

Abundance and Distribution of Gelatinous Zooplankton in the San Francisco Estuary

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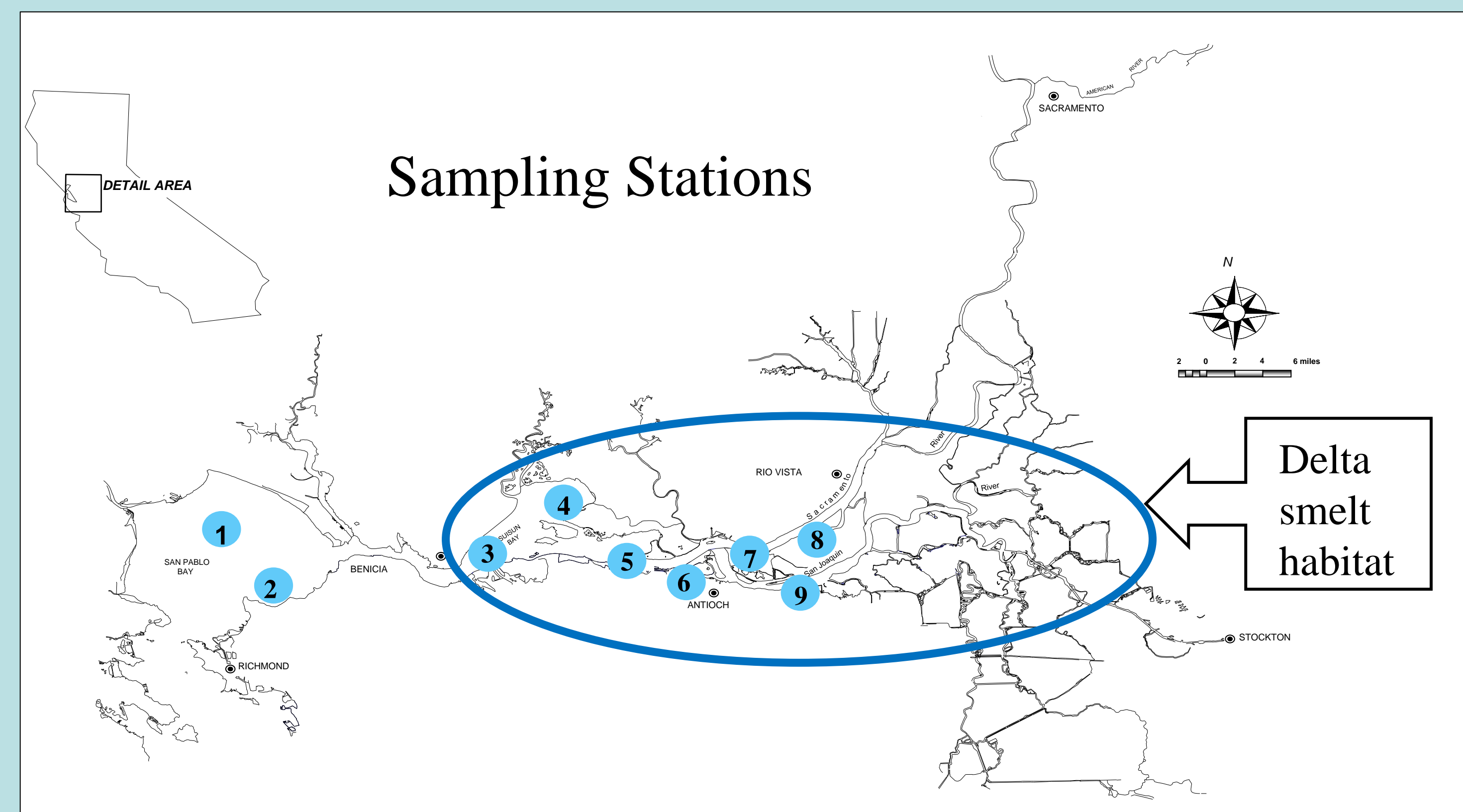
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Rationale



Delta smelt, a threatened species of fish endemic to the San Francisco Estuary, are found in salinities ranging from 0–10, and have been significantly declining in numbers.^{1,8}

