Use of the ICES harmful algal event meta-database to archive data from the west coast of the United States

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Issues to Address

- Background
- What is currently being done?
- Is there enough information?
- Should the process be modified?

BACKGROUND

Motivation for Database

- Develop a tool for PICES researchers and managers
- Graphically show the extent of HAEs
- Visualize trends in HAEs

Harmful Algal Events

- A water discoloration, scum or foam causing a socio-economic impact due to the presence of toxic or harmful microalgae.
- Biotoxin accumulation in seafood above levels considered safe for human consumption.
- Any event where humans, animals or other organisms are negatively affected by algae.

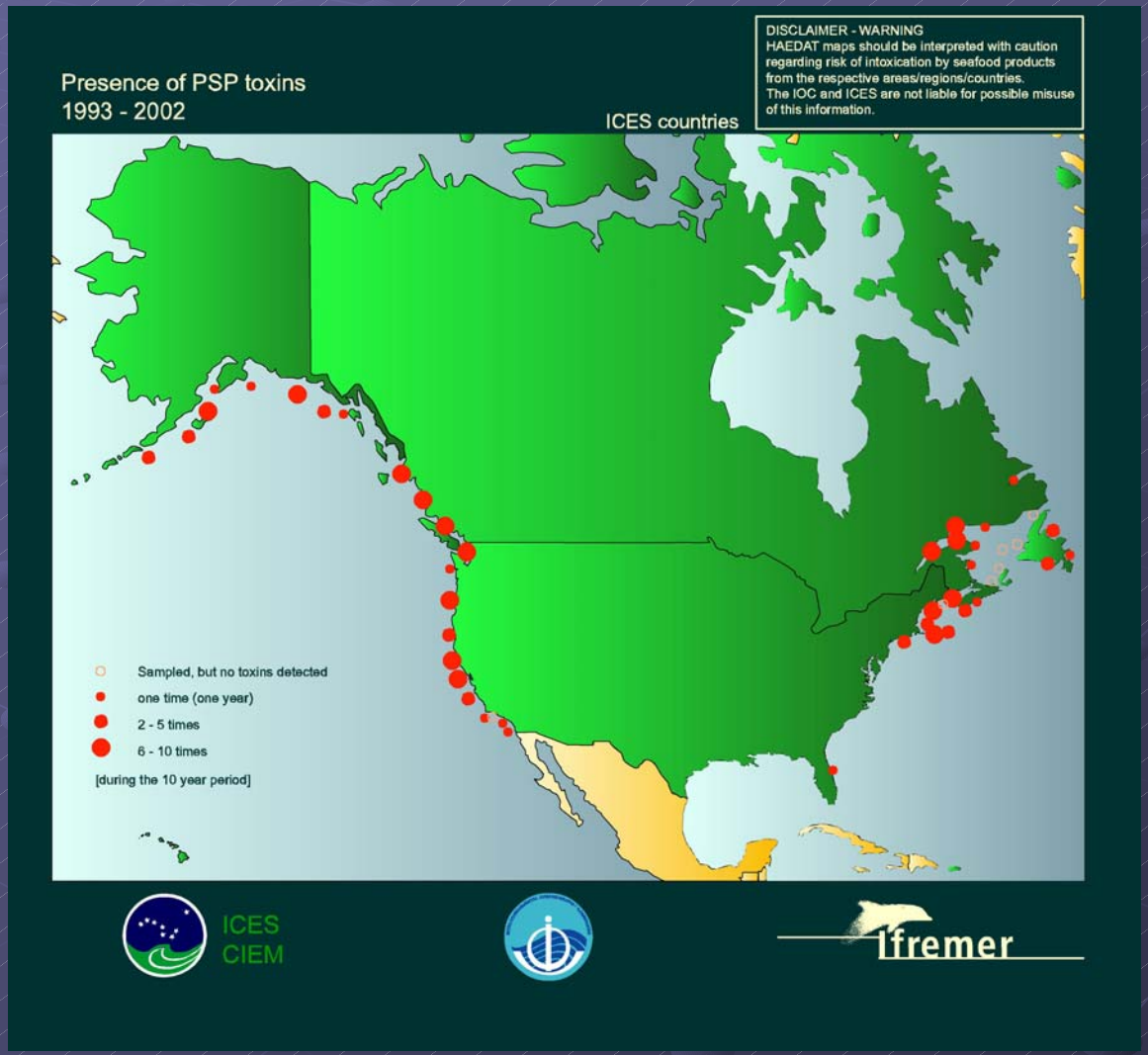
Regulatory Limits

- PSP toxins: 80 µg/100g shellfish meat
- Domoic Acid (ASP): 20 ppm in molluscan shellfish, 30 ppm in crabs

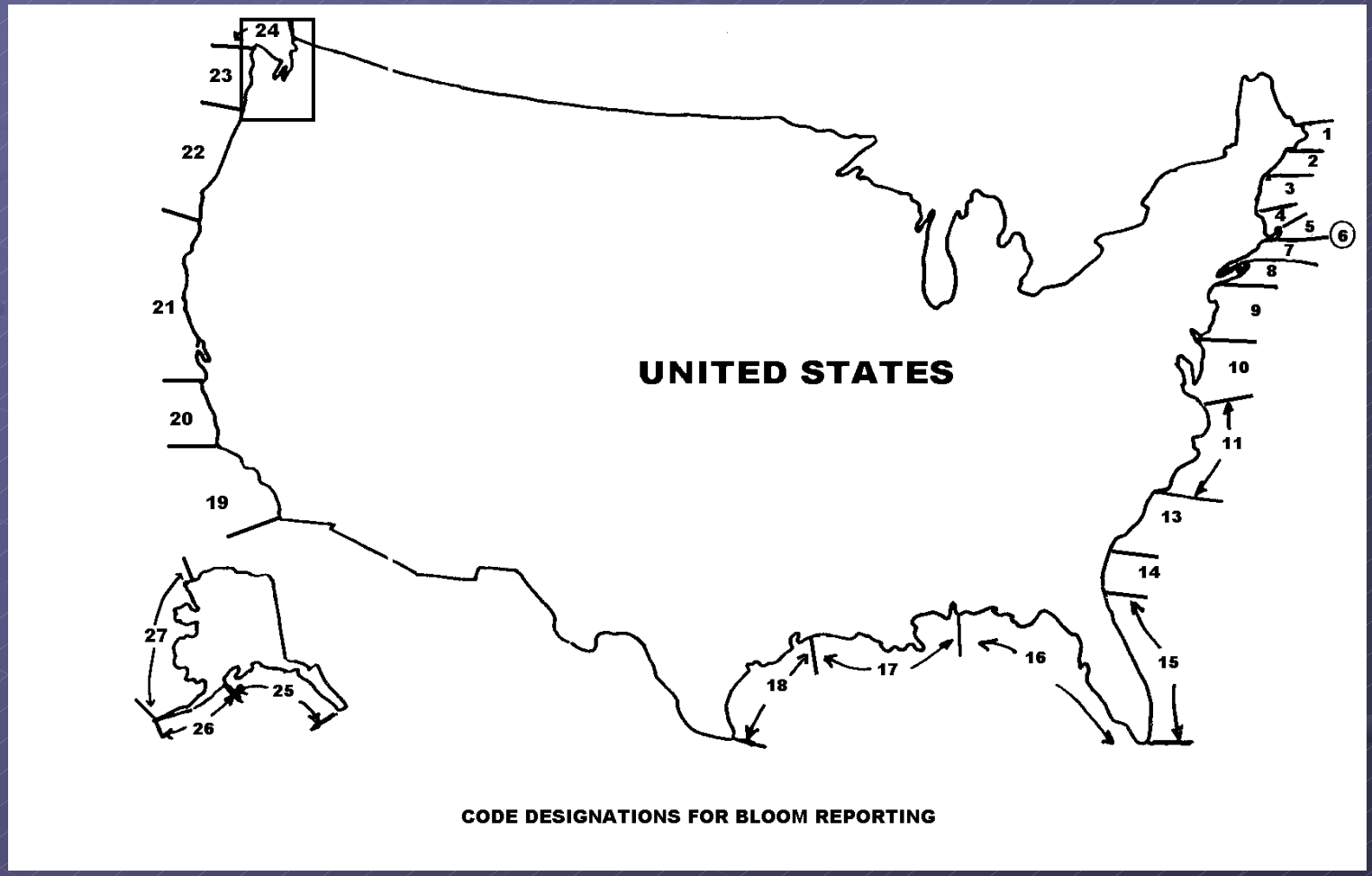
US West Coast

- 9 ICES areas on the US west coast
- Decided to keep these designations
- Some areas may have many events
- How many events occur at a given site?

