

Finding Drivers of Smelt Abundance: Salinity and Nutrients as Possible Candidates

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January 26, 2010

What Influences Smelt Population?

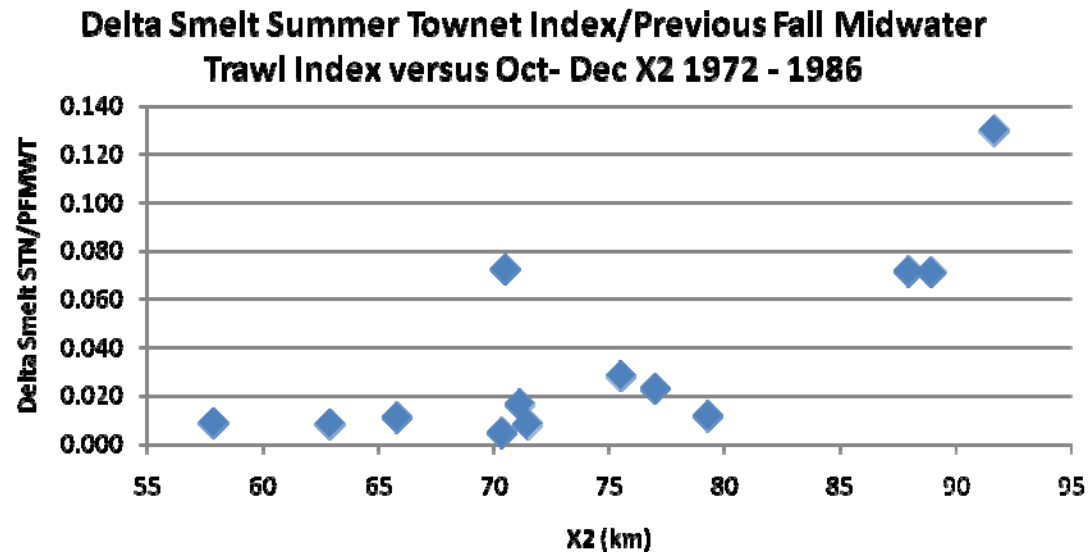
- Enormous amounts of data are readily available:
 - Food supplies
 - Flows
 - Diversions
 - Temperature
 - Nutrients
 - Species abundance
 - Turbidity

Water Operations in Context

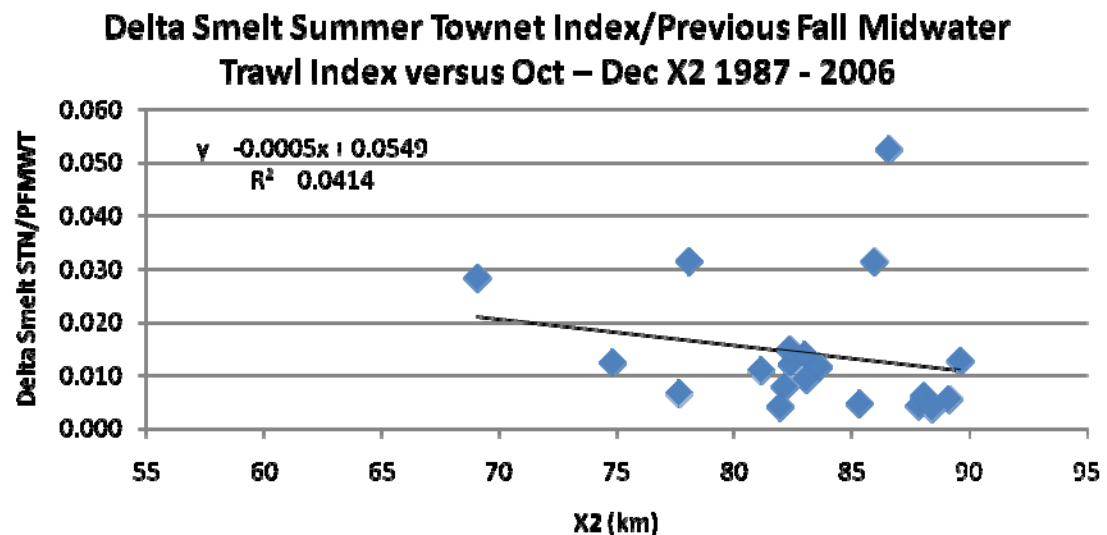
- Scientific Question is not whether water operations harm Delta smelt (perhaps at levels impossible to detect), but
- Whether water operations make any real difference given all the other factors influencing Delta smelt. Conversely, will RPA's generate any real benefits within the context of all the stressors impacting Delta smelt.