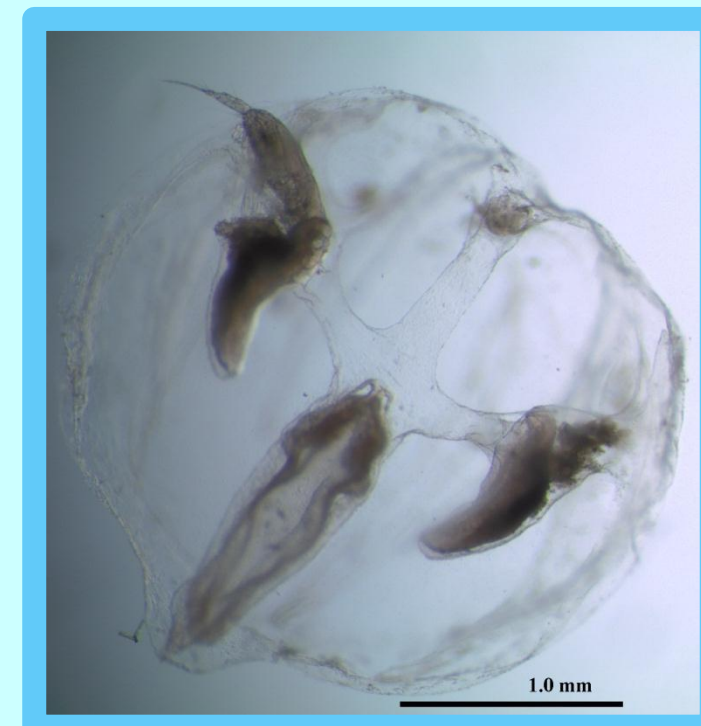
Gelatinous zooplankton and planktivorous fish larvae, like delta smelt, feed primarily on microscopic crustaceans called copepods.^{2,9} Spatial and temporal overlap between gelatinous zooplankton and delta smelt could result in direct consumption of smelt and competition.^{2,9}



Objectives

- Determine the abundance and distribution of gelatinous zooplankton in the San Francisco Estuary
- Determine if the gelatinous zooplankton are abundant in delta smelt habitat

Prominent Species



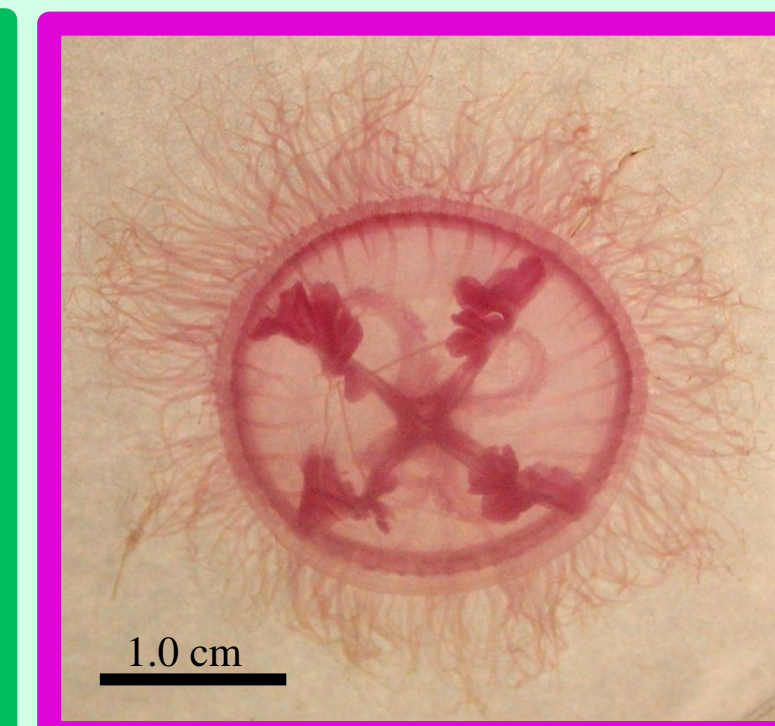
Pleurobrachia bachei
Ctenophore
(=comb jelly)
Native
Salinity range:
>23⁶



