



# Integrated Diet and Habitat Use Biomarkers for Fish Life History Reconstruction

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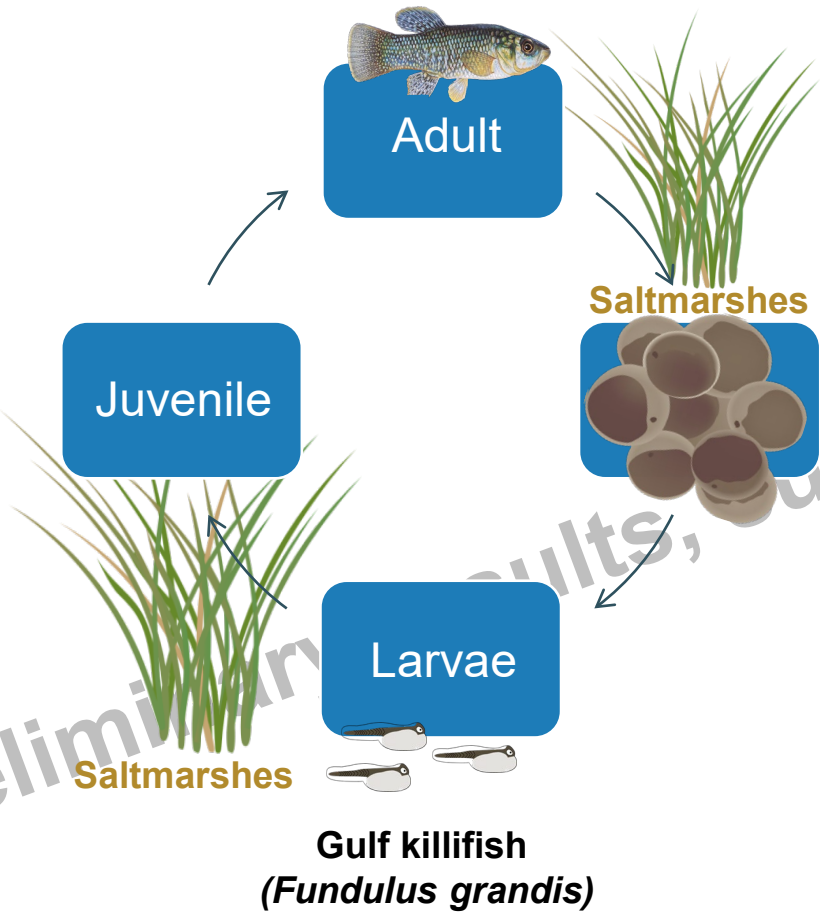


# Saltmarsh Habitats

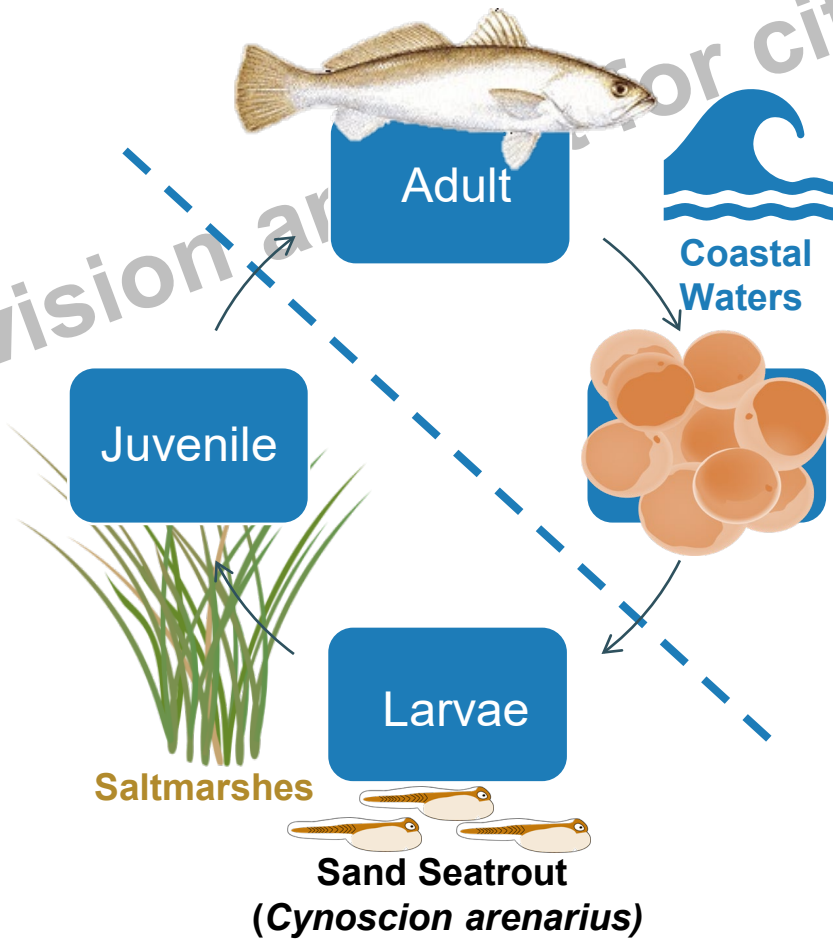
- In the U.S.:
- Account for 55% of recreational catch,
- 68% of Commercial Catch



# Resident fish and transient fish have different life cycles

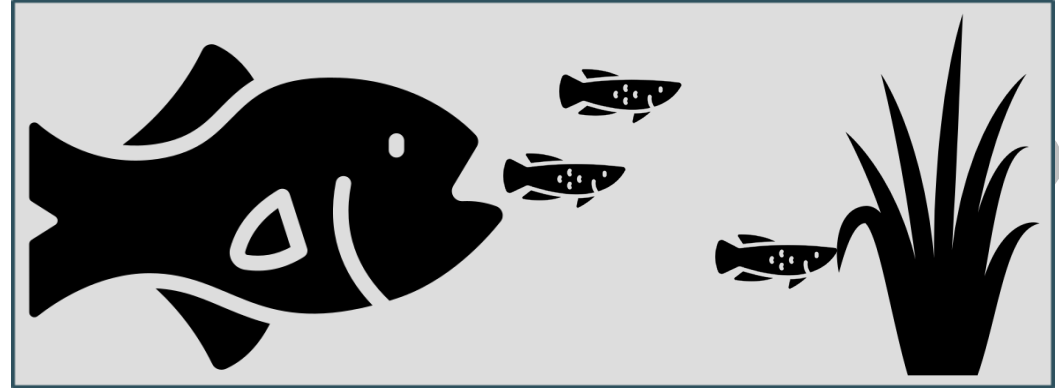


vs.