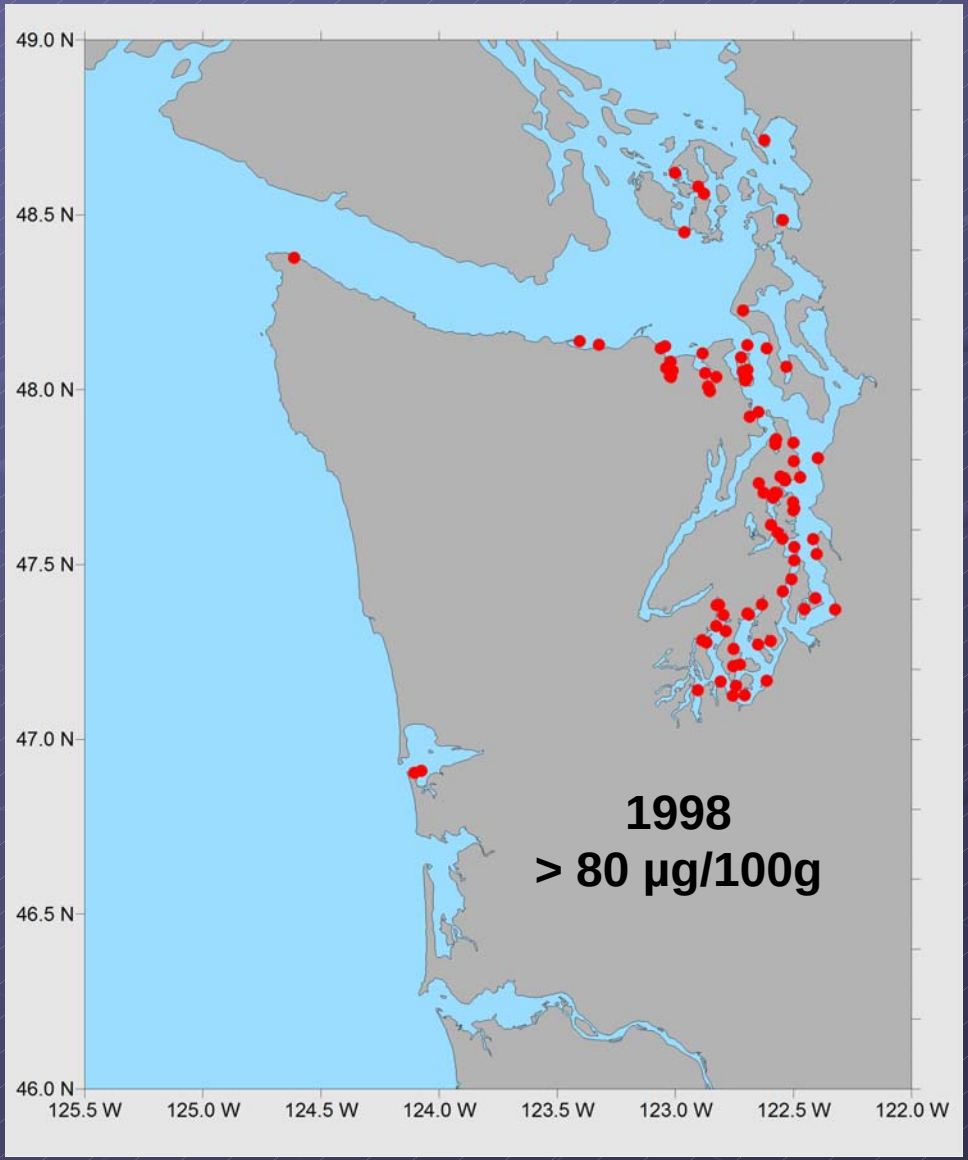
US West Coast-Decadal Map



ICES Area Codes



Washington State



DATA ENTRY FOR 1998

Data Entry

- Compared monitoring data to HAE-DAT
- Focus on Washington and California

US West Coast-1998

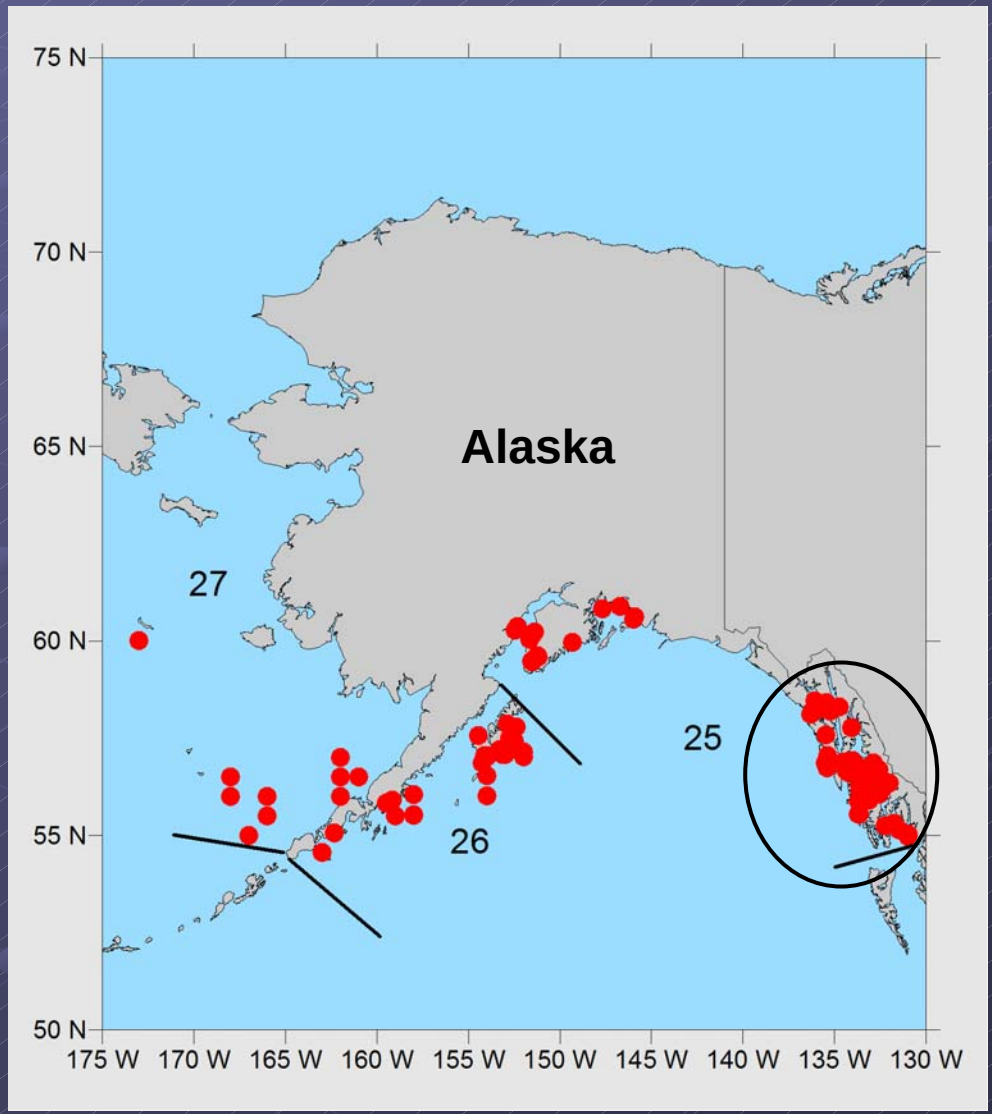
Information in HAE-DAT for 1998

- Alaska: 6
- Washington: 3
- Oregon: None
- California: 3

US West Coast

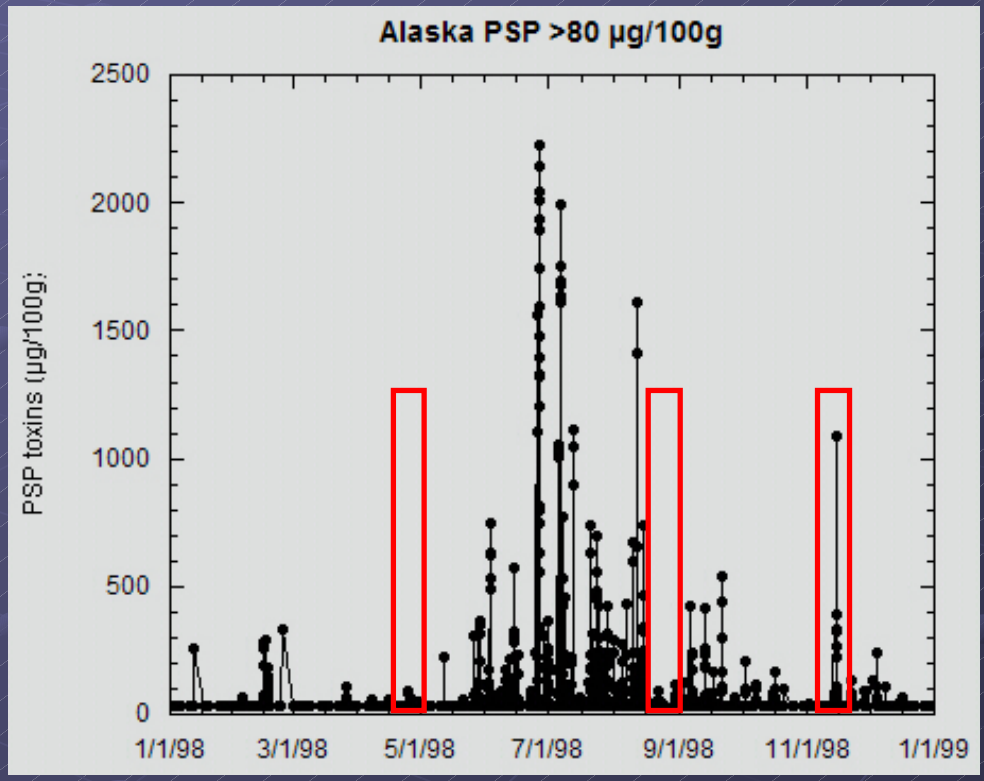
Alaska-1998

- PSP >80 µg/100g