Fall X2 as a Possible Abundance Driver

Before 1987 drier
seems to be better

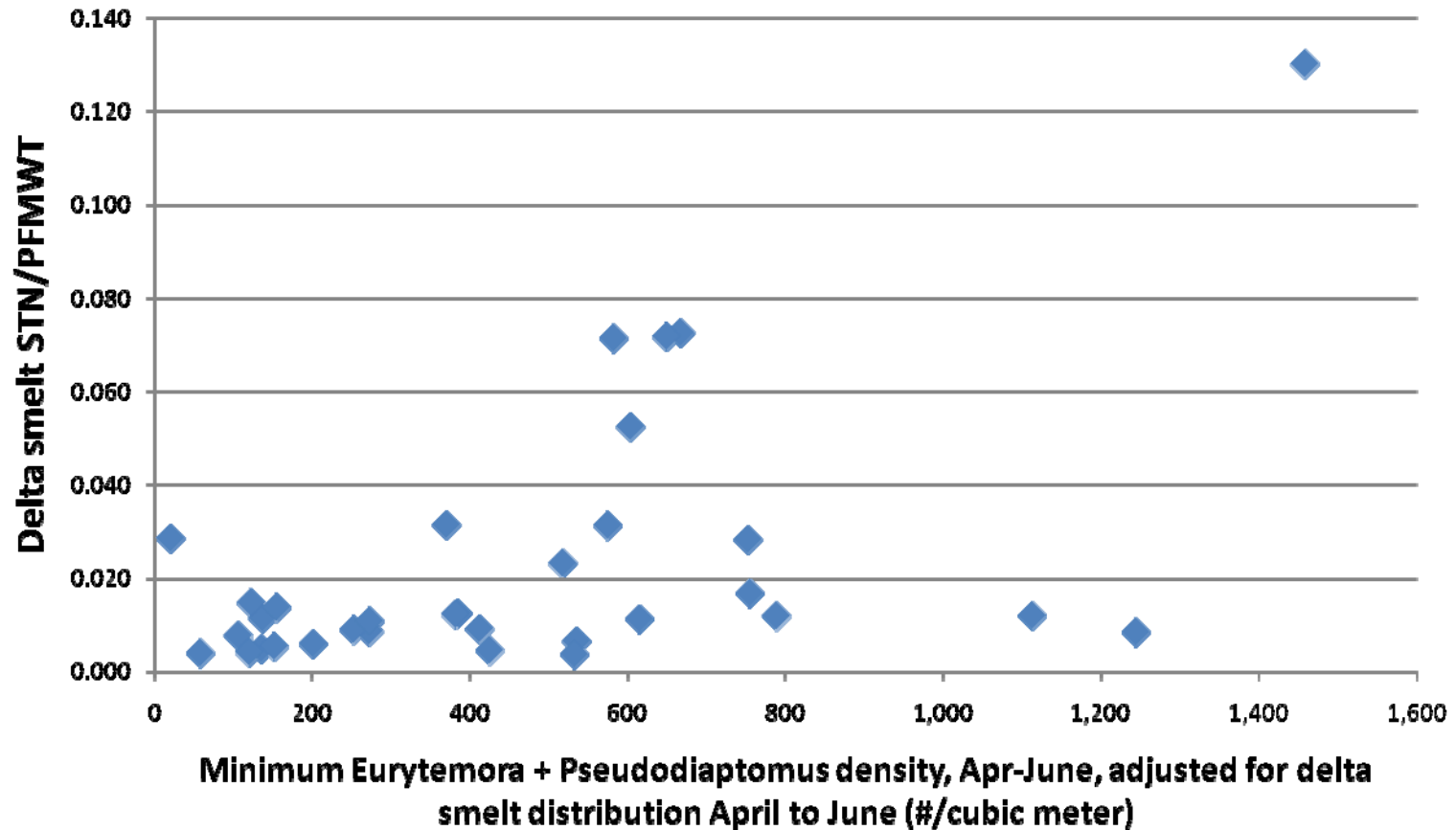


Since 1987 no
real relationship.
This graph is the
foundation of the
Fall X2 RPA.



Food As a Possible Abundance Driver: Smelt Need Zooplankton:

