



# Salinity and Temperature Distribution of Jellyfish in the San Francisco Estuary



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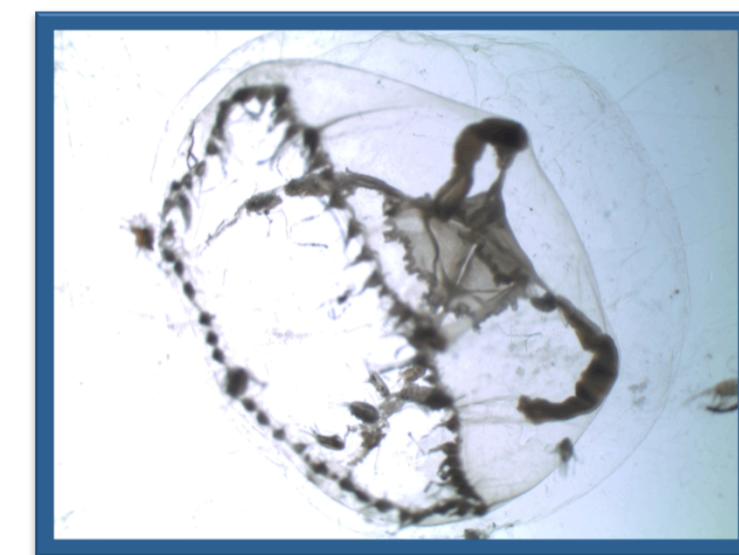
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## Background

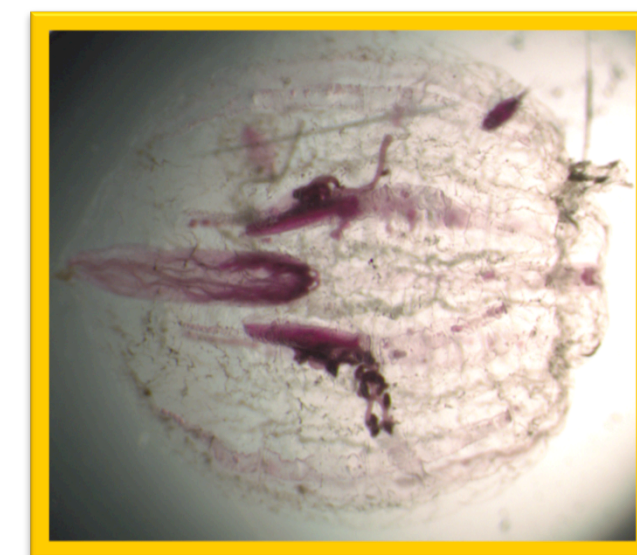
In the San Francisco Estuary, the rising number of jellyfish are in competition with the endangered delta smelt for the same food sources. The three most prevalent jellyfish (*Maeotias marginata*, *Blackfordia virginica*, and *Pleurobrachia bachei*) have established populations in ecological niches defined by qualities such as salinity and temperature. Determining these niches helps better understand interactions between jellyfish and delta smelt.



*M. marginata*



*B. virginica*



*P. bachei*

## Objective

Determine the abundance and location of jellyfish in the San Francisco Estuary in relation to salinity levels and temperature

## Methods

Plankton tows were used to collect samples at 9 stations of varying salinities across the San Francisco Estuary.