- AK biotoxin database
- 6 reports for 1998 in HAE-DAT
- 1998 reports only from Southeast Alaska



Alaska-1998

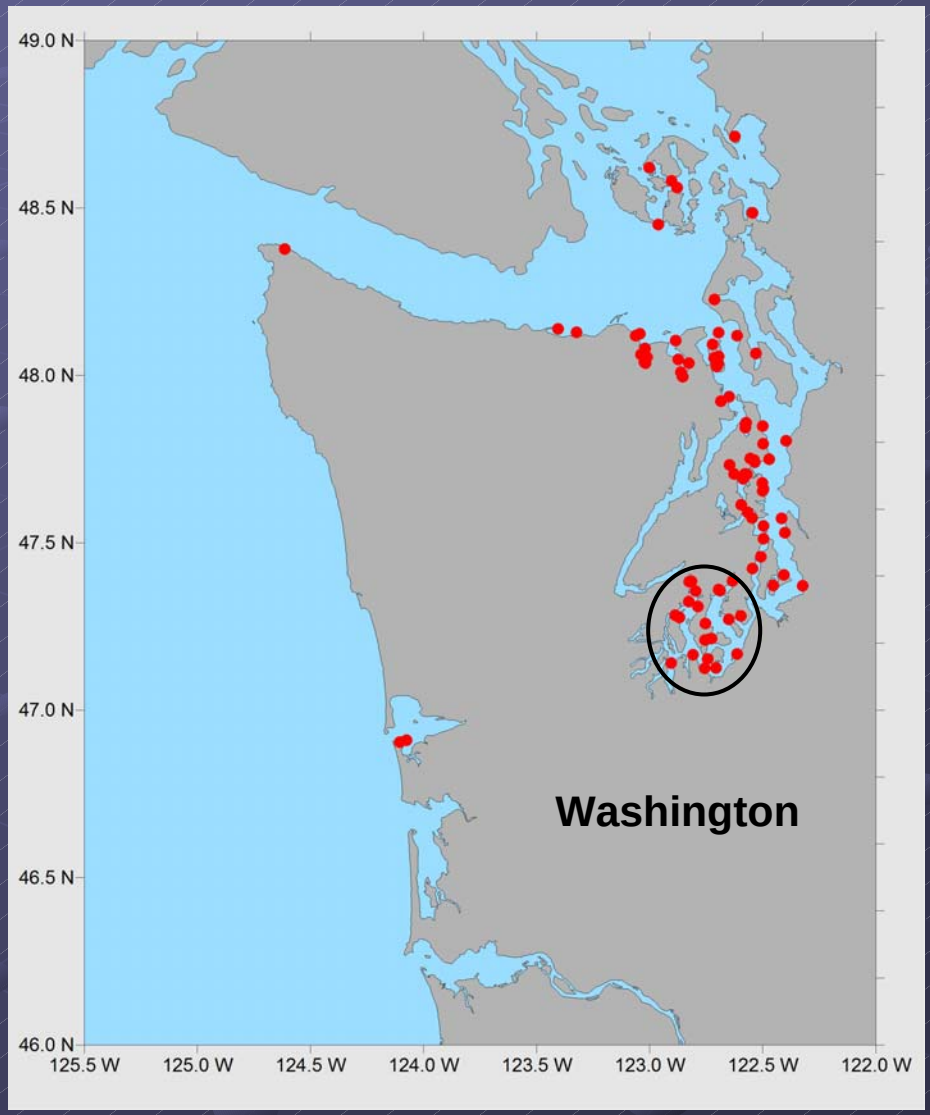
- PSP >80 µg/100g
- AK biotoxin database
- Over regulatory limit at all times of year
- How many “Harmful Events”



US West Coast

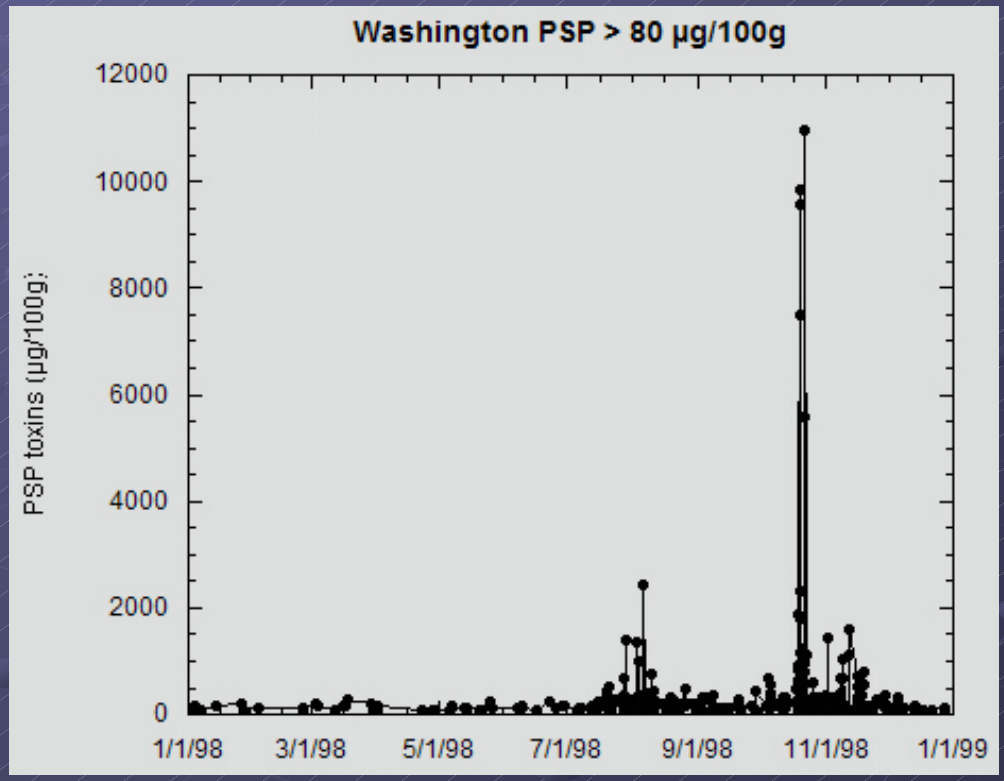
Washington State-1998

- PSP >80 µg/100g
- WA biotoxin database
- 2 reports for 1998 in HAE-DAT
- 1998 reports only inside waters



