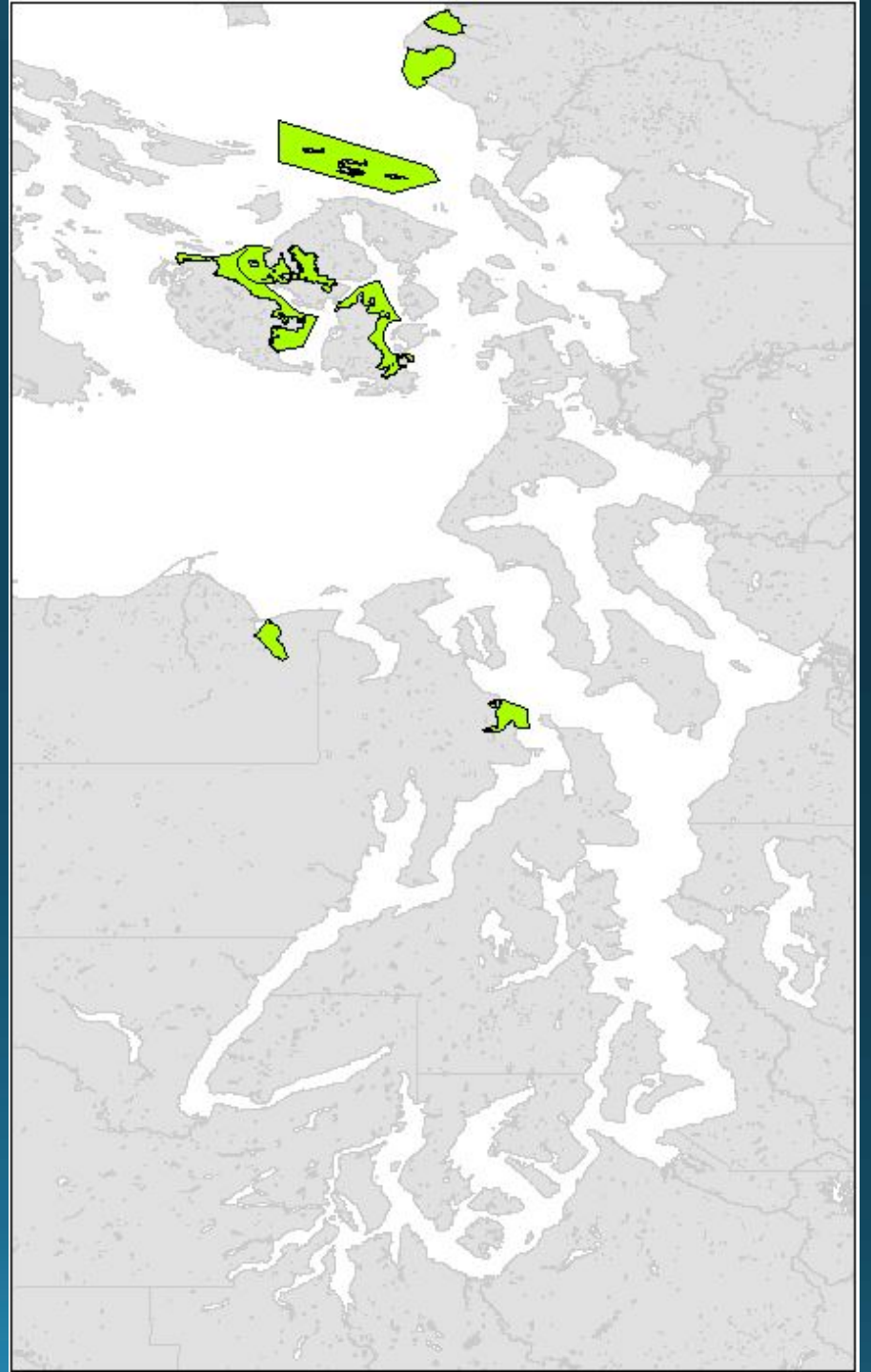
Research Question #1

- Do PSP blooms within Closure Zones **initiate** at similar locations or times every year?
- How has this changed over time in each Closure Zone?