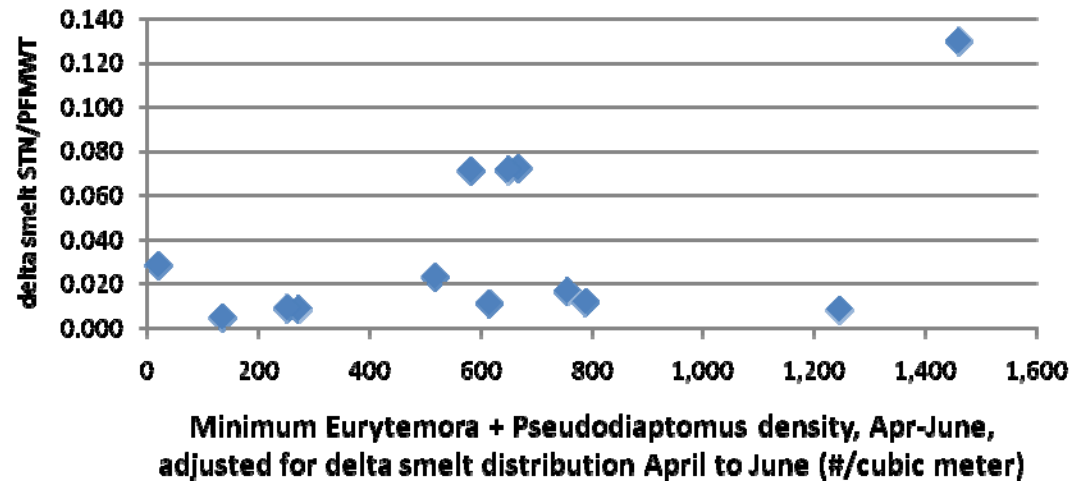
1972 - 2006



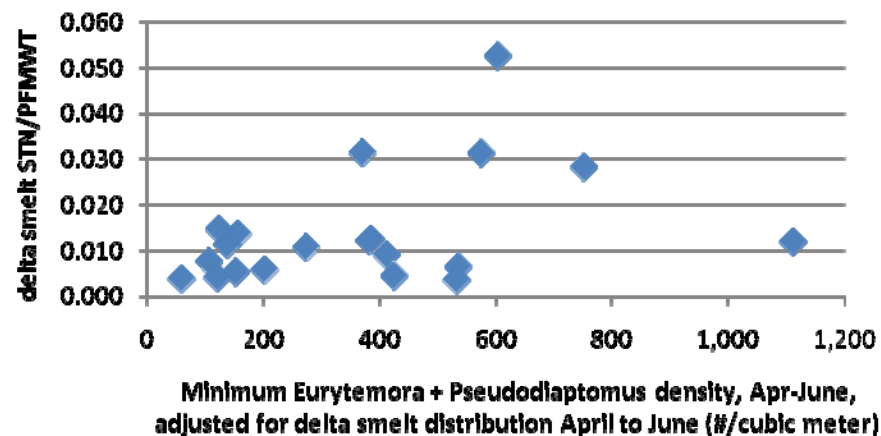
Source: Dataset BJ Miller Discussed

Smelt:Zooplankton Relationship is Consistent Over Time

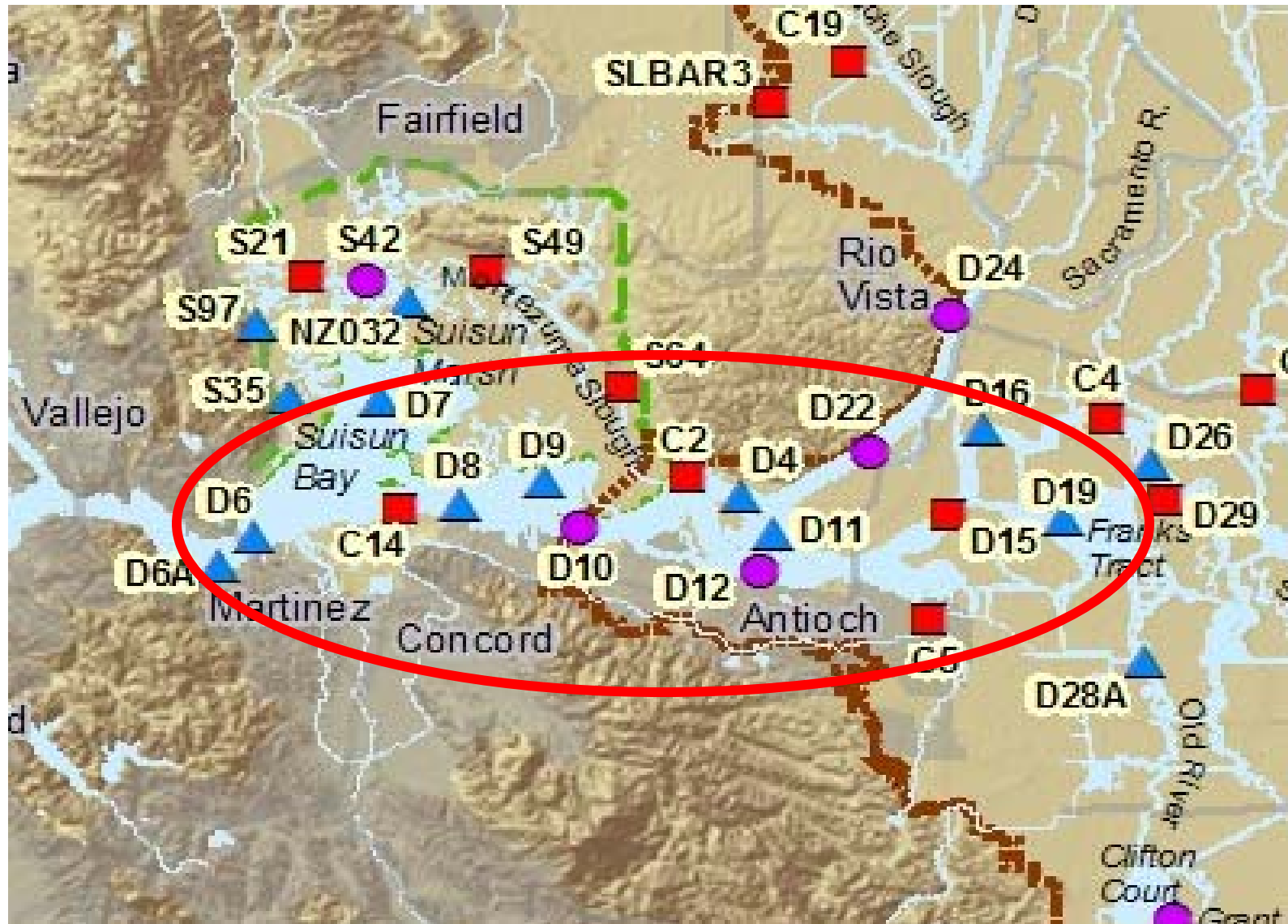
1972 - 1986



1987 - 2006

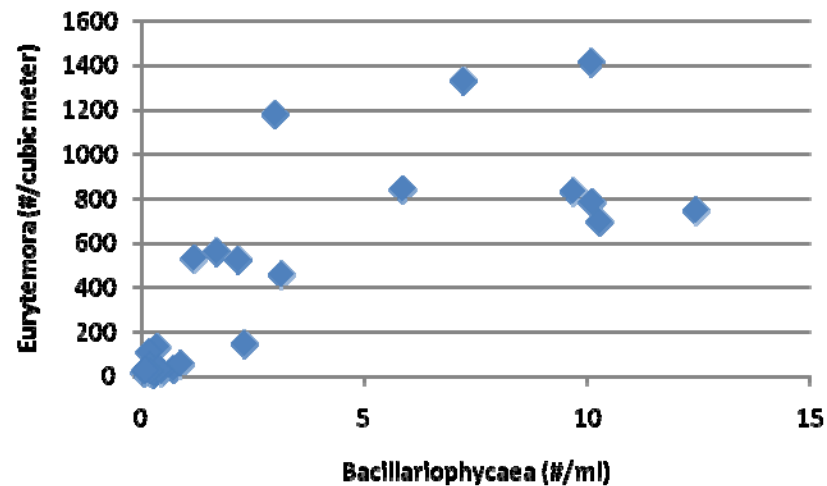


Confluence to Suisun Bay Area