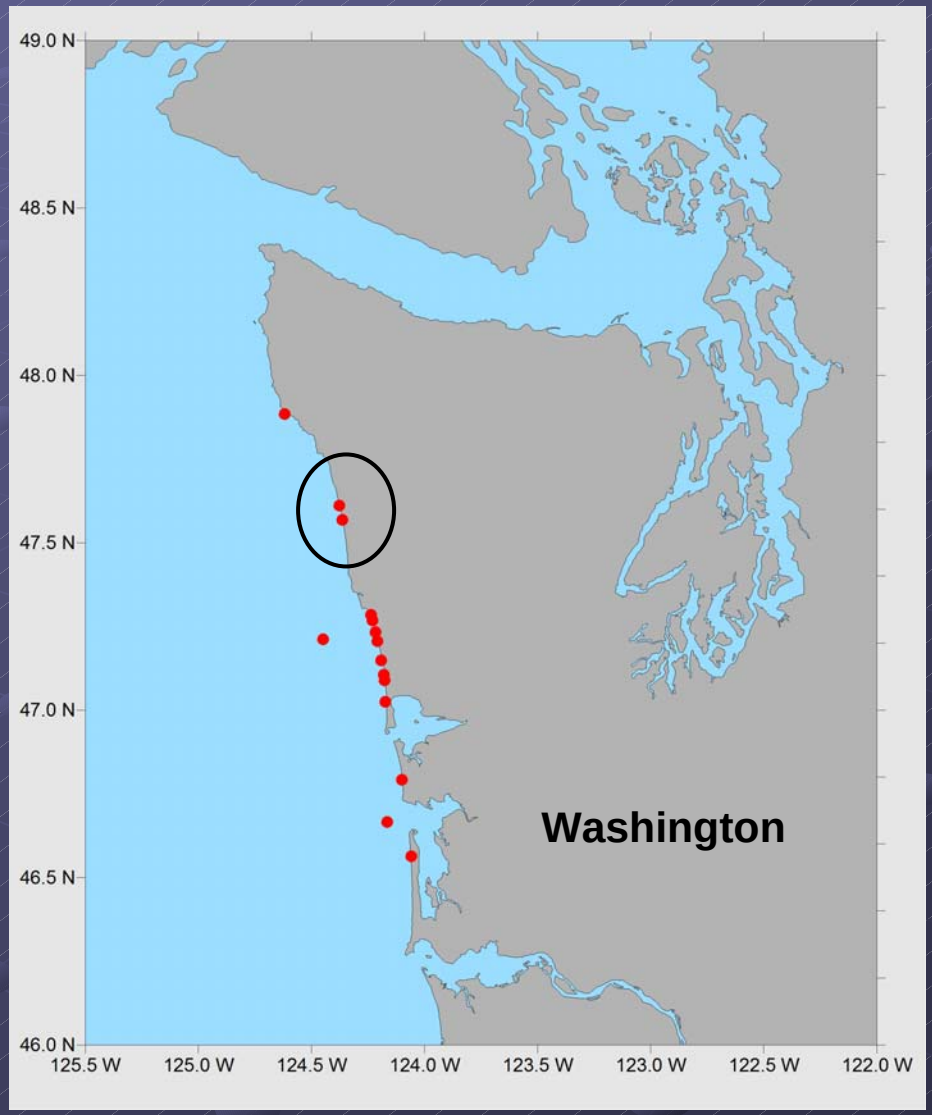
Washington-1998

- PSP >80 µg/100g
- WA biotoxin database
- Over regulatory limit at all times of year
- How many “Harmful Events”
- 3-4 depending on location and time of year



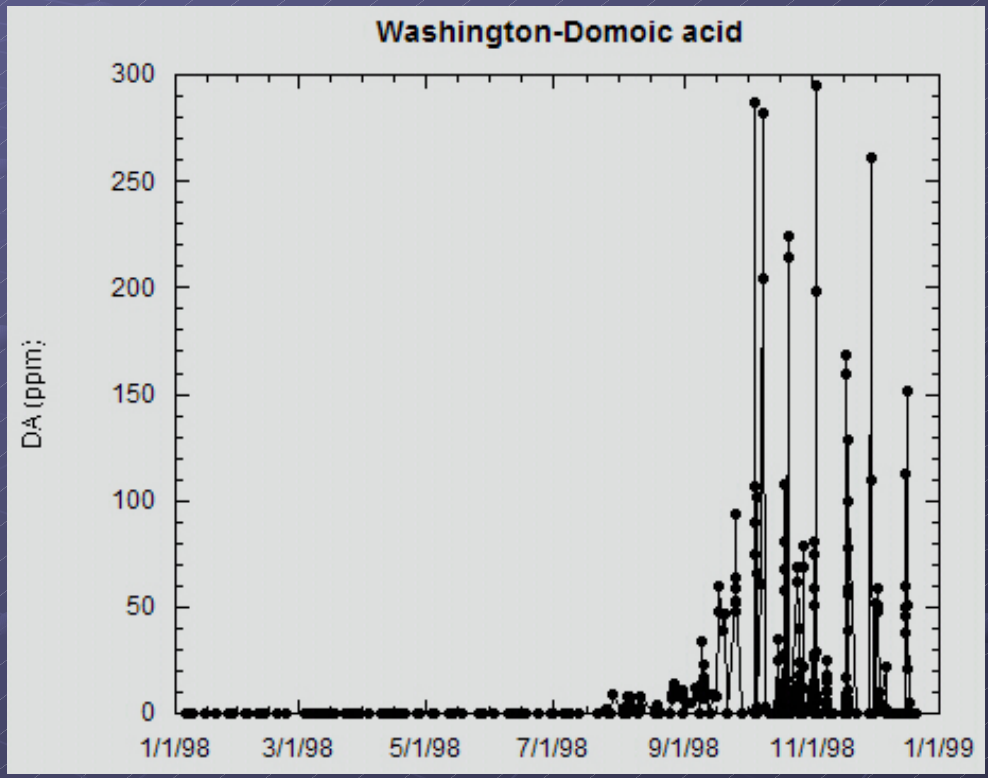
Washington State-1998

- DA > 20 ppm
- WA biotoxin database
- 1 report for 1998 in HAE-DAT
- 1998 report from one beach