http://oceandatacenter.ucsc.edu/

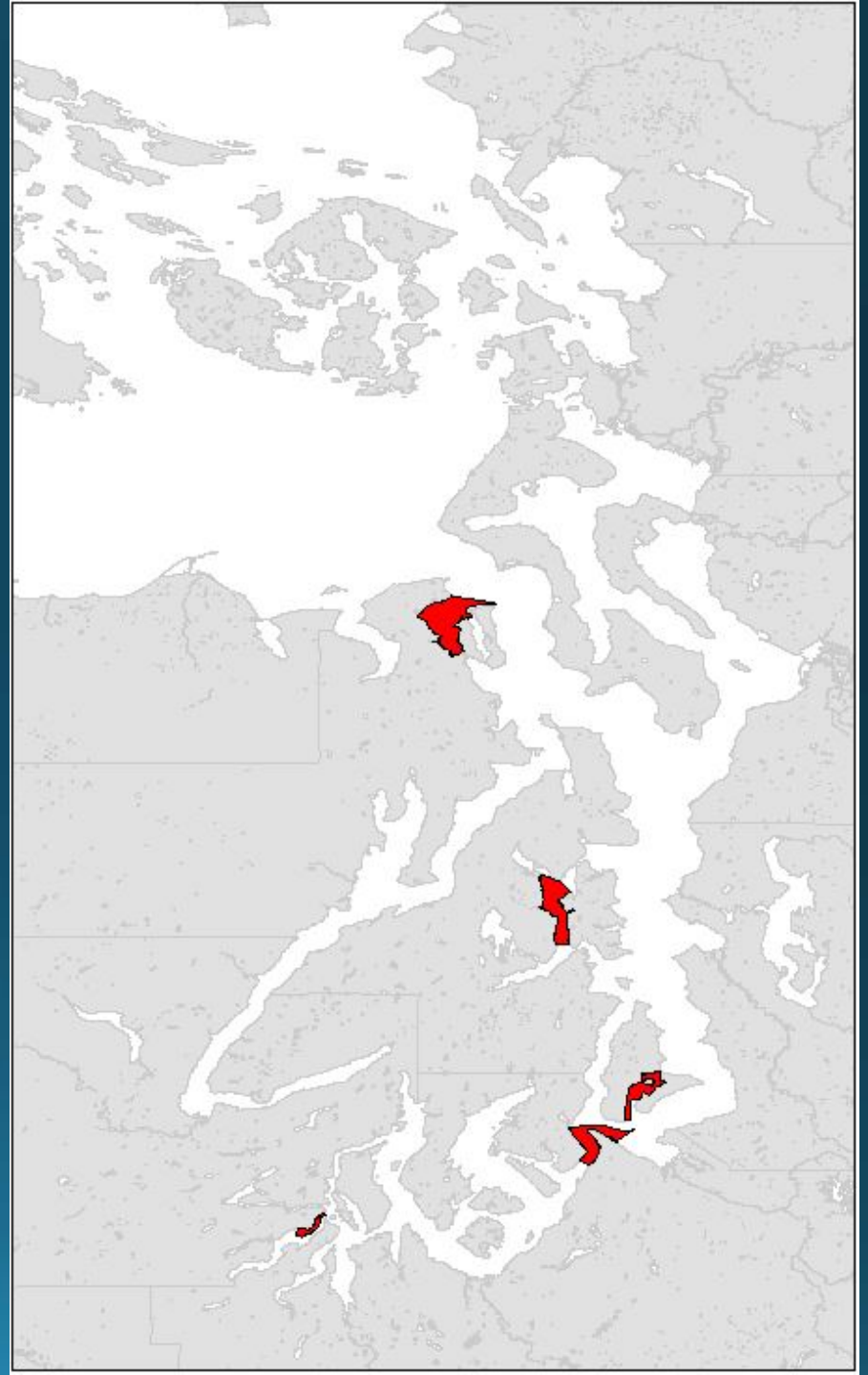

PSP First Detection
Port Gamble
Johnson Point
South Burley Lagoon
Agate Passage
Griffiths Point
North Bay
South of Bridge
Des Moines
Port Washington
Penrose
Raft Island
Edmonds
Hale Passage
Admiralty Inlet
Point Defiance
South Narrows
Carkeek
Yukon Harbor
Poulsbo
Lofall
Eagle Harbor
Quartermaster Harbor
Gorst
Pitt Passage
Cypress Island
Fidalgo Bay
East Vashon Island
Mystery Bay
Bellingham
North Kilisut
West Bainbridge
Silverdale
Port Madison
Seabeck
Oak Bay
Rich Passage
Point Doughty
Iceberg Point
Portage Bay
Kingston
Discovery Bay
Port Ludlow
Friday Harbor
Sucia Island
Deer Harbor
Sequim Bay
East Lopez Island
West Sound
Drayton Harbor
Birch Bay
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Oct
Nov
Dec



Significant Trends (p<0.05)