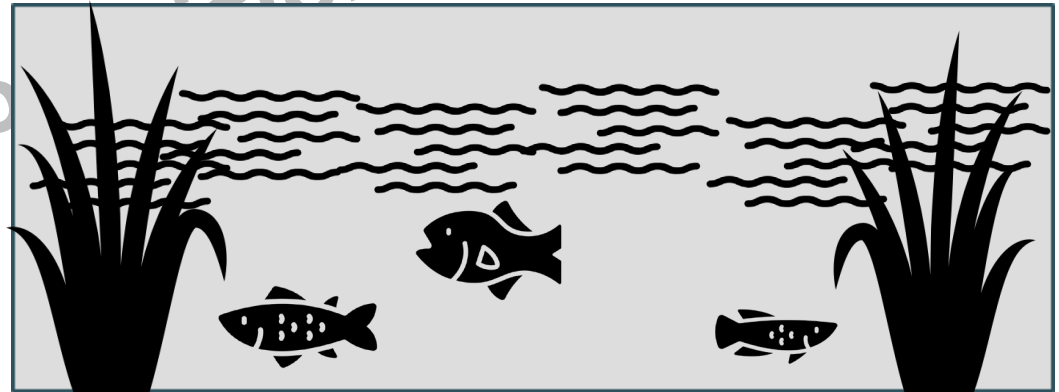


# Objectives

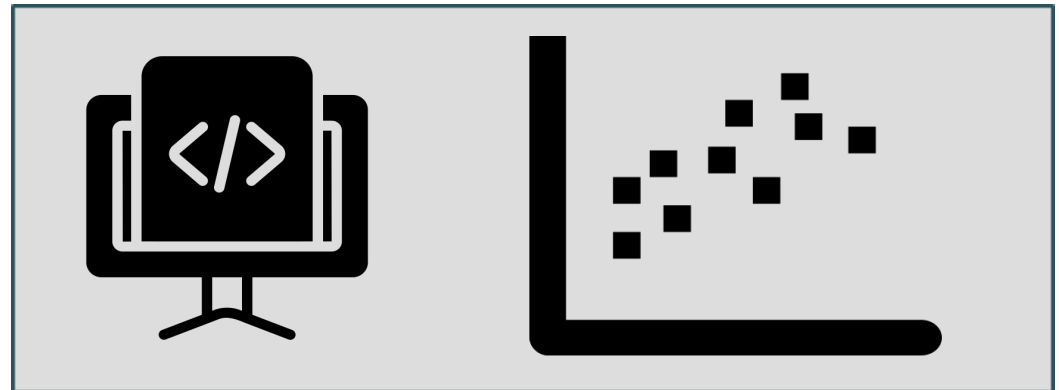
Analyze Dietary Biomarkers



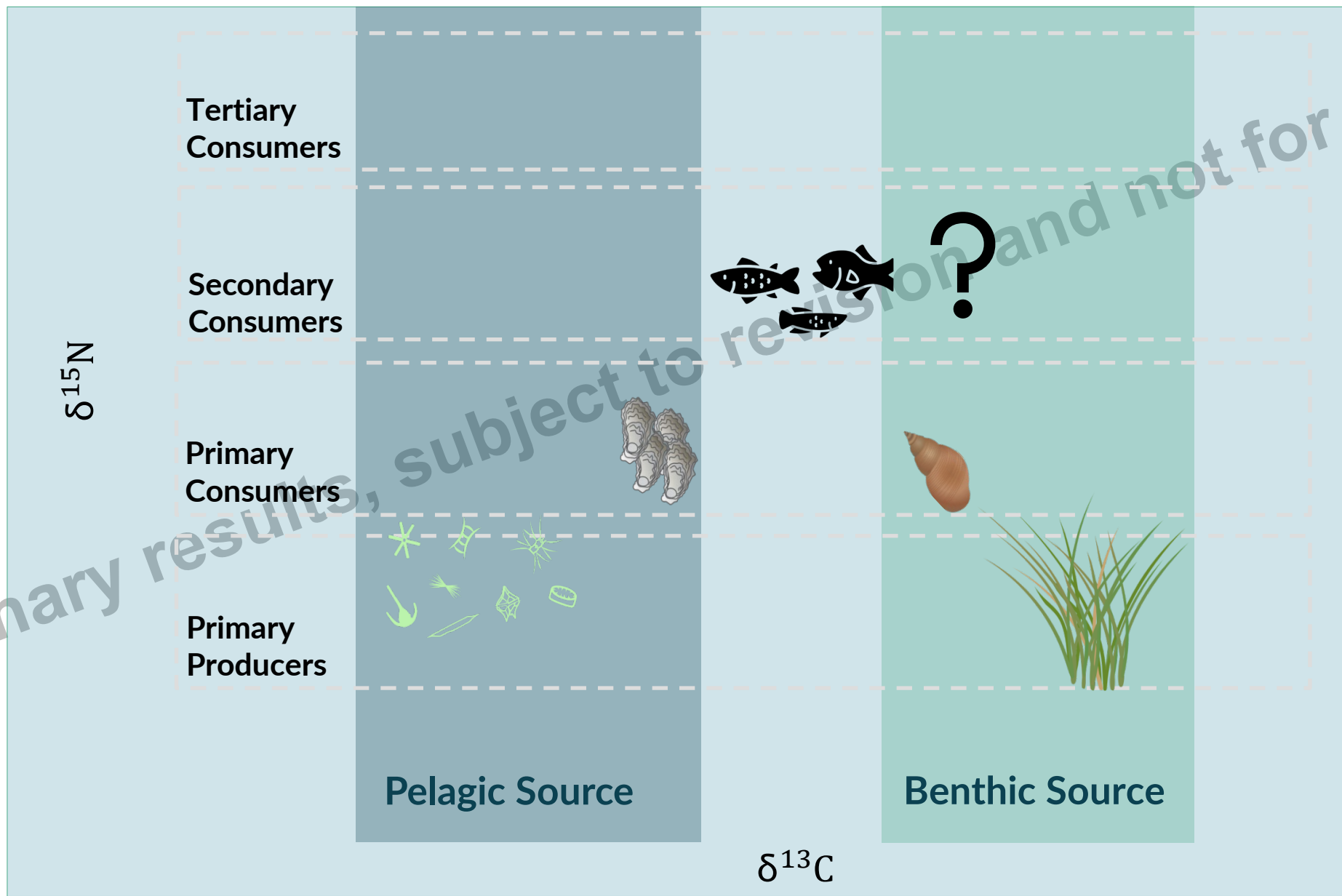
Evaluate Habitat-Use Biomarkers