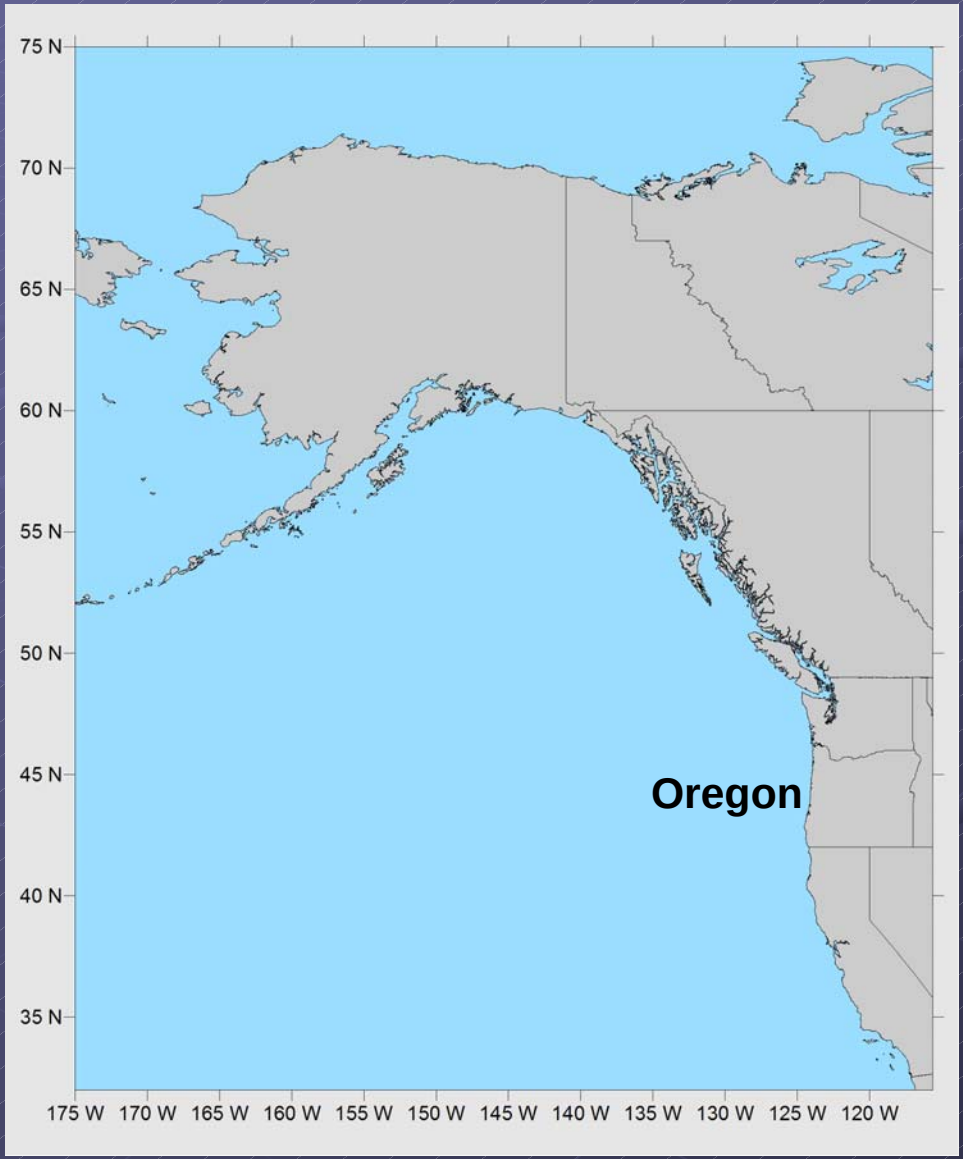


Washington-1998

- Domoic acid
- WA biotoxin database
- Over regulatory limit starting in September
- How many “Harmful Events”