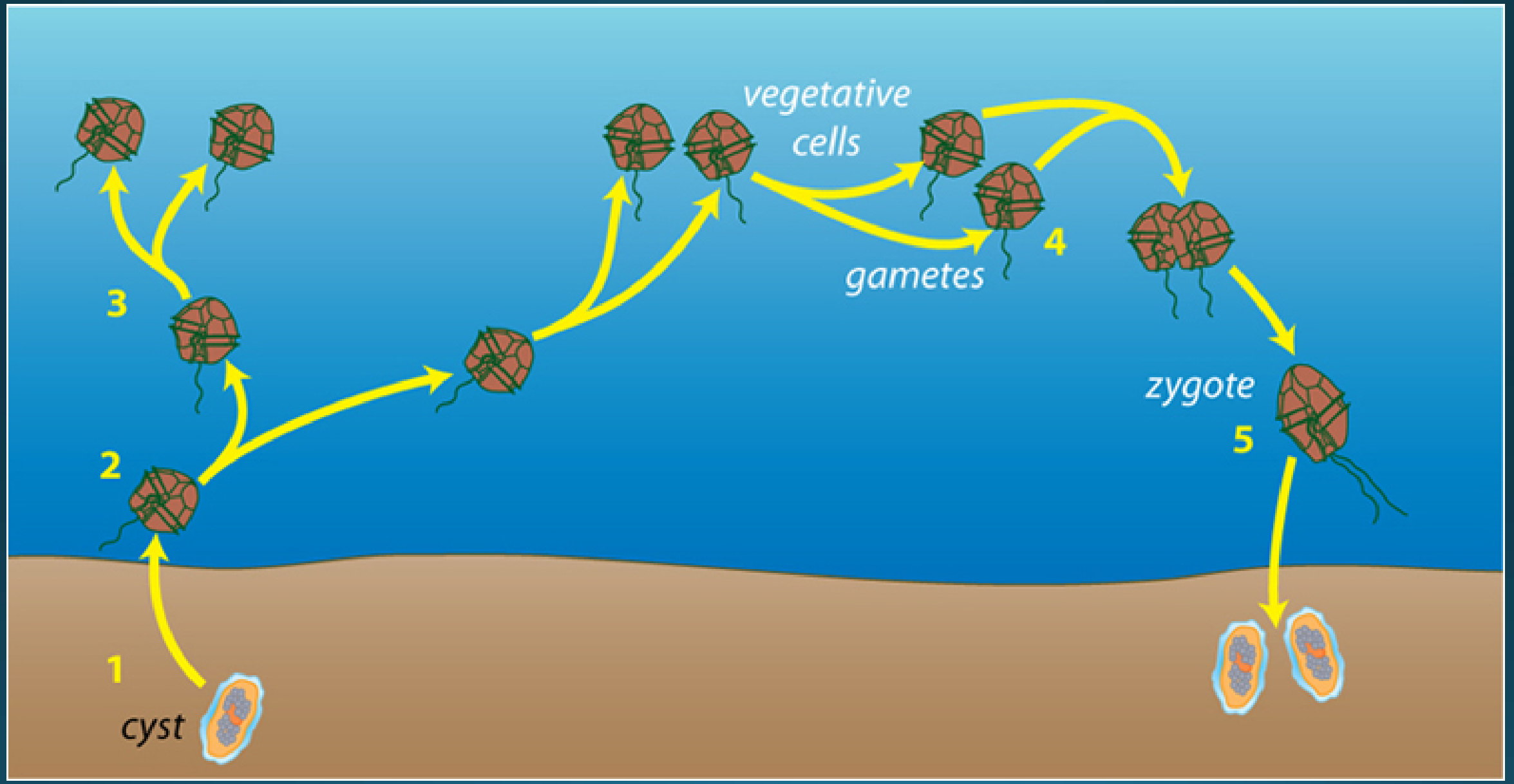
All Trending to *Later* in the Year

- Port Townsend Bay
- West Bainbridge
- Yukon Harbor
- Quartermaster Harbor
- Point Defiance