Integrate both Biomarkers

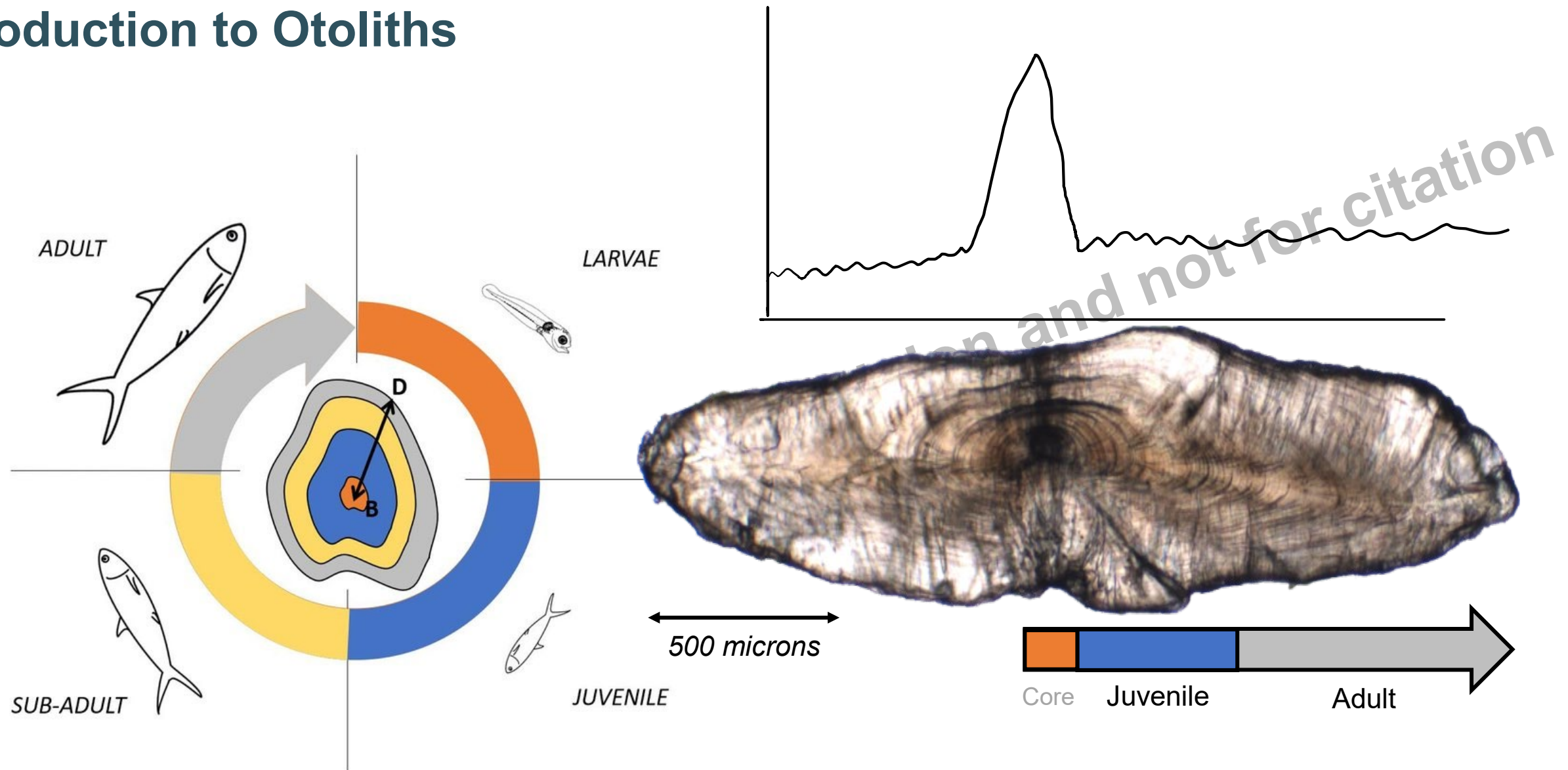


# Introduction and Hypothesis for Dietary Biomarkers





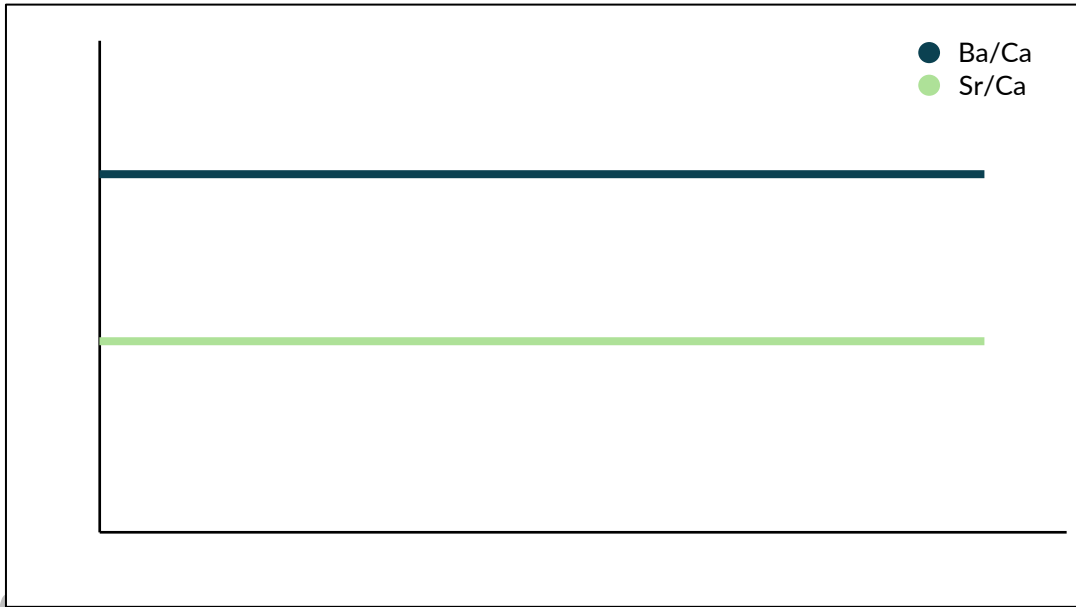
# Introduction to Otoliths



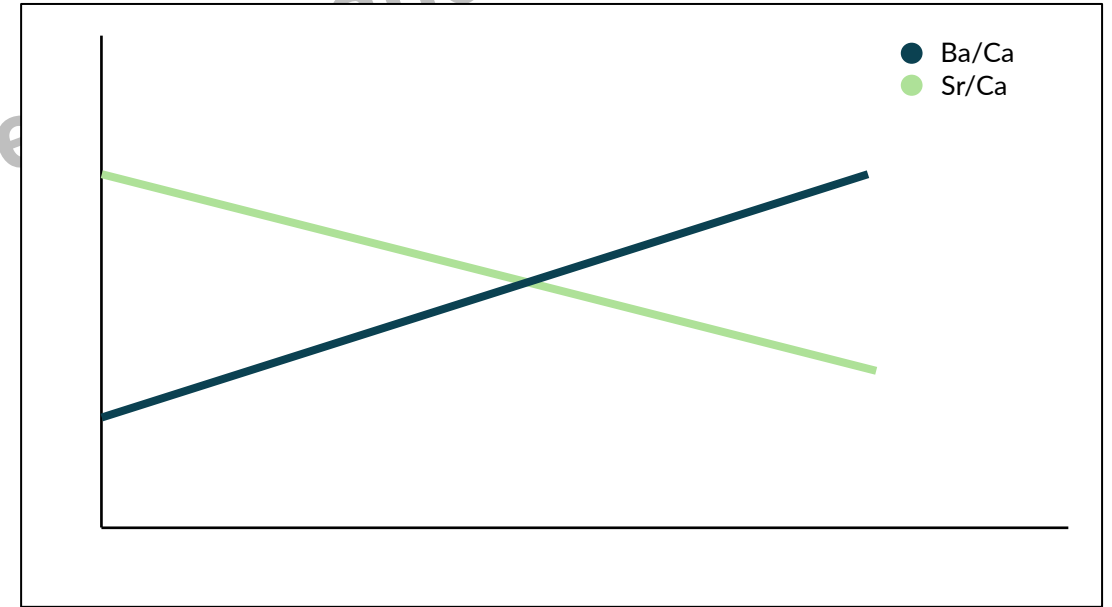