Polyorchis penicillatus
Hydromedusa
Native
Salinity range:
≥20⁶



Blackfordia virginica
Hydromedusa
Non-native
Salinity range:
6.5–16⁶



Maeotias marginata
Hydromedusa
Non-native
Salinity range:
1–16⁵

Methods

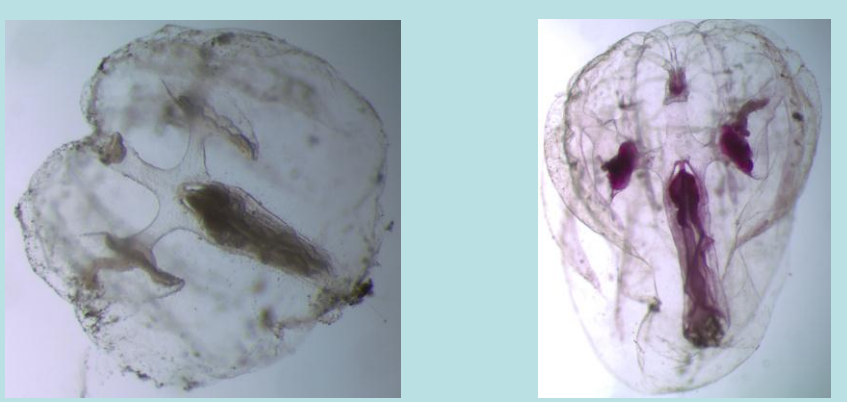
- 1 Oblique plankton tows were taken with a 300-μm net from the research vessel *Questuary* at nine sites.



- 2 Temperature, salinity, light intensity, and depth were measured with a CTD sensor at each station.



- 3 Jellies were stained with rose bengal to make identification easier.

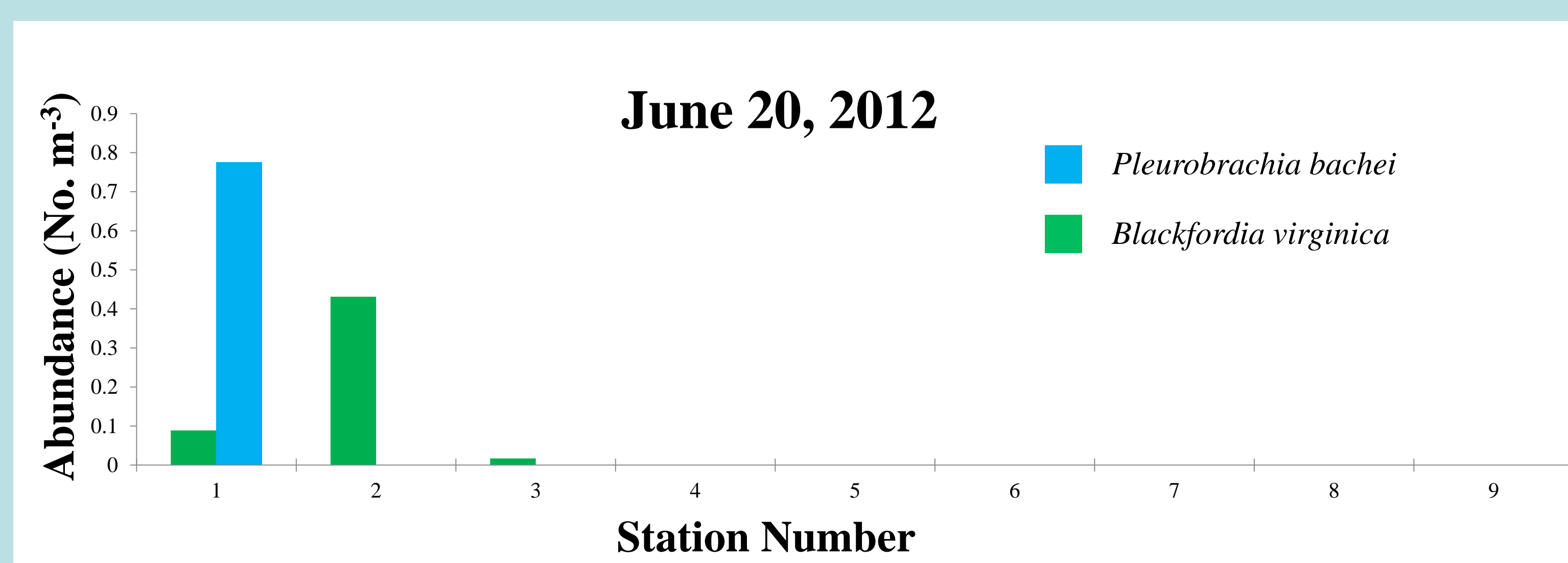
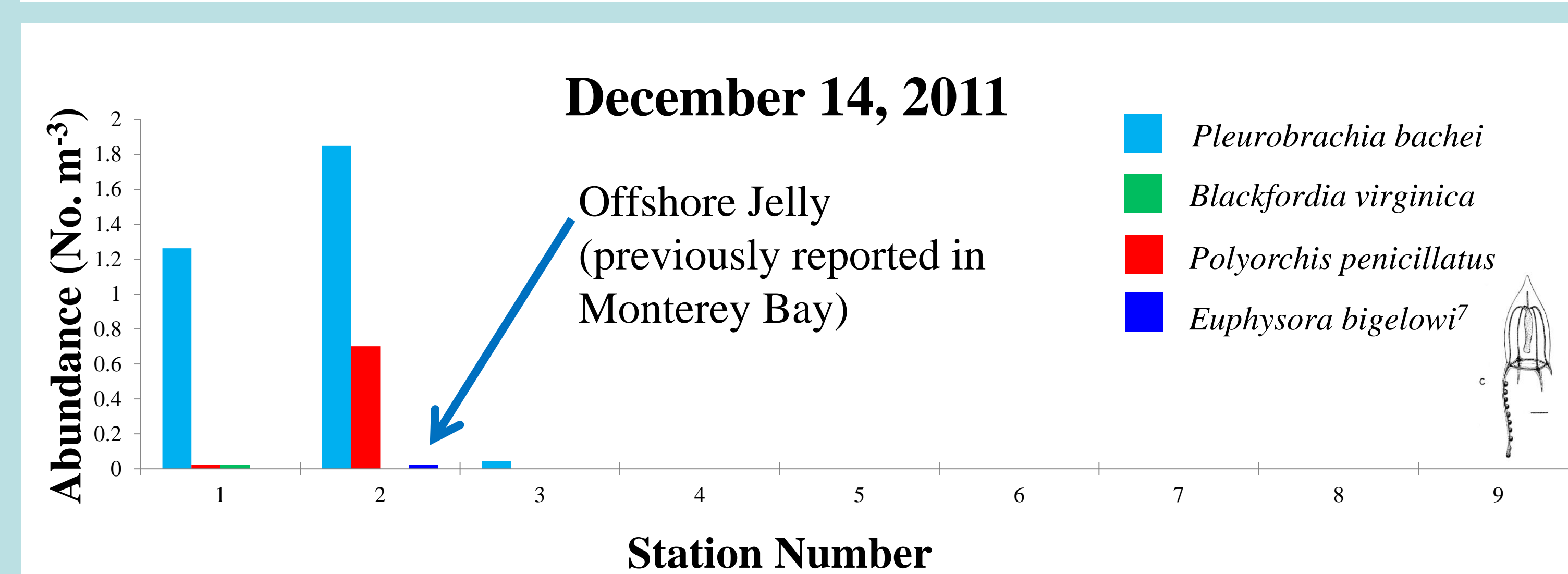
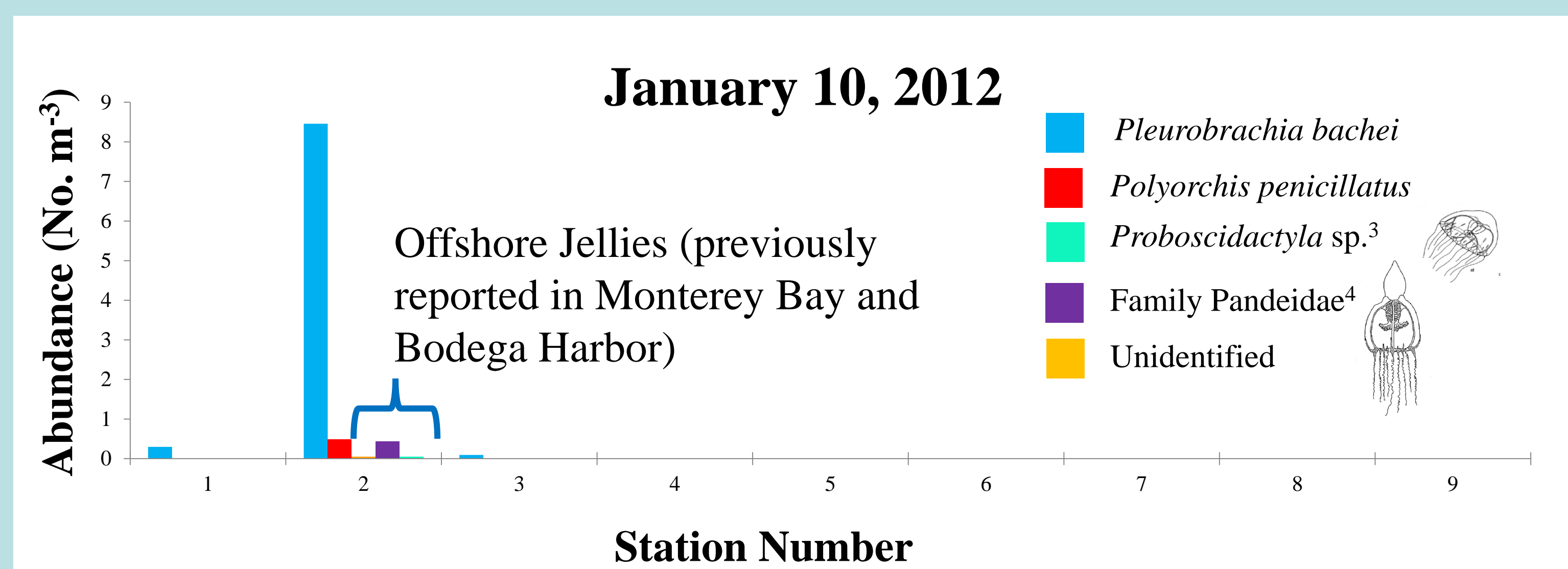
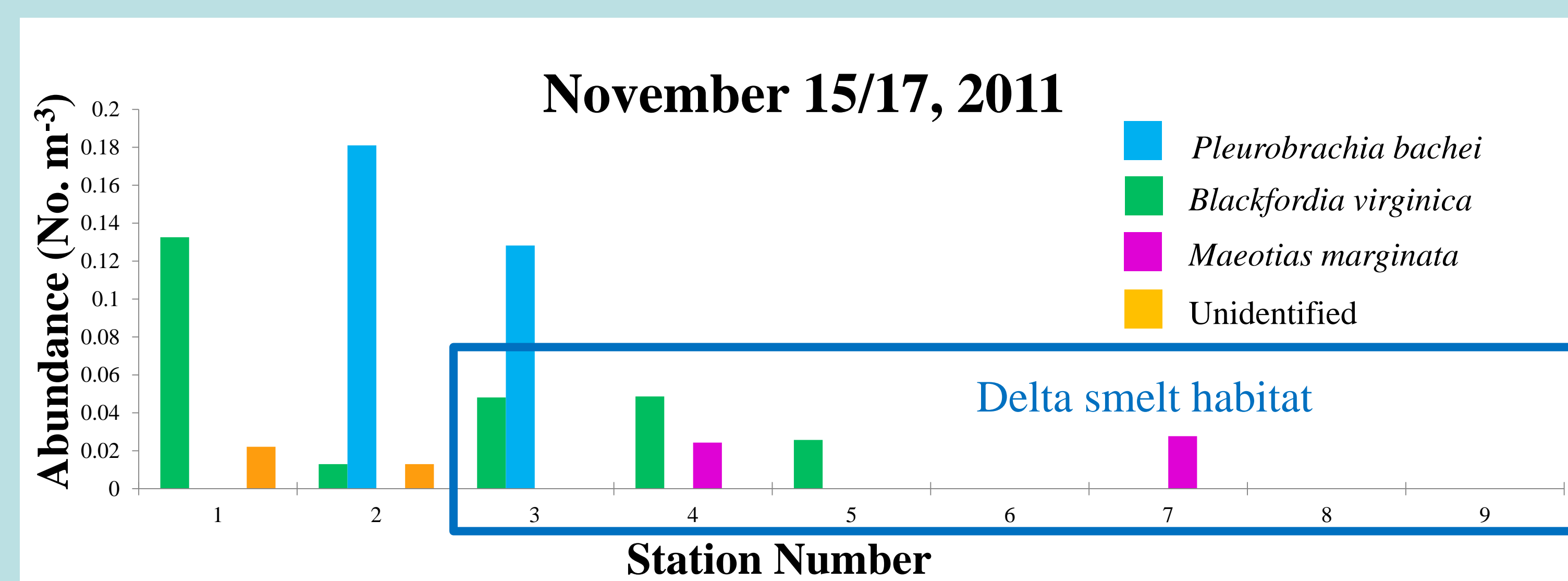


Before After

- 4 A light box was used to find jellies, which were then identified, photographed, and measured using a dissecting microscope equipped with a camera and Spot™ software.



Abundance and Distribution



Conclusions

- Initial data shows some spatial overlap between delta smelt and gelatinous zooplankton, however most jellies were observed outside delta smelt habitat, this should be investigated further due to the seasonality of some species of gelatinous zooplankton.
- More than two times greater abundance observed for *P. bachei*.
- Observed several species of offshore jellies not previously reported in the San Francisco Estuary, potentially due to strong upwelling.

Acknowledgments and References

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