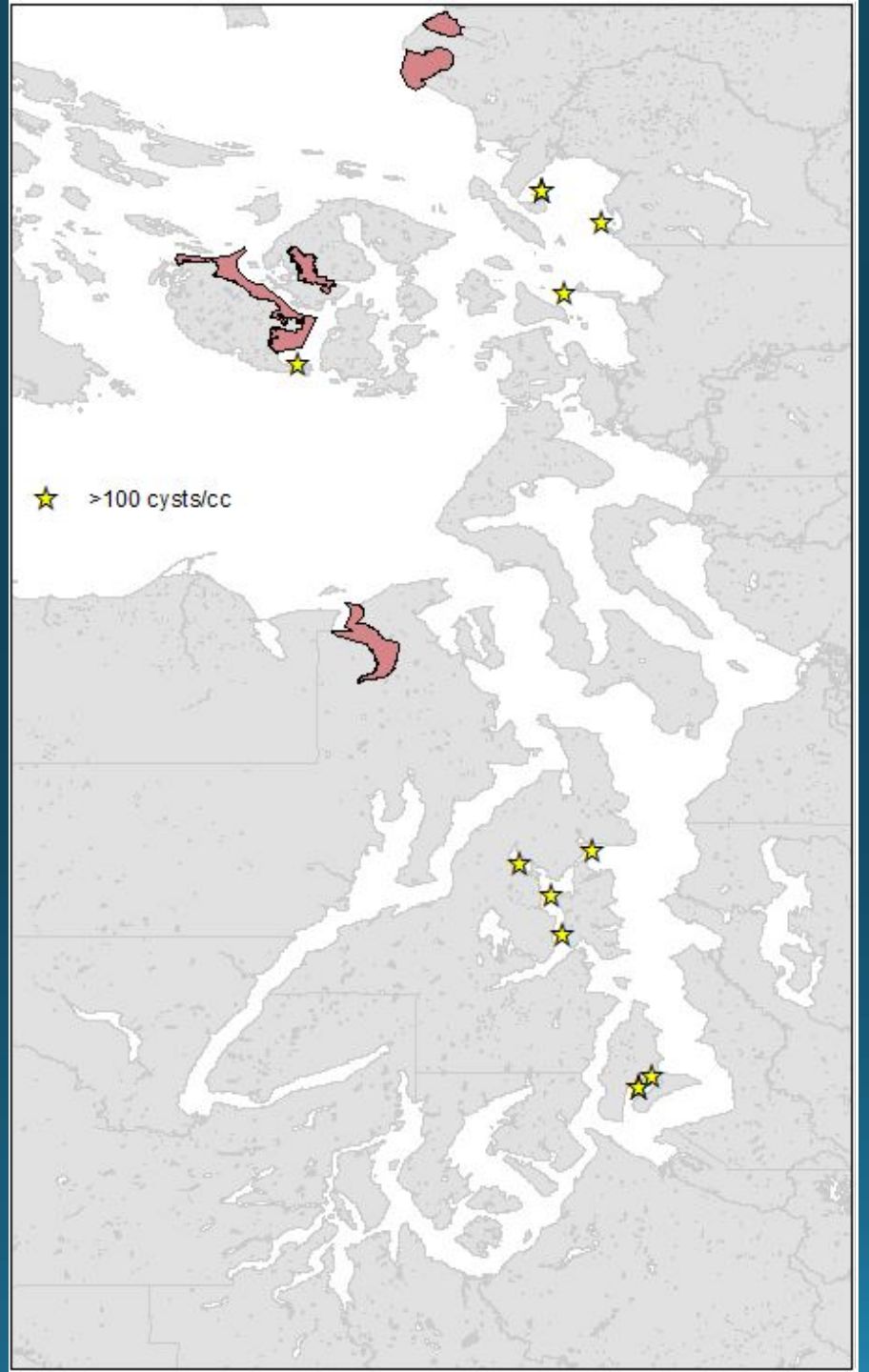
Research Question #2

Is bloom initiation spatially linked to concentrations of *Alexandrium* cysts within the sediment?