# Hypothesis for the Microchemistry

Resident

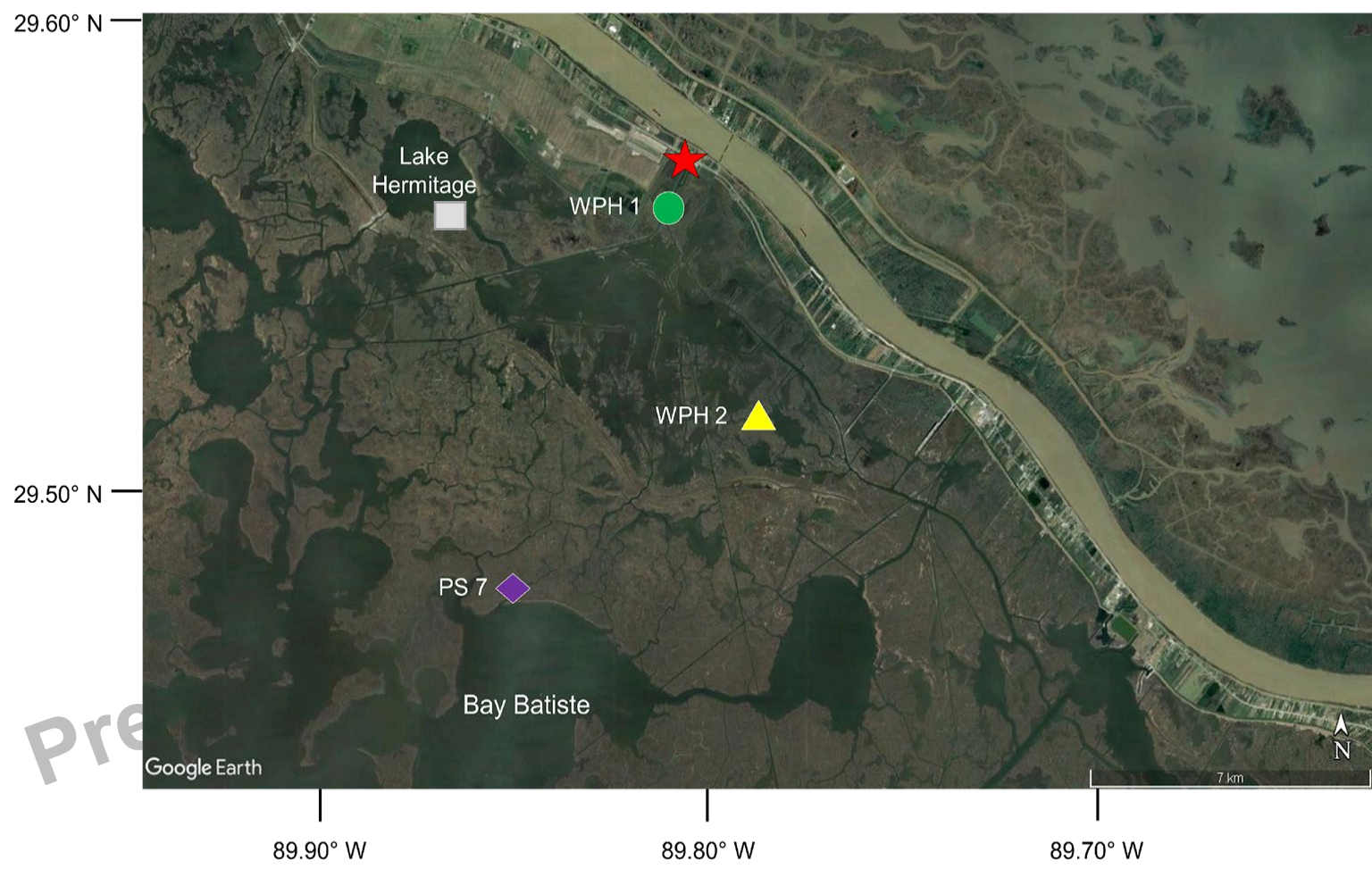
Trace Metal Concentration



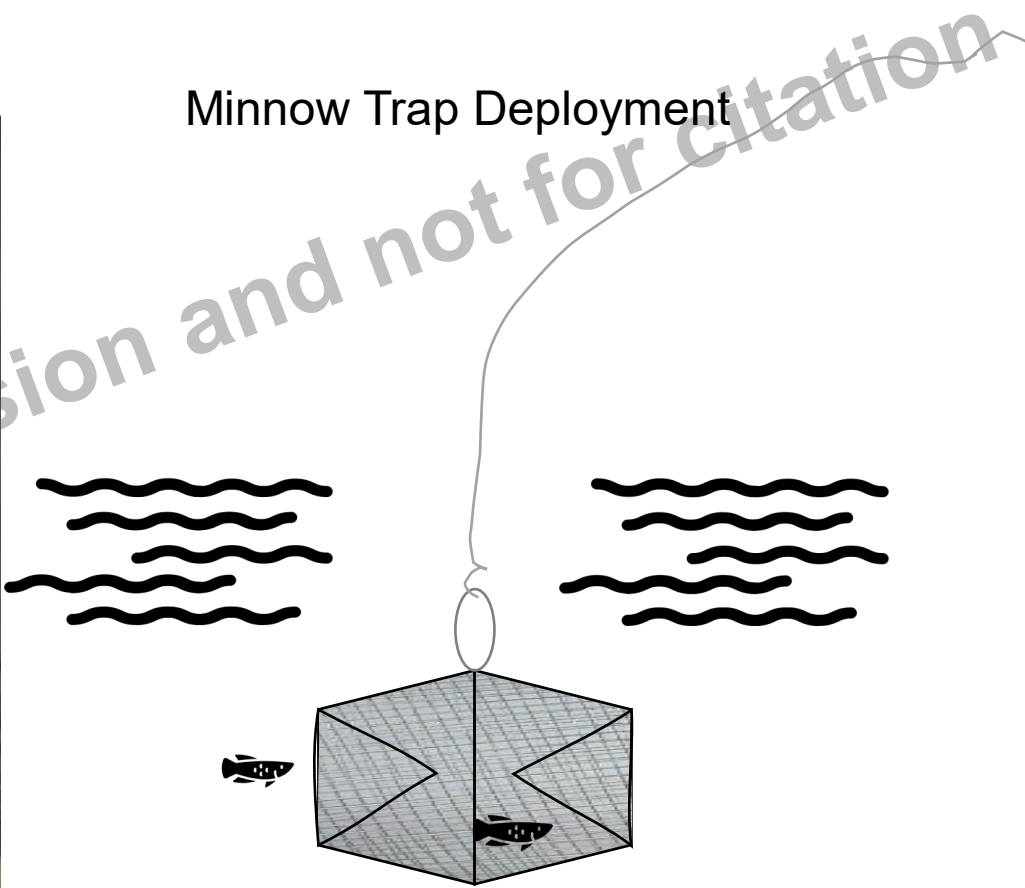
Transient