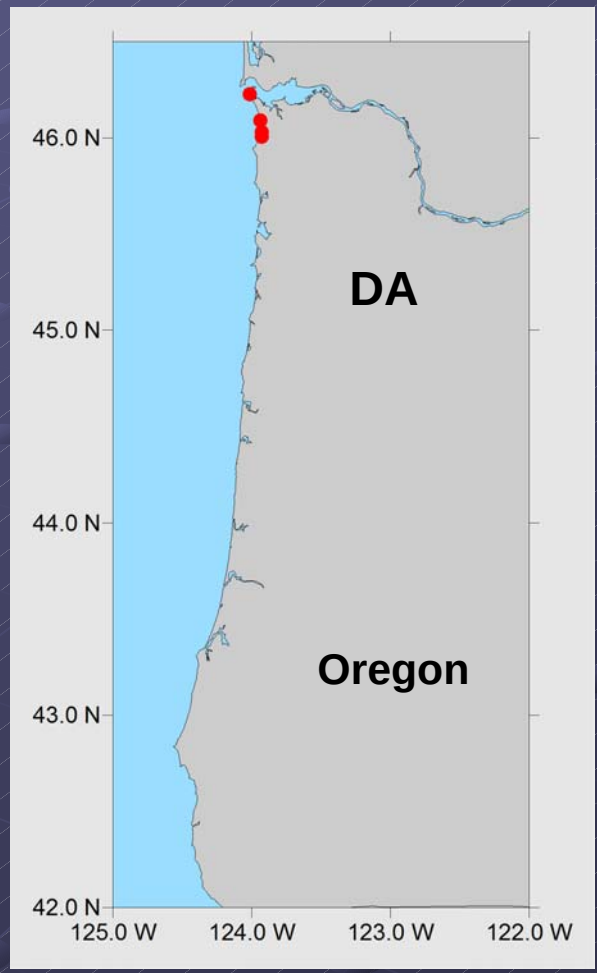


US West Coast

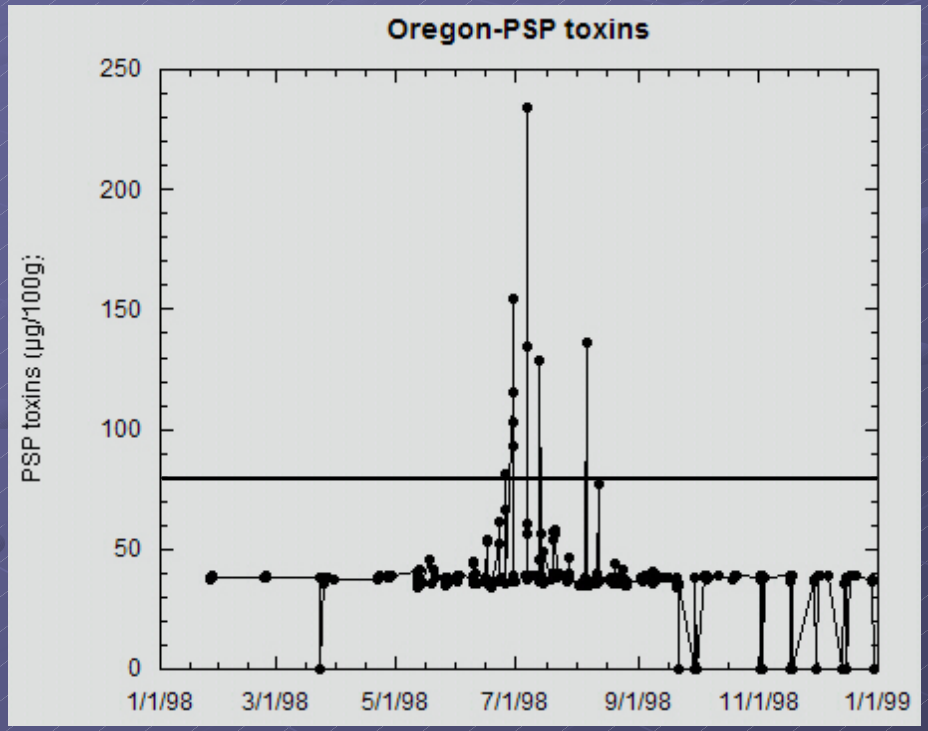


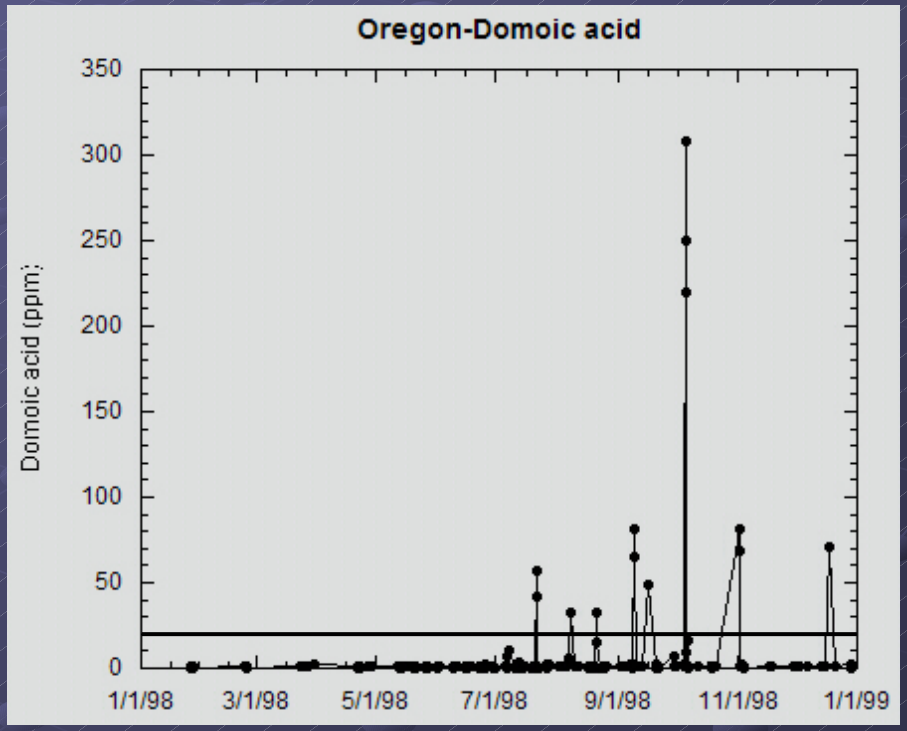
Oregon-1998

- No Reports
- Sites where PSP >80 µg/100g
- Sites where DA >20 ppm

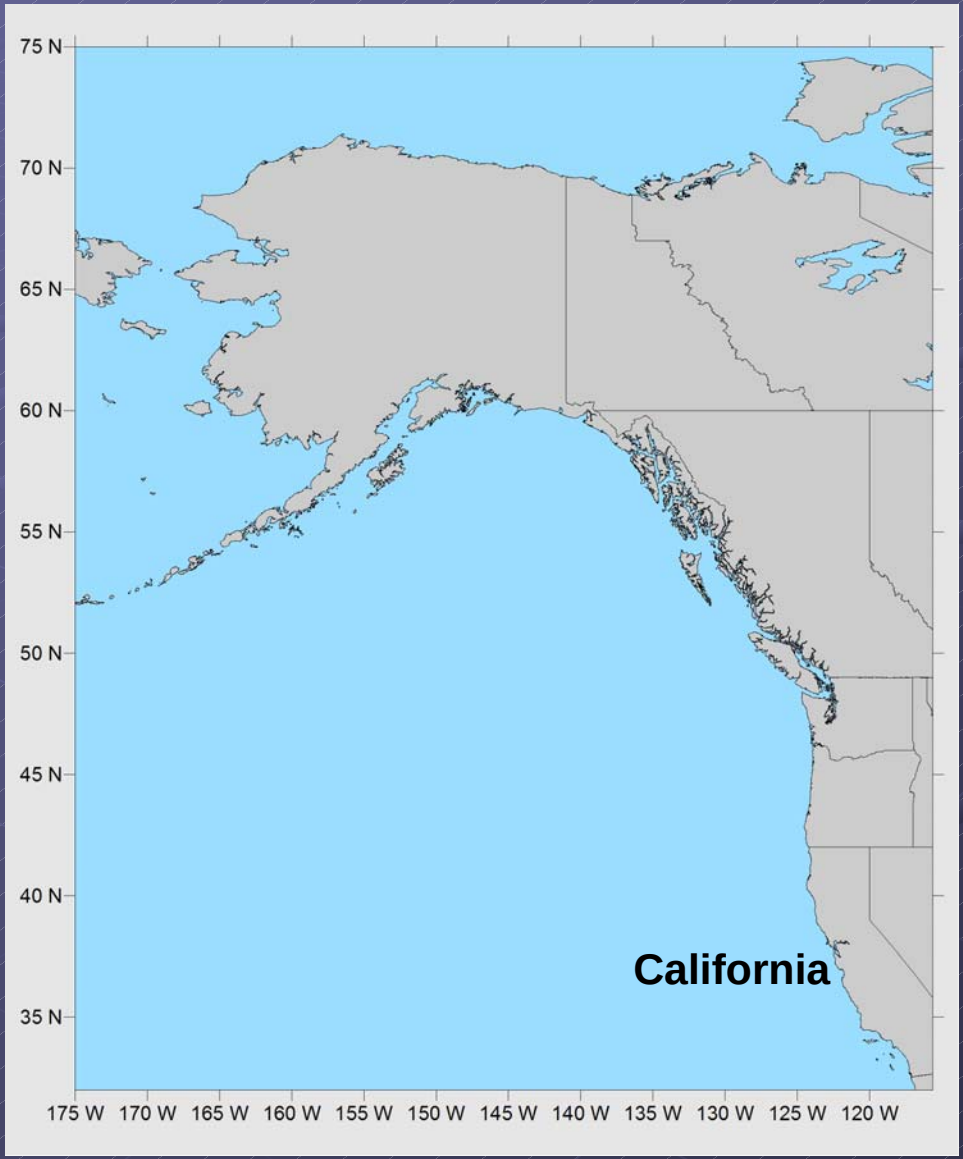


Oregon-1998


Oregon-PSP toxins
PSP toxins (µg/100g);
250
200
150
100
50
0
1/1/98
3/1/98
5/1/98
7/1/98
9/1/98
11/1/98
1/1/99


Oregon-Domoic acid
Domoic acid (ppm);
350
300
250
200
150
100
50
0
1/1/98
3/1/98
5/1/98
7/1/98
9/1/98
11/1/98
1/1/99