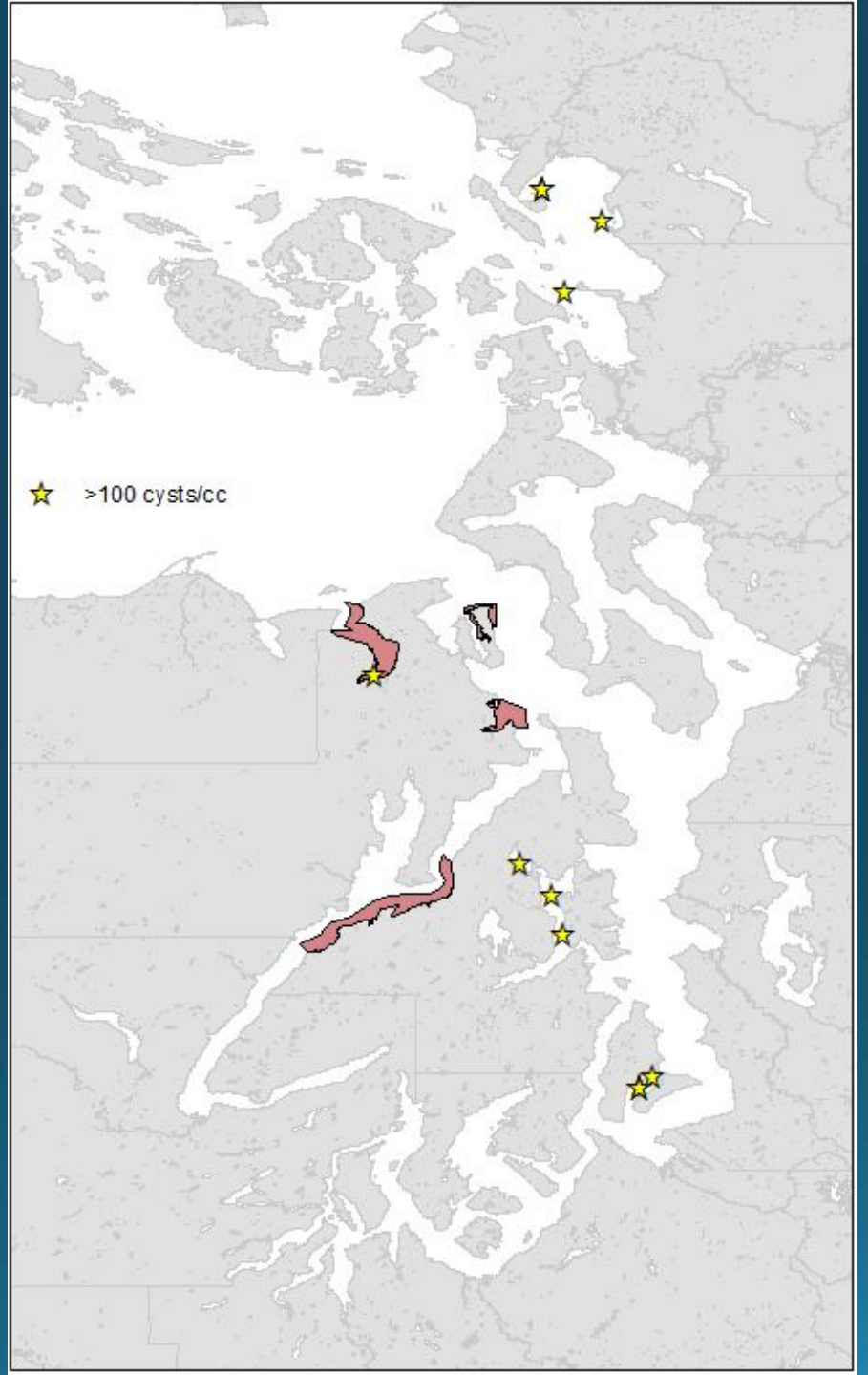

vegetative
cells
gametes
4
3
2
1
cyst
zygote
5

2011

2012



2013



Conclusions

- Initiation in North Puget Sounds confirms what has been suggested by WDOH among others
- Climate-related changes in initiation may not be detectable at this spatial/temporal scale

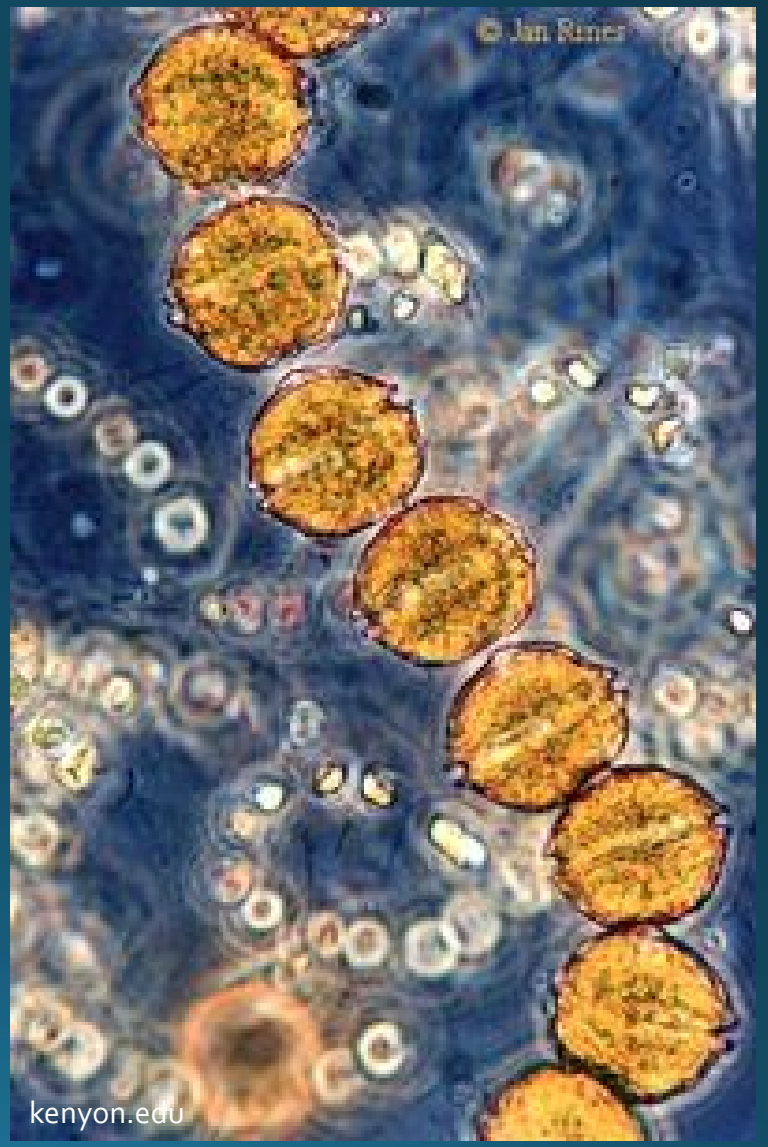
Conclusions

- No consistent spatial correlation between cyst concentration and first detection of PST

Conclusions

Lack of overwhelming trends indicate…

WDOH extensive sampling efforts should continue to be funded and supported



Questions?

Special Thanks to:

Dr. Erika McPhee-Shaw, WWU
Dr. Stephanie Moore, NOAA
Dr. Cheryl Greengrove, UW Tacoma

Washington State Dept. of Health

Stillaguamish Tribe of Indians