# Methods

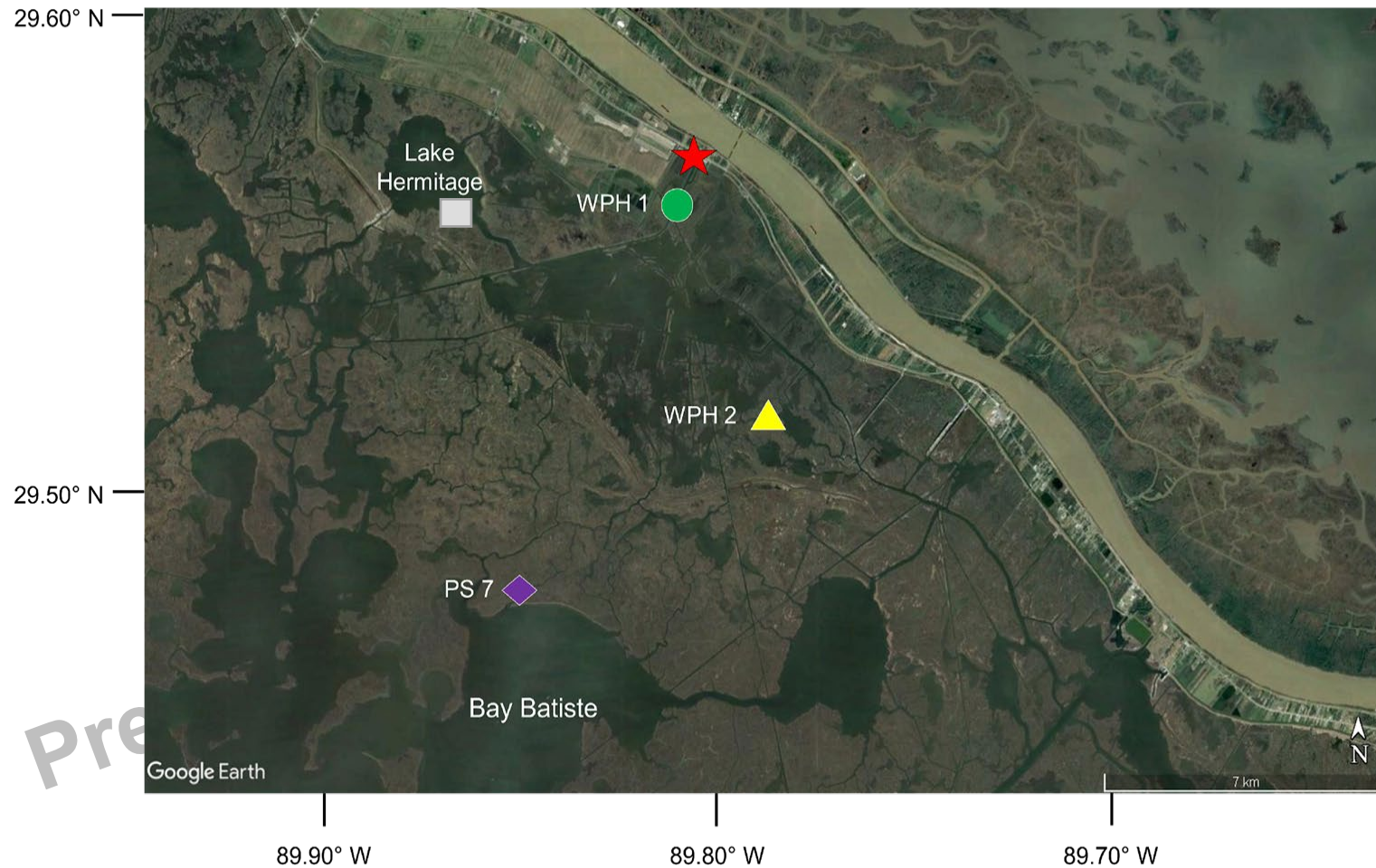


Minnow Trap Deployment

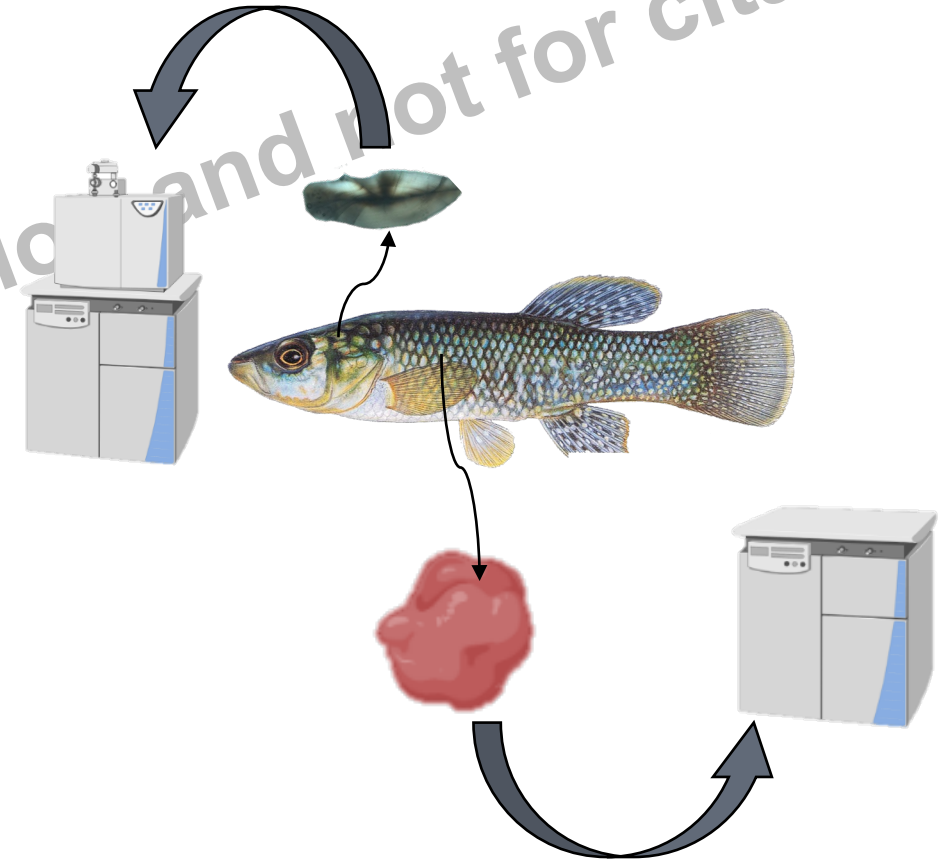




# Methods

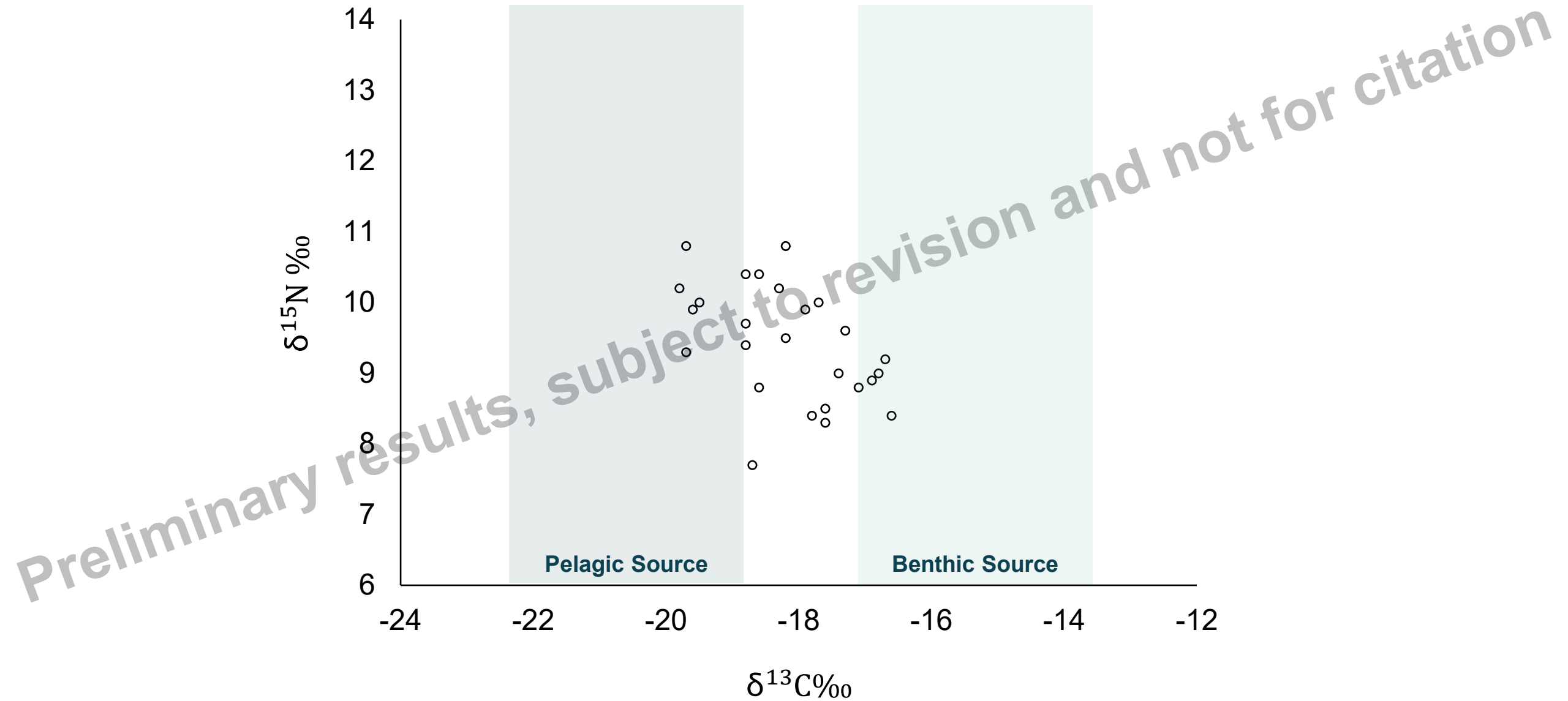


LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry)