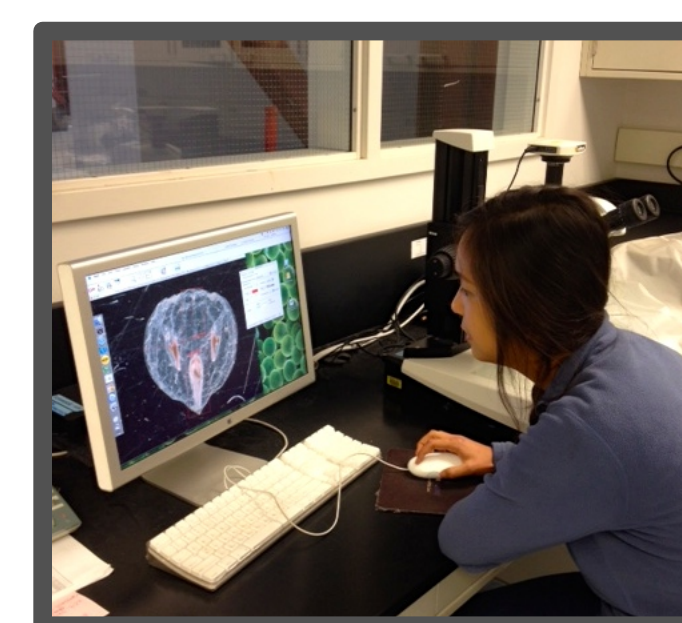
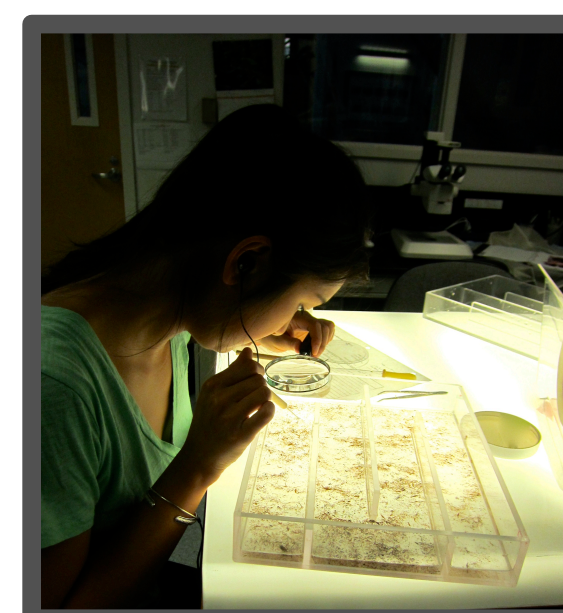


Samples were taken monthly over two years to account for jellyfish lifecycle and environmental variability.

July 2010 → December 2010  
June 2011 → January 2012

Span of monthly sample collections

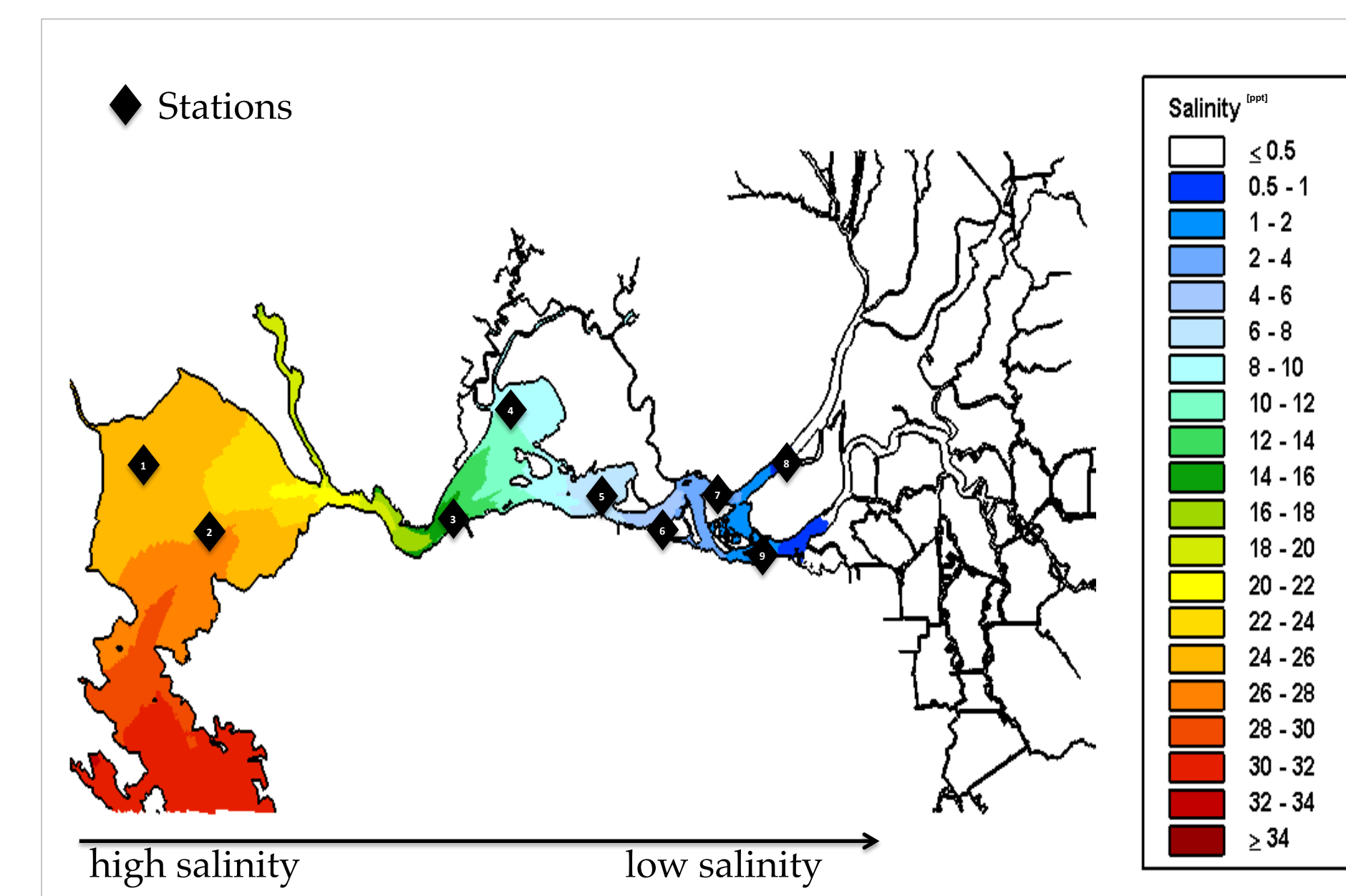
Samples were preserved and processed by manually removing jellyfish and observing them under a microscope.



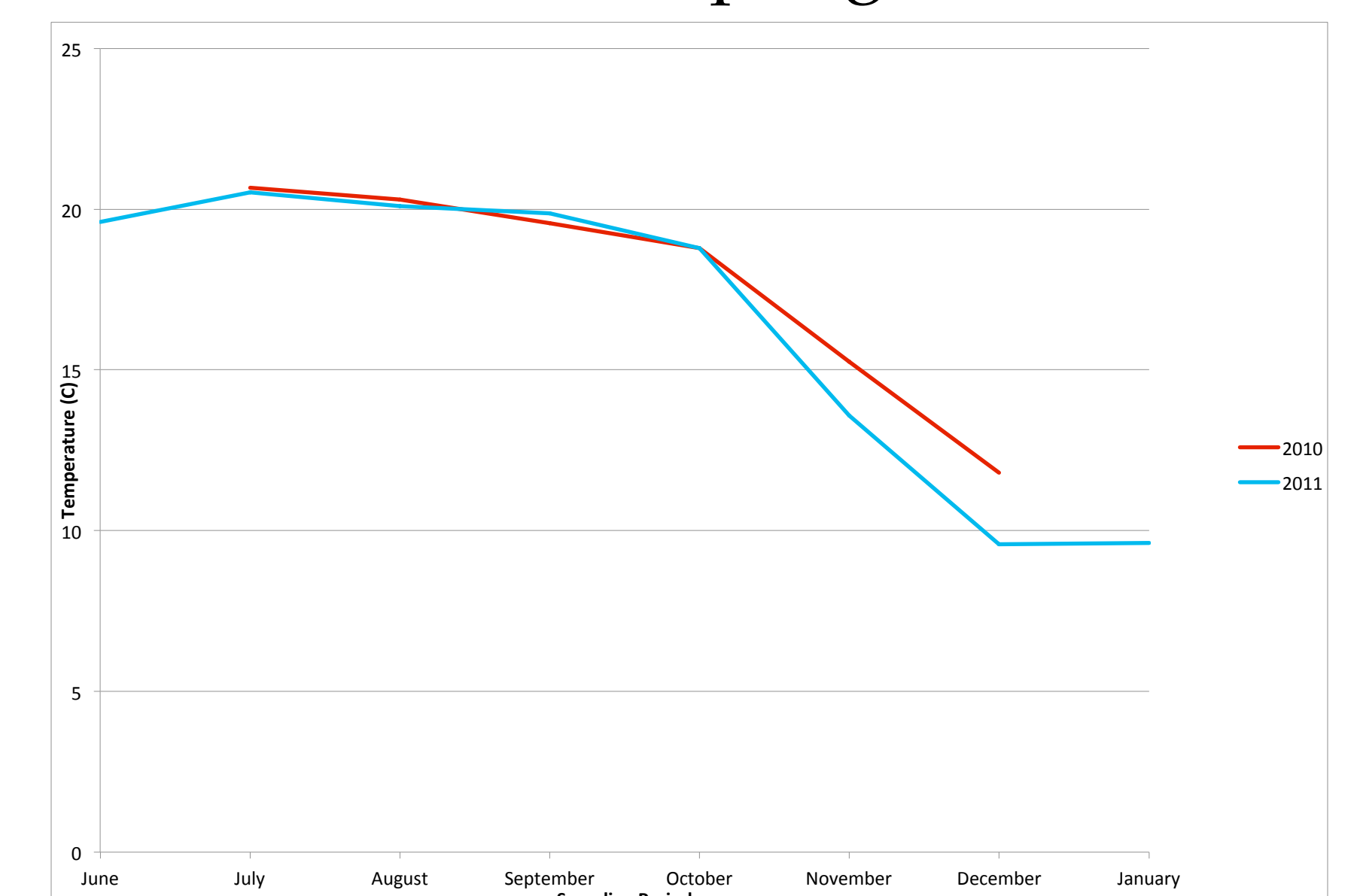
Number, species, size, and sample location were recorded.

## Results

### Salinity of the San Francisco Estuary

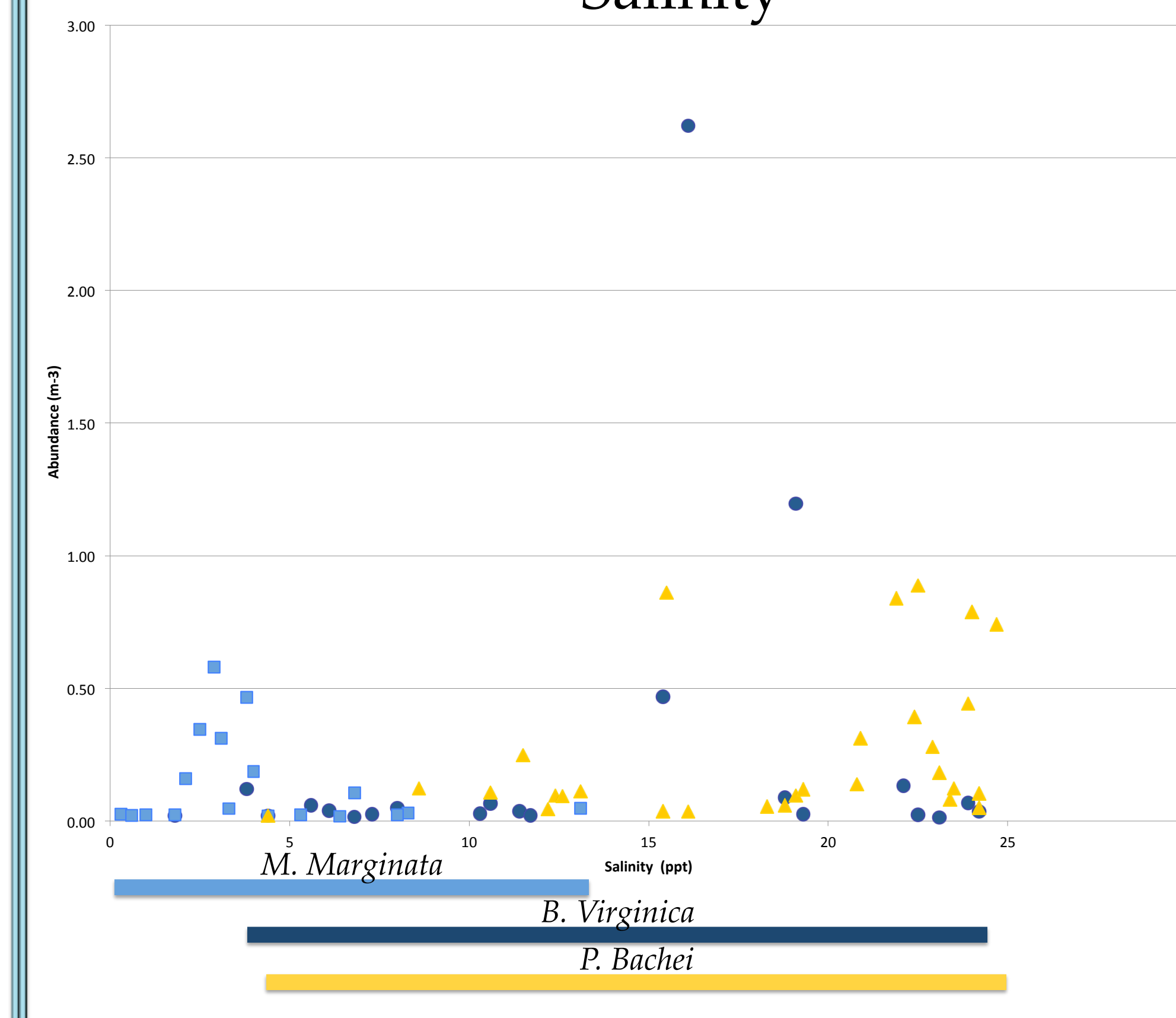


### Temperature of San Francisco Estuary over the Sampling Period

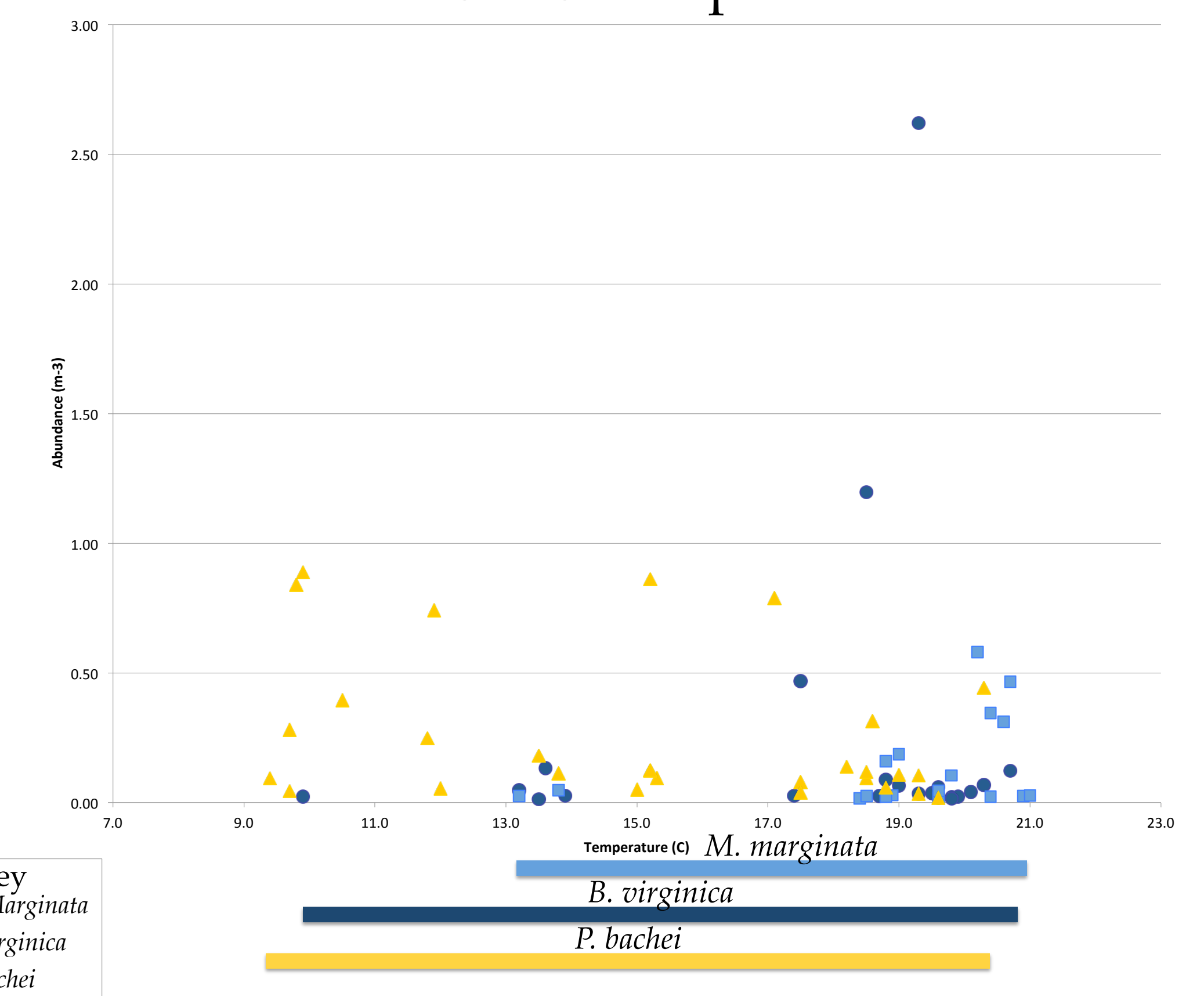


Temperatures did not vary between years

### Abundance of Jellyfish in Relation to Salinity



### Abundance of Jellyfish in Relation to Temperature



## Conclusions

*B. virginica* and *P. bachei* thrive in high salinity habitats; *M. marginata* thrives in freshwater habitats.

*M. marginata* and *B. Virginica* are more abundant in warm waters; *P. bachei* is abundant across all temperatures sampled.

Understanding the location and seasonal trends of these jellyfish provides insight on overlap with delta smelt niches to predict potential competition.