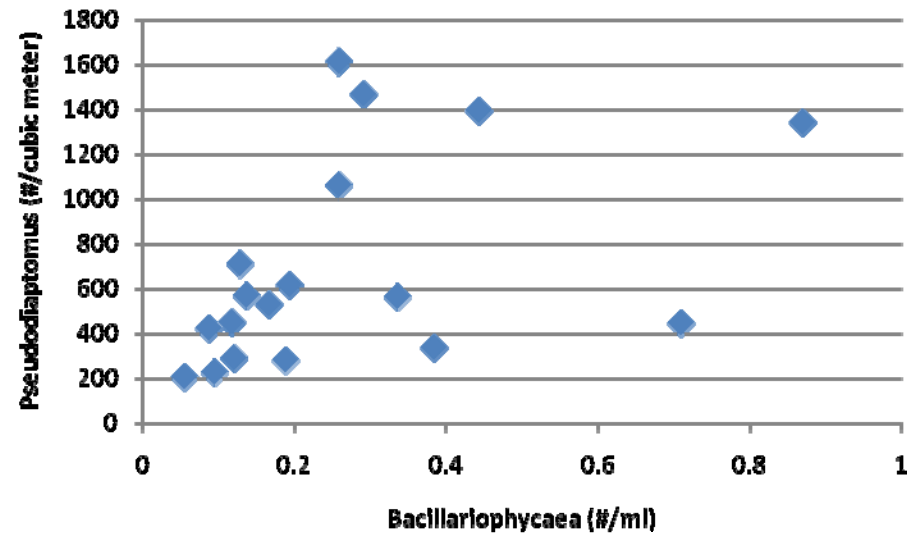


Zooplankton Linked to Phytoplankton

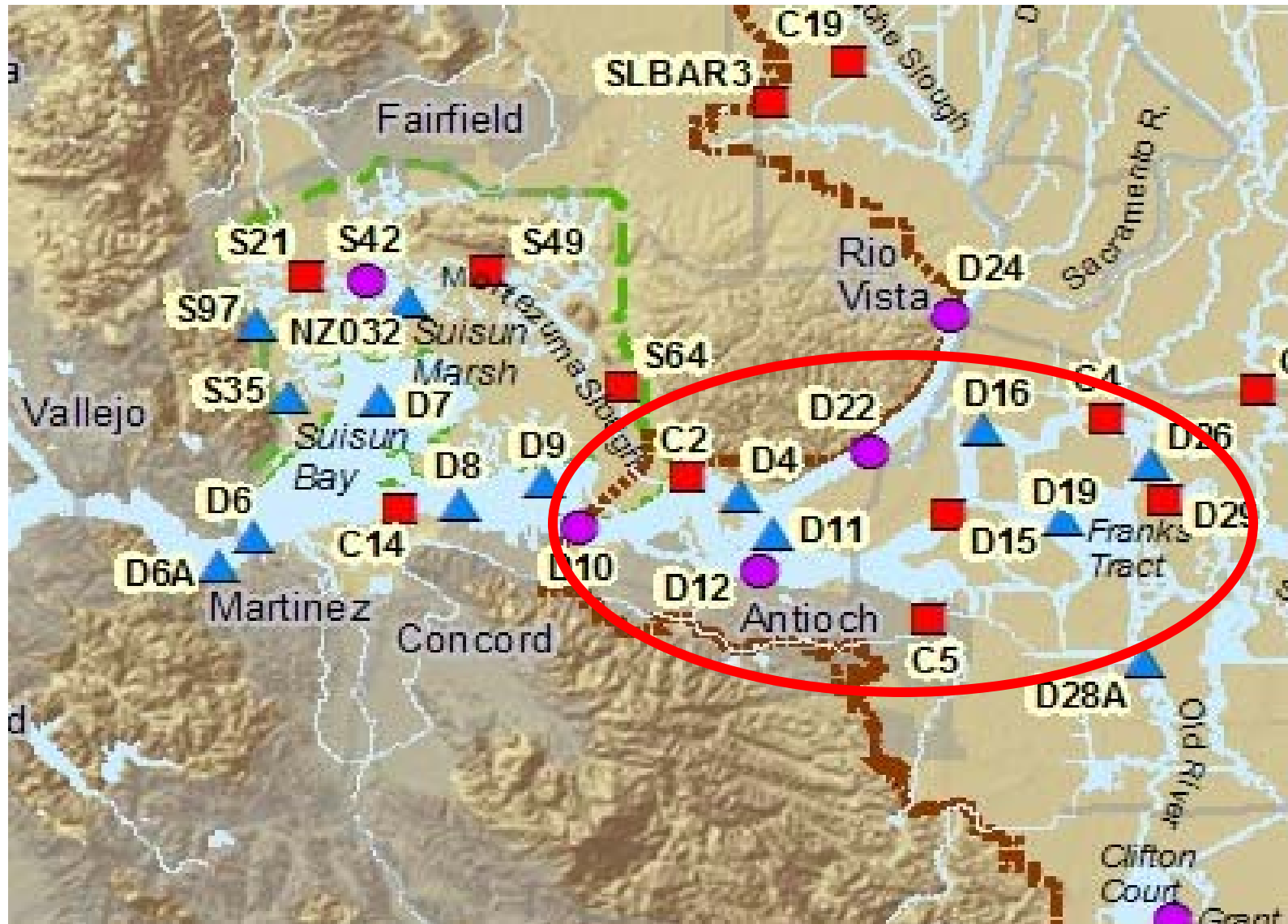
Eurytemora v
Bacillariophyceae
density 1972 – 2006
all months.
Confluence to Suisun
Bay.



Pseudodiaptomus v
Bacillariophyceae
density 1987 – 2006
all months.
Confluence to Suisun
Bay.

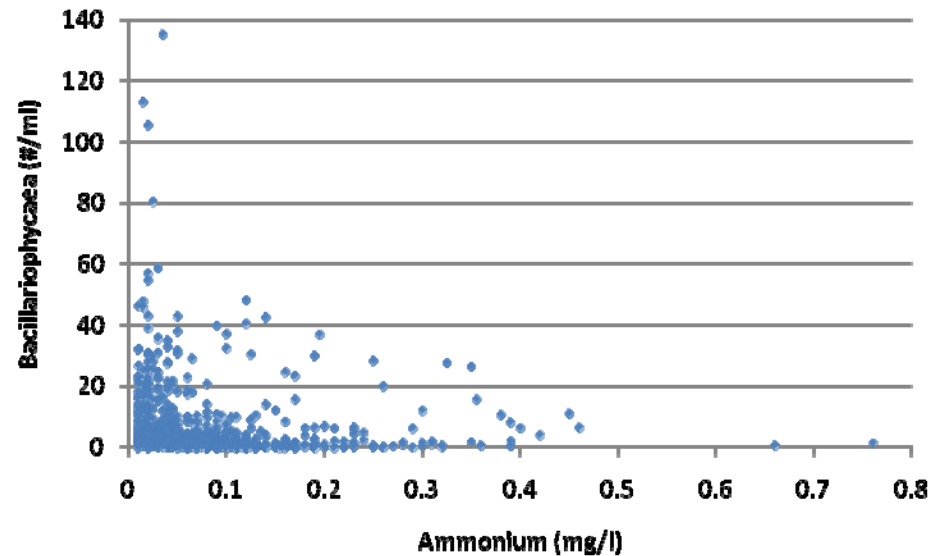


Confluence Area

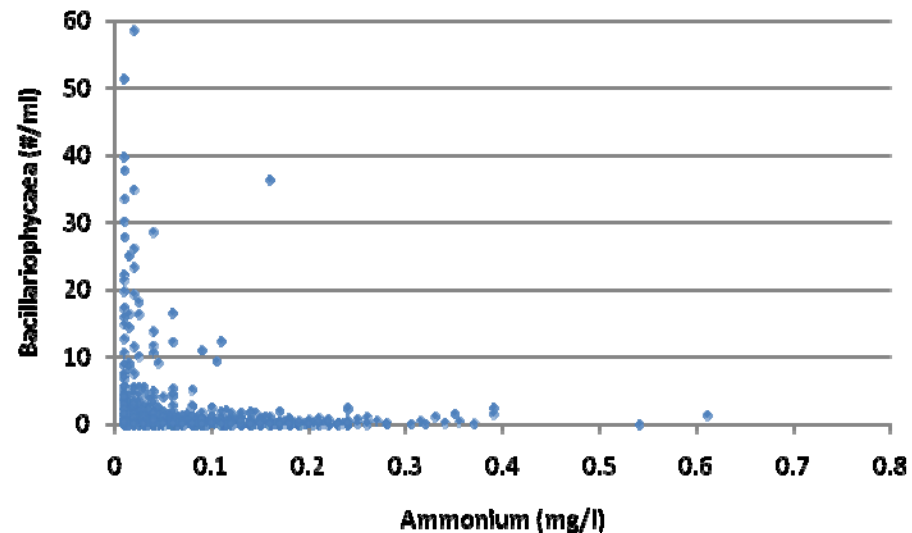


Diatoms Linked to Nutrients

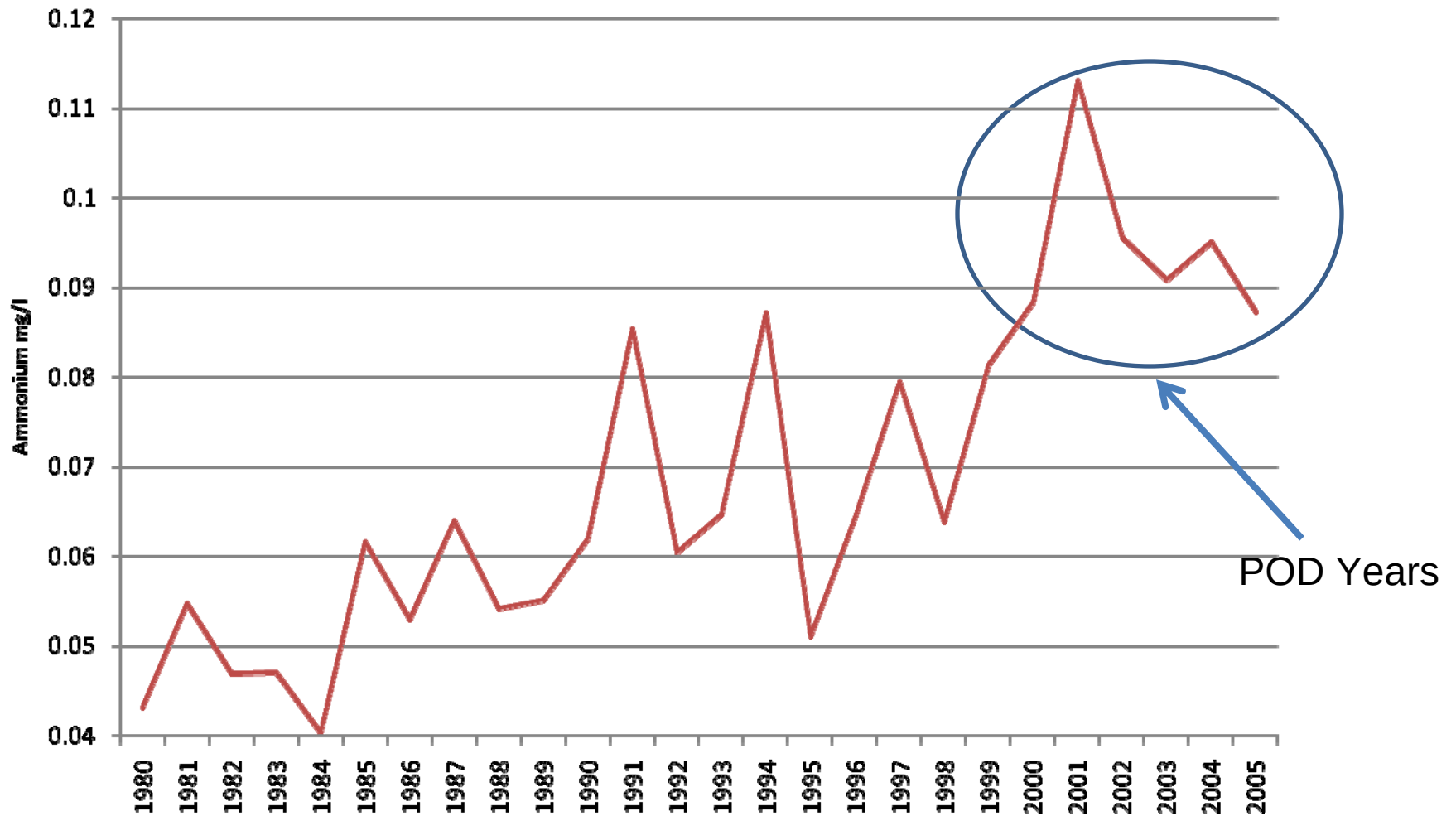
Bacillariophyceae v
Ammonium density.
1975 – 1986. All
Months. Confluence
Area



Bacillariophyceae v
Ammonium density.
1987 – 2006. All
Months. Confluence
Area (Suisun Bay
response is weak
after 1986)



Ammonium Over Time: Confluence to Suisun Bay. Annual Averages



Final Thoughts

- No apparent linkage between Fall X2 and abundance.
- Food supply a good candidate for abundance driver.
- Enormous amounts of data are readily available and easily manipulated. Panelists may wish to analyze data themselves rather than simply evaluate others' analyses.