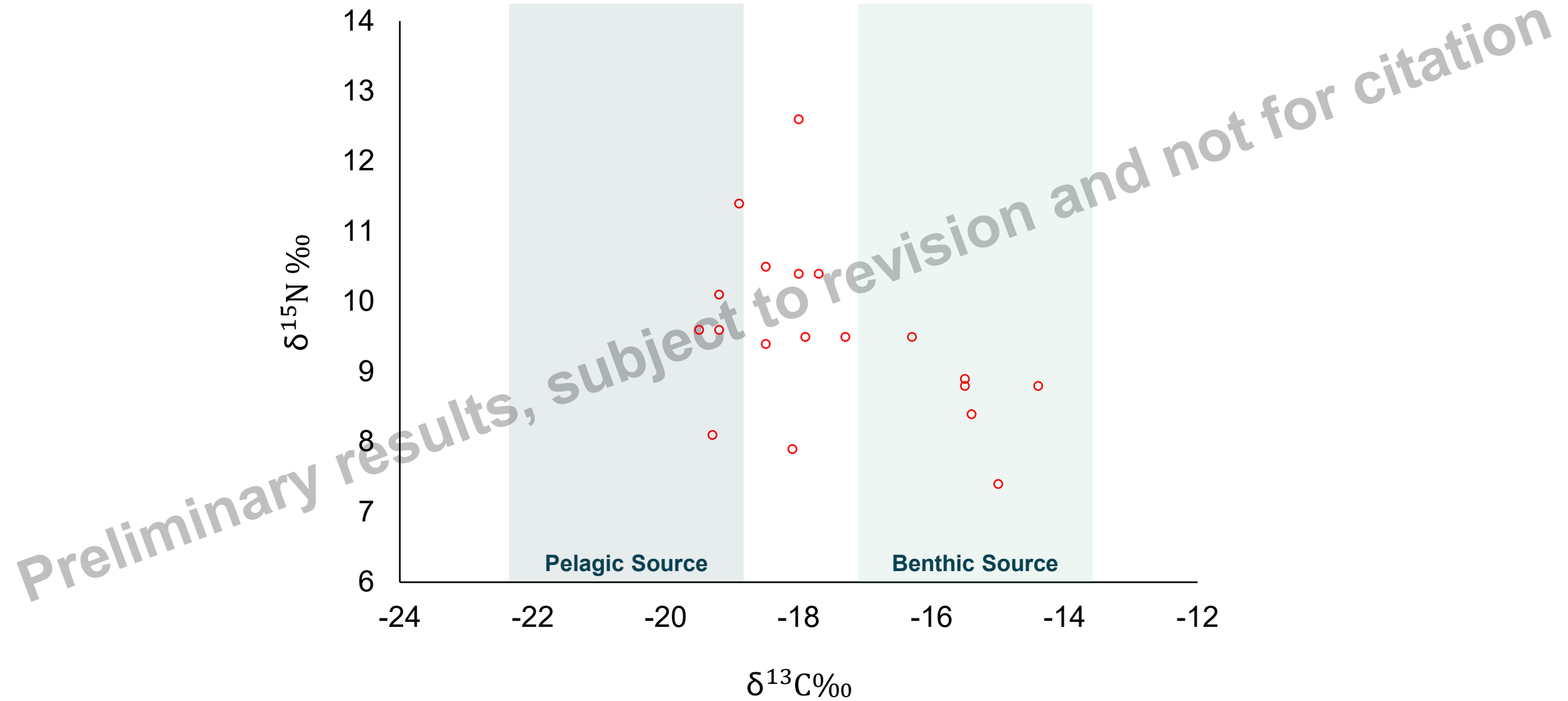


IRMS – Isotope Ratio Mass Spectrometry

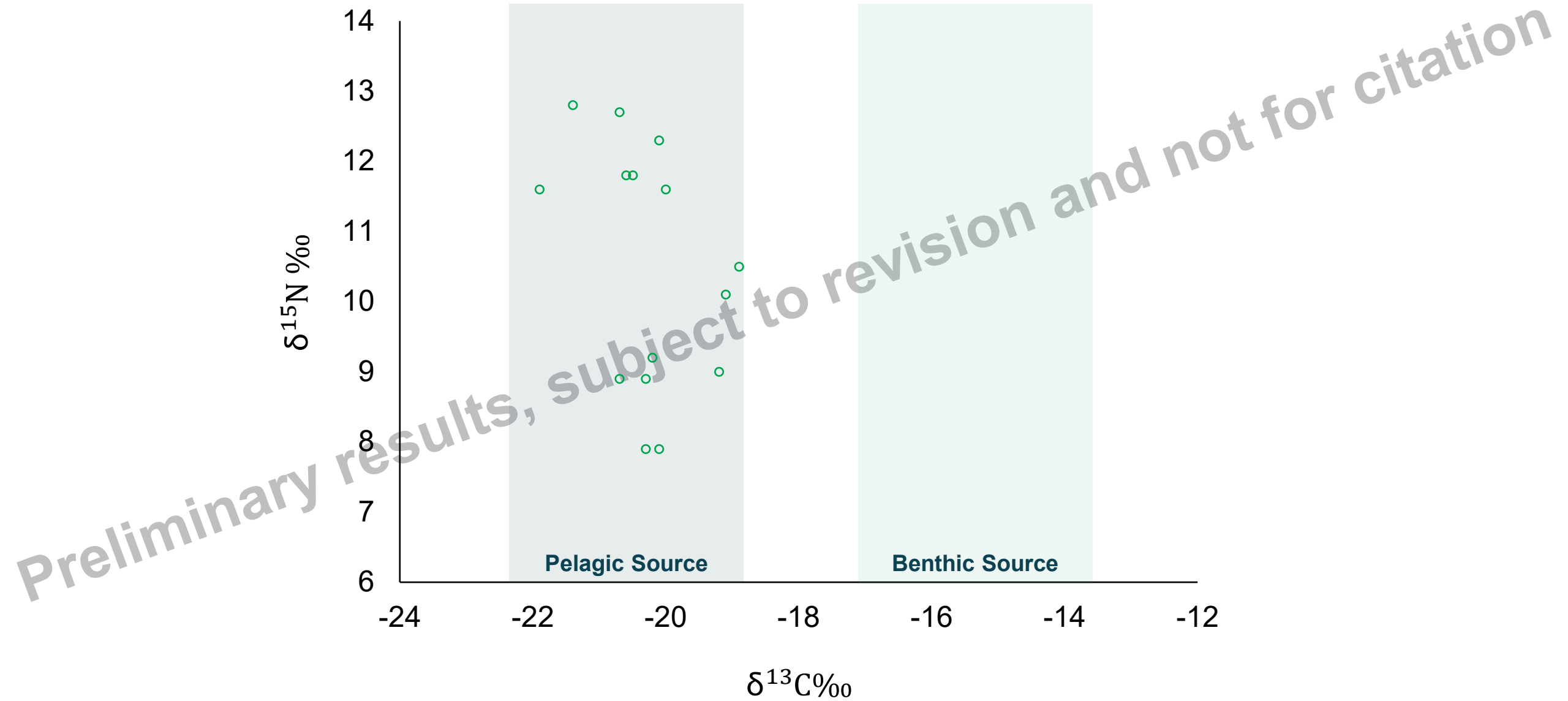
# Gulf killifish SIBER





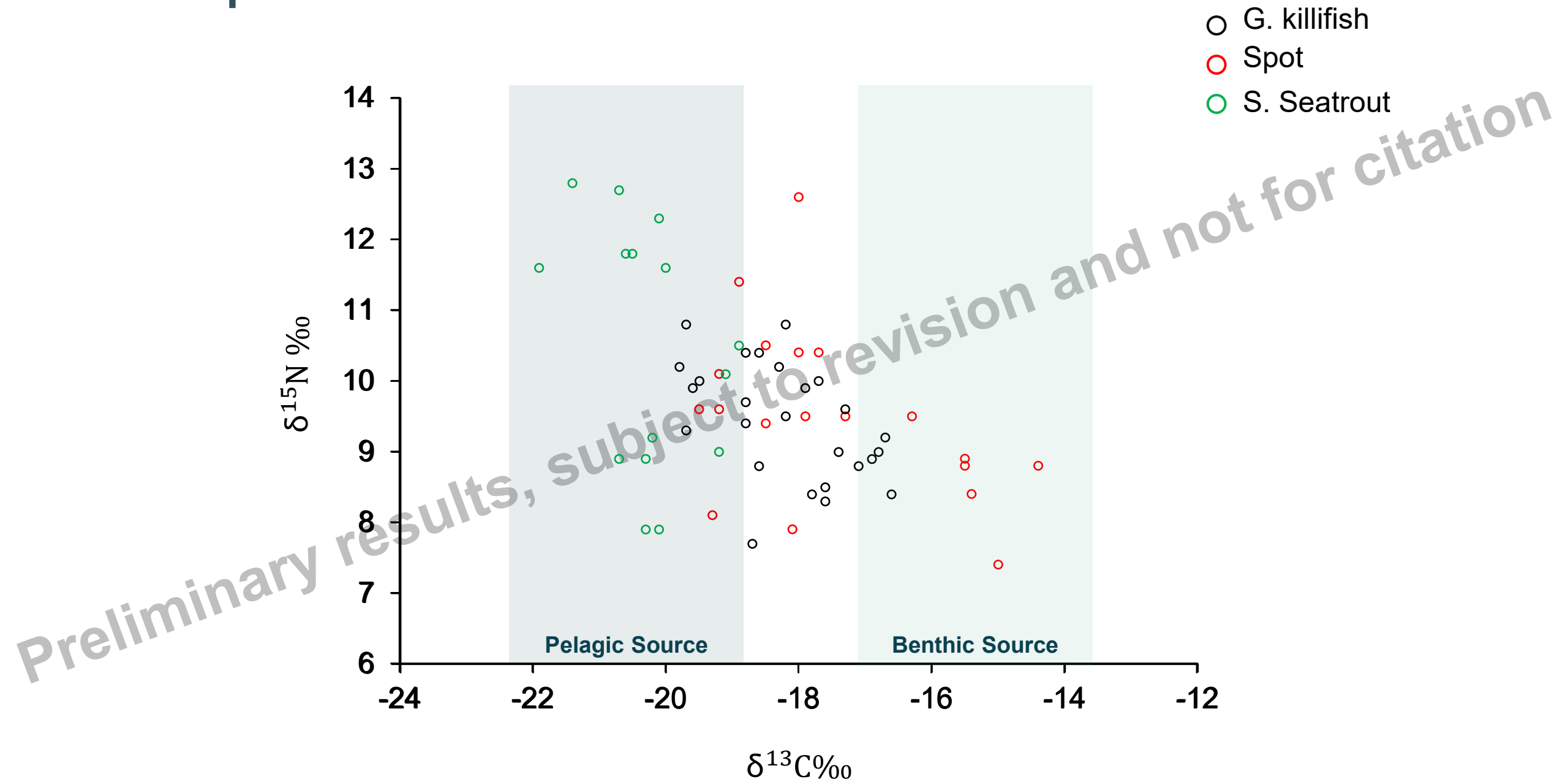


# Sand Sea Trout

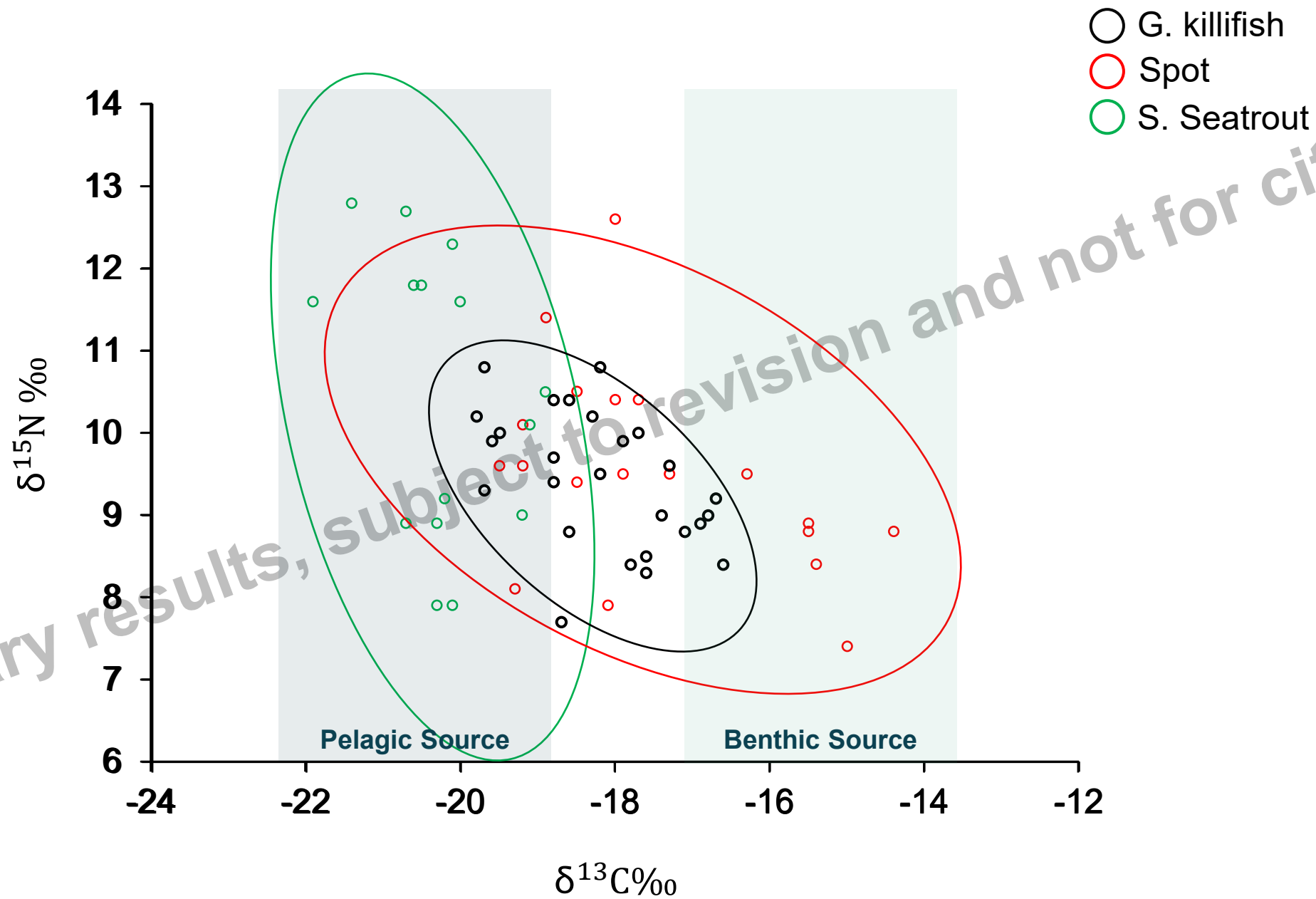