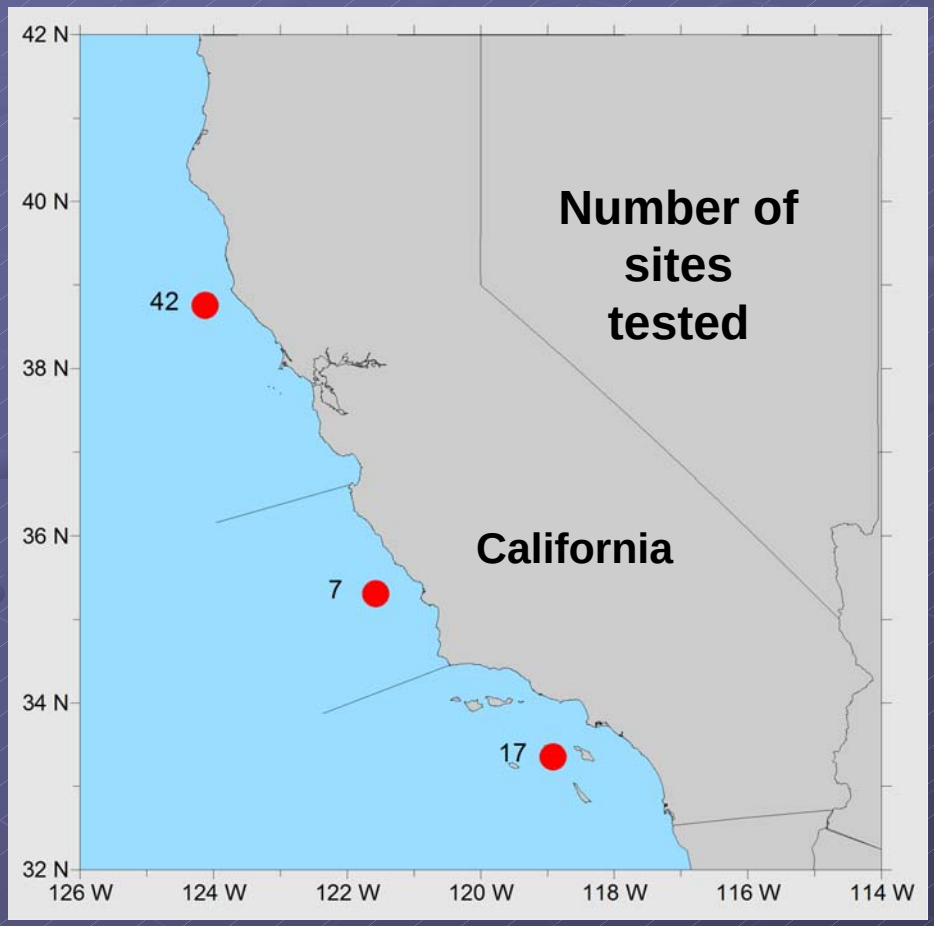
US West Coast

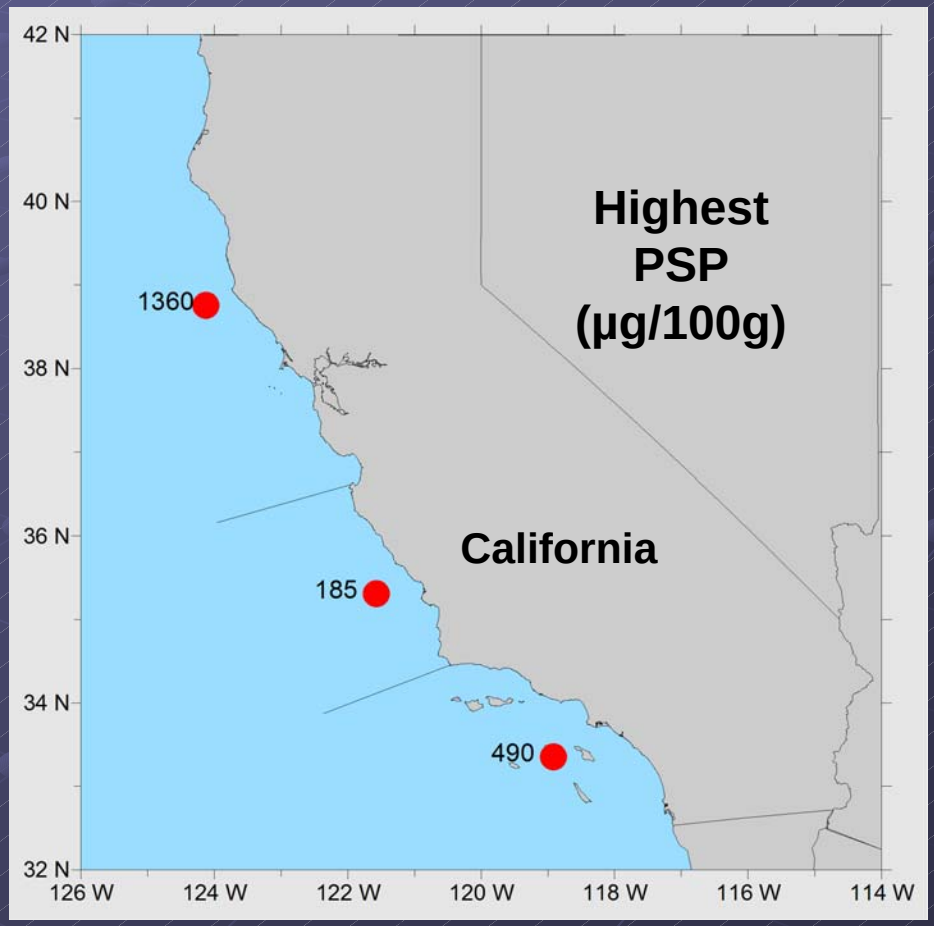


California-1998

- 3 records in HAE-DAT
- 5 events identified from biotoxin data and published reports
- HAE-DAT records not very specific

California-1998





FUTURE WORK

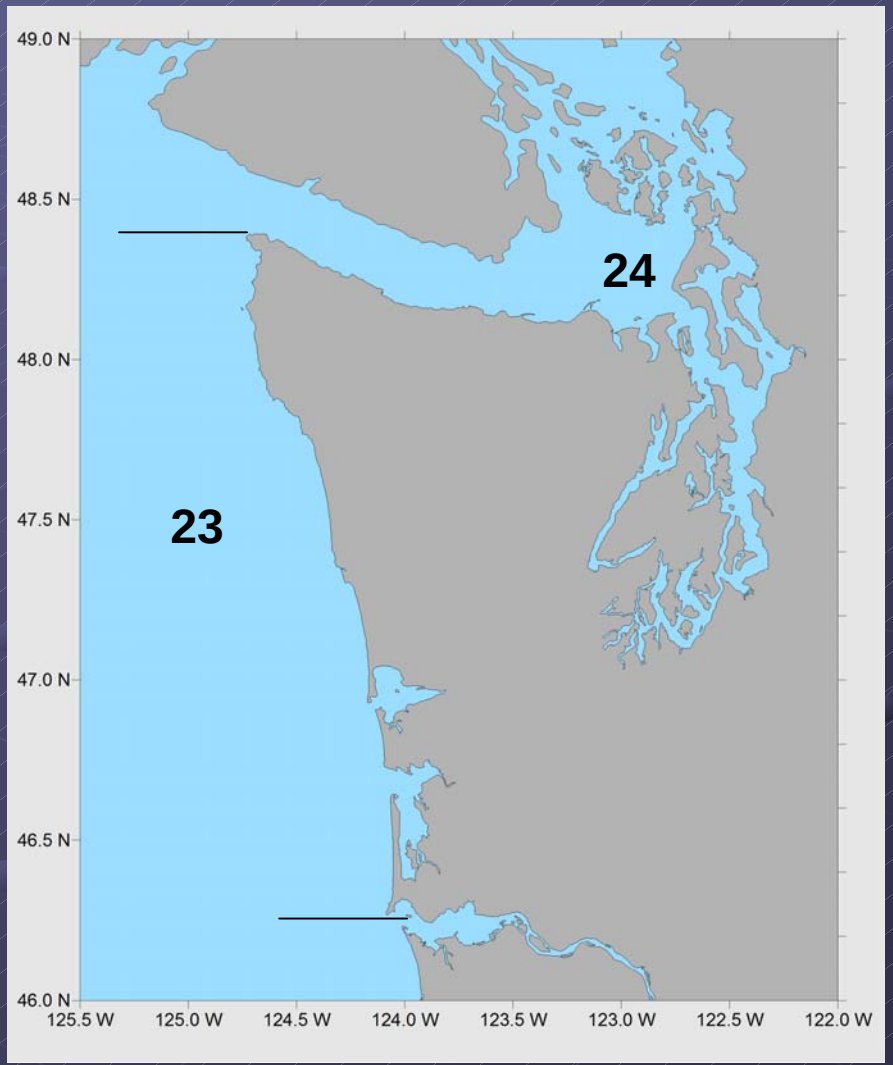
Additional Parameters

What types of information should be included?

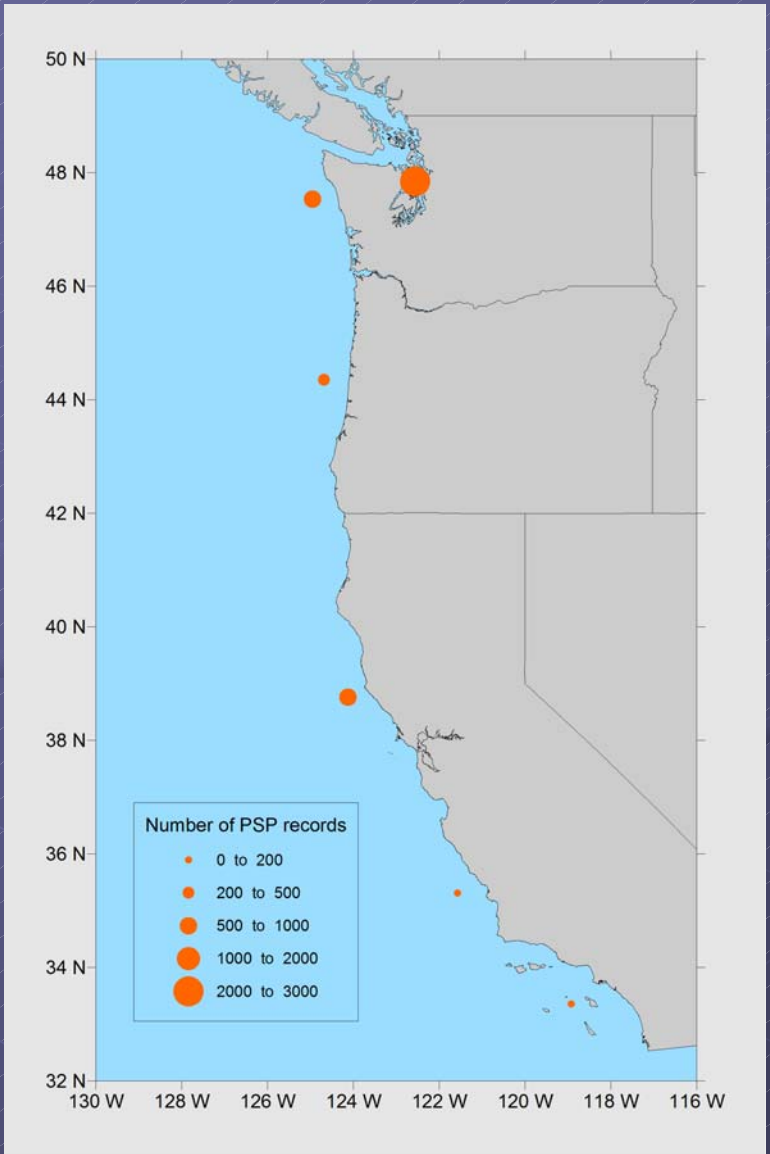
- Magnitude and duration (start and stop dates)
- Number of sites in a given area
- Highest toxin level
- Number of tests
- Number of tests above regulatory limits

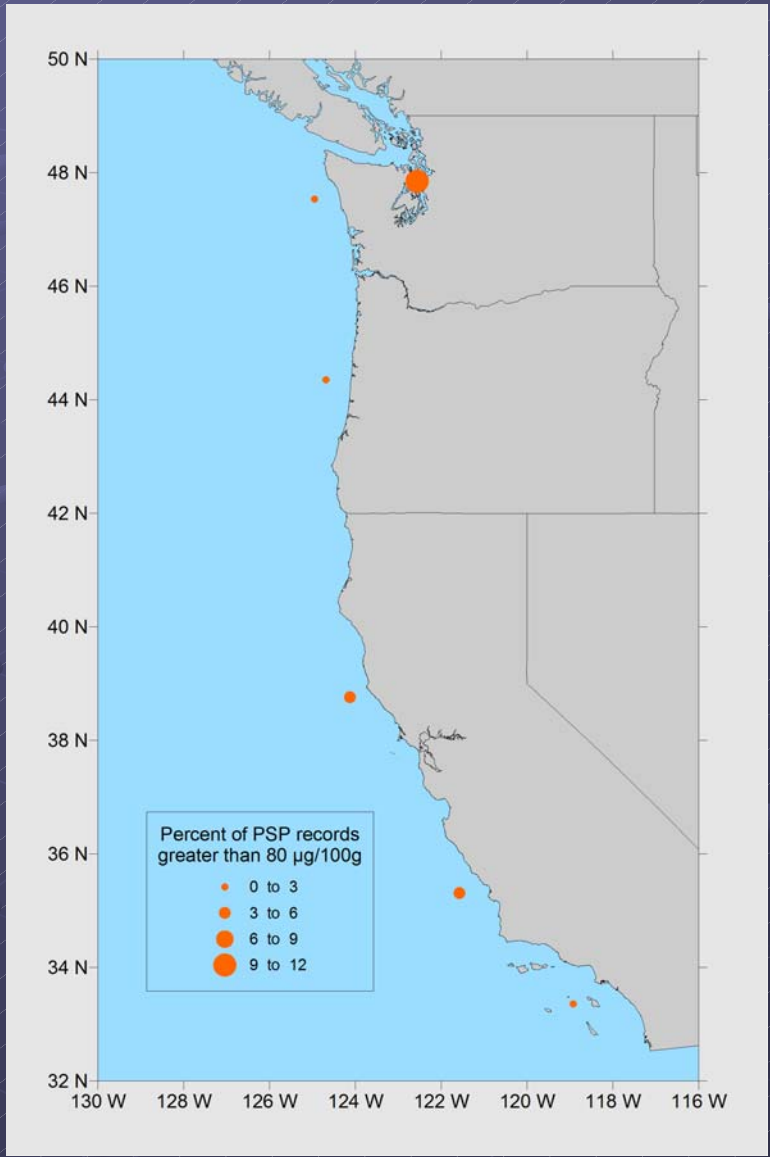
Washington State-1998

Parameter	ICES 23	ICES 24
PSP records	518	2965
Records > 80 킽 /100g	4	305
# of records in HAE-DAT	0	2
Highest PSP (킽 /100g)	118	10982
# of sites tested	43	265
# sites > 80 킽 /100g	2	85



Additional Event Data





Report Card-What Worked

- Online form relatively easy to use
- Mostly self-explanatory
- Able to include much information

Report Card-Challenges

- Reconciling HAE-DAT reports with archived data (general vs. specific)
- Knowing who the database will be geared towards
- How specific do you get?
- Blanket closures
- Determining what data are useful
- Not giving the impression of incorrect data entry

Suggested Modification 1

Harmful Algal Event Report - HAE-DAT PICES test form	COUNTRY :	
	Region :	
	Year :	

1 - GENERAL INFORMATION

Please note: NOT all information requested on this form is required. Some respondents may choose to stop at the end of the first page, but others may wish to add detailed bloom information, as requested on page 2. Any information you provide is of value.

Indicate the nature of the reported harmful event:

☐ Water discoloration	☐ High Phyto concentration	☐ Seafood toxin
☐ Mass mortalities	☐ Foam/mucilage in the coast	☐ Other:

Has the event directly affected?

☐ Planktonic life	☐ Shellfish	☐ Birds	☐ Natural Fish	☐ Humans
☐ Benthic life	☐ Aquatic mammals	☐ Seaweeds	☐ Aquaculture Fish	☐ Other terrestrial :

Has any toxicity been detected? ☐ Yes ☐ No If yes, approximate range:

Associated syndrome ☐ PSP ☐ DSP ☐ ASP ☐ AZP ☐ NSP ☐ CFP ☐ Other:

Suggested Modification 2

5 - TOXIN ASSAY INFORMATION

Species containing the toxin	Toxin type	Toxin details	Max. Concentration (specify units)	Assay type	Use of a kit (if yes, what type of kit)
					☐ Yes ☐ No Type:

ADDITIONAL INFORMATION (e.g. positive animal assay, chemical details, analytical methods, etc.): HPLC

ECONOMIC LOSSES (production value, direct loss, indirect loss...): Fall recreational harvest season not opened, some question whether spring 1999 recreational harvest will be allowed.

MANAGEMENT DECISION: Fall recreational harvest season not opened, some question whether spring 1999 recreational harvest will be allowed.

ADDITIONAL HARMFUL EFFECT INFORMATION:

Conclusions

- Data entry appears to be subjective
- Discrepancies between HAE-DAT records and actual data
- Add a few specific parameters
- *What will PICES countries want to get out of this database?*

Acknowledgements

- Mike Ostasz & David Wike (Alaska Department of Fish and Game)
- Frank Cox, Linda Hanson & Jerry Borchert (Washington Department of Health)
- Deb Cannon (Oregon Department of Agriculture)
- Gregg Langlois (California Department of Health Services)
- Kathi Lefebvre (Northwest Fisheries Science Center)

Misc. Issues

- Unique situation for 2003, 2002 bloom caused closure of 2003 fishery. Is this an “event” for 2003?
- Go to Yearly maps
- As it stands, data entry is subjective. More specific parameters should be included.
- Mapping “duration” for an area proved difficult
- Data “Harmonization”
  - E.g. each country including similar info on their forms