# All three Species

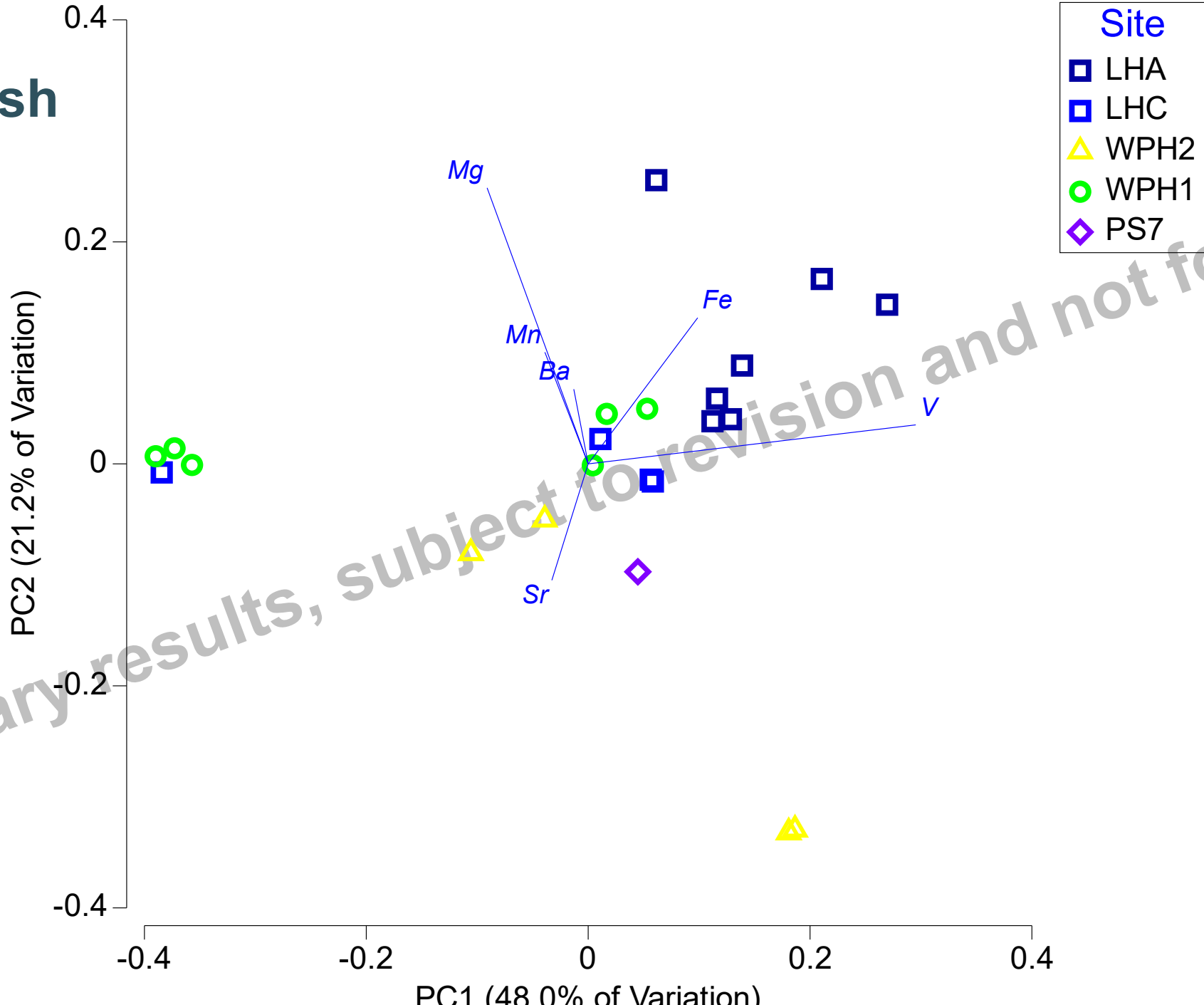


# All three Species, SIBER

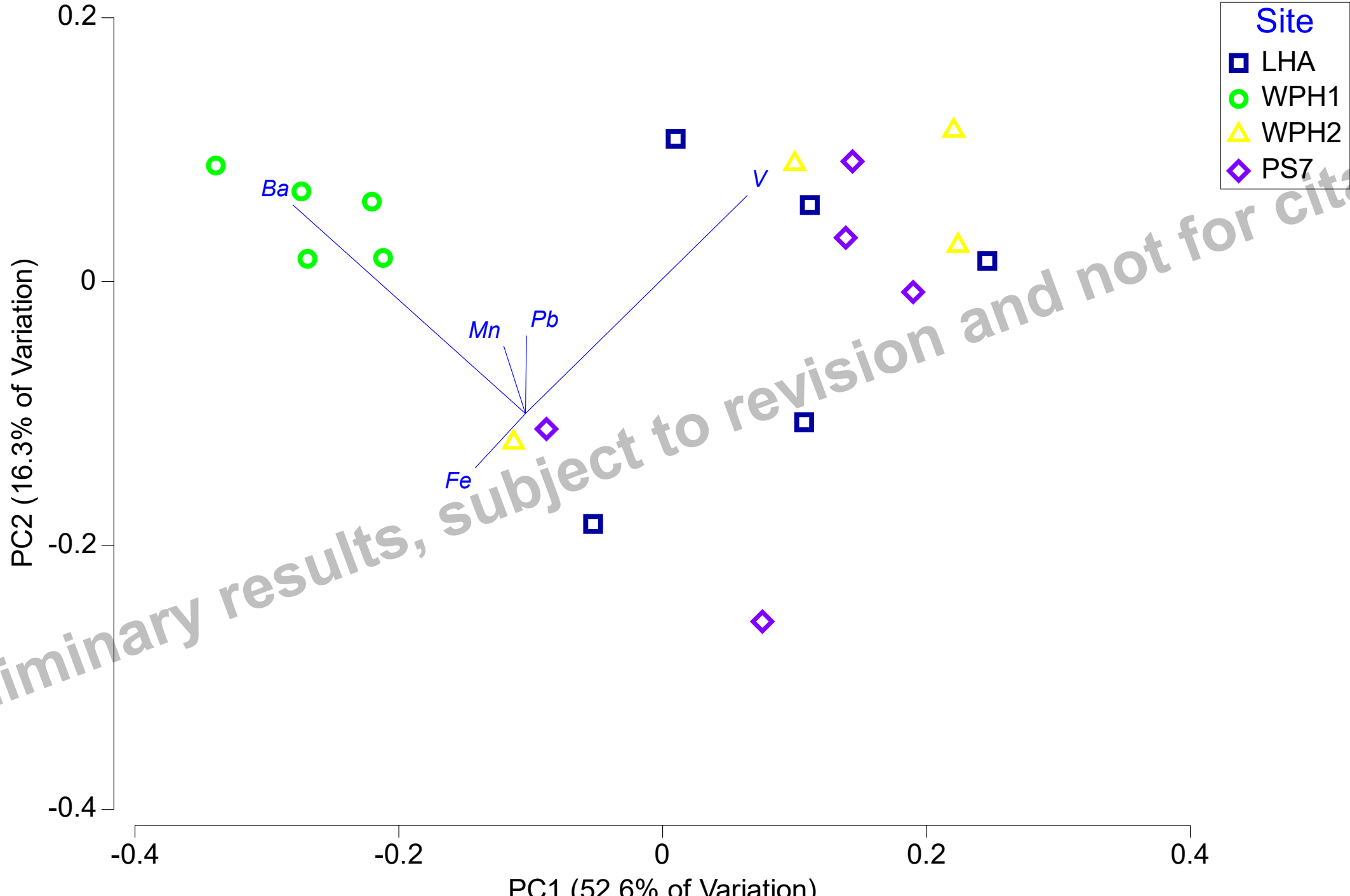




# Gulf Killifish



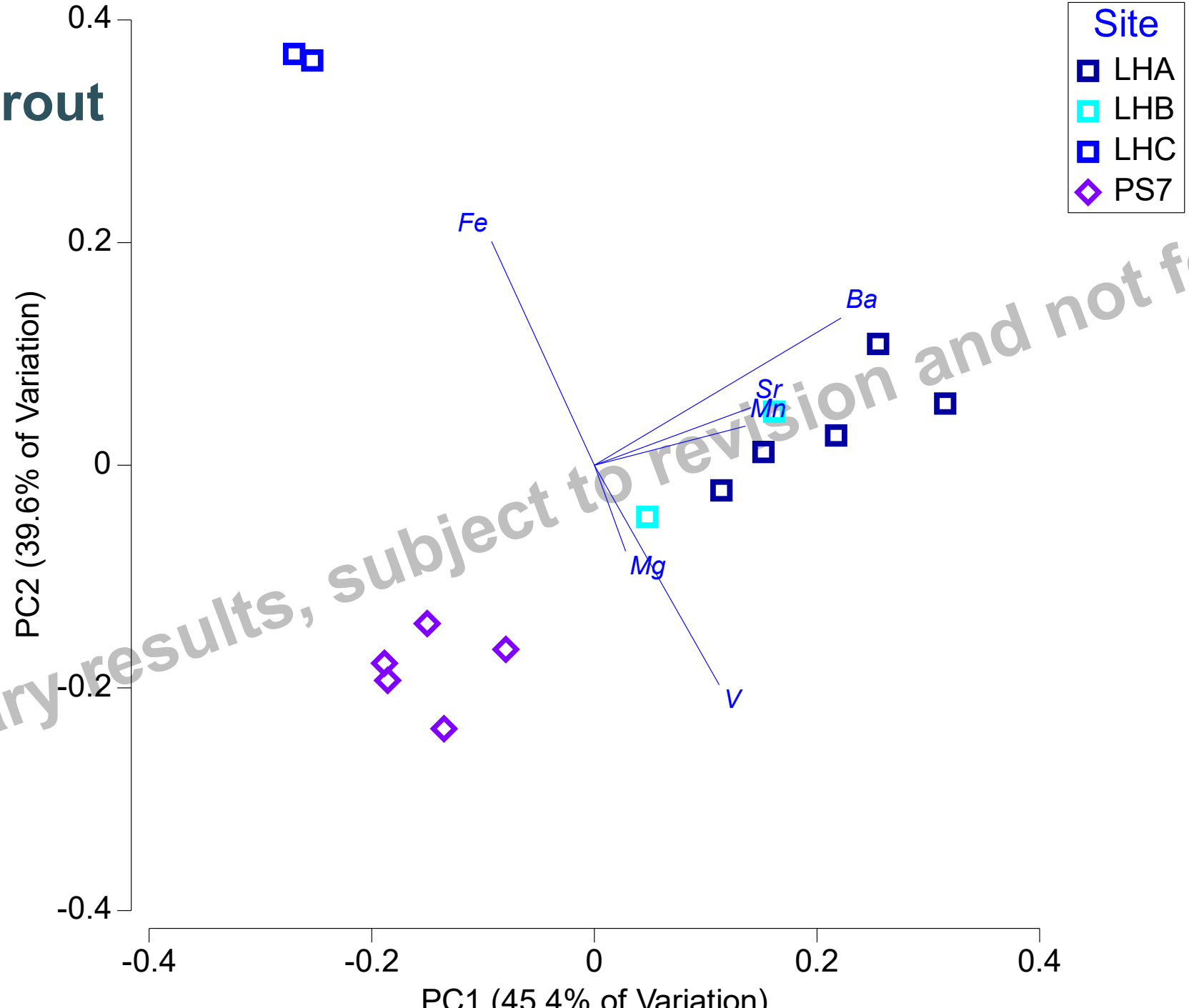
Spot



Preliminary results, subject to revision and not for citation

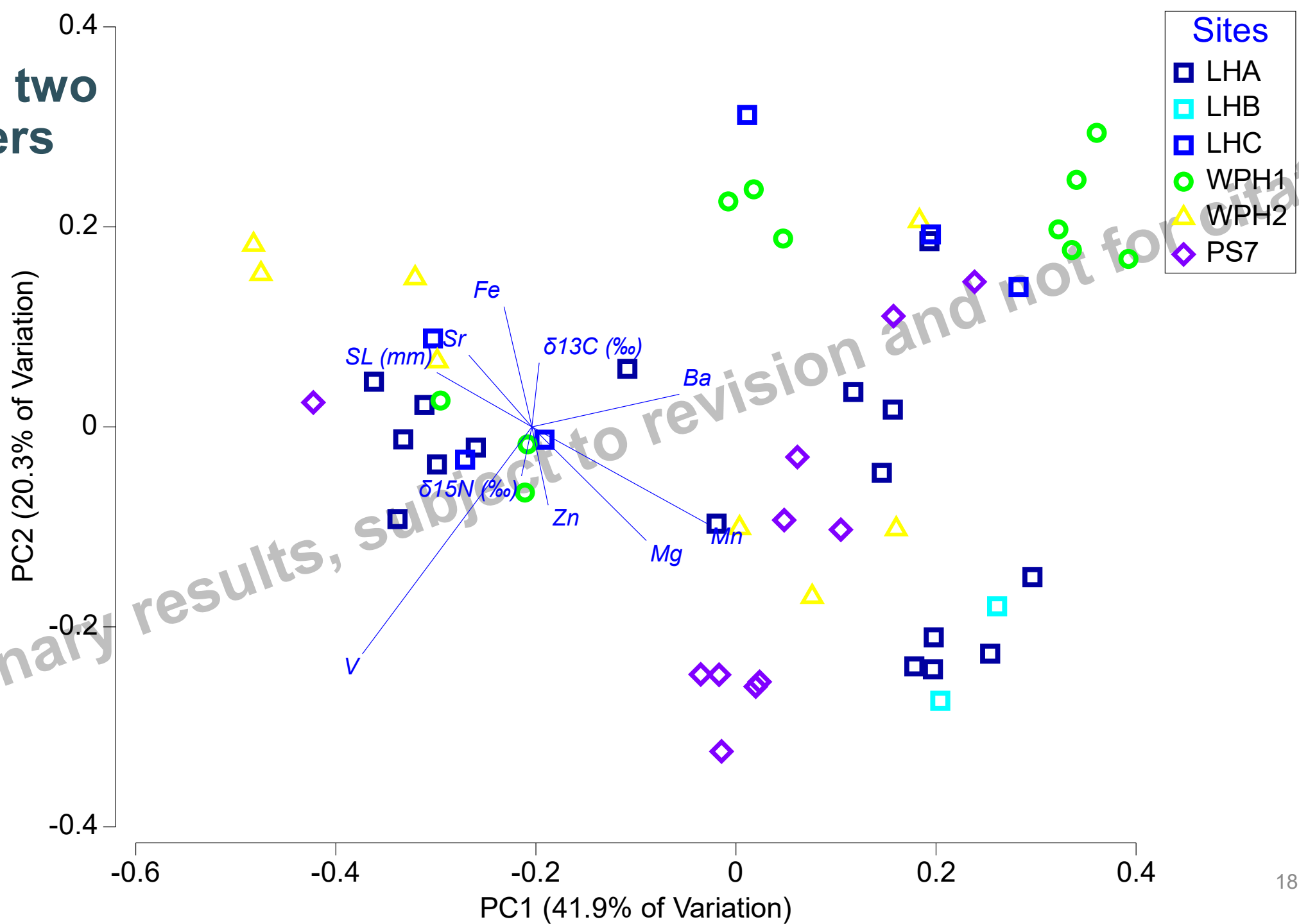


# Sand Sea Trout



Preliminary results, subject to revision and not for citation

Bring the two  
Biomarkers  
together



**In summary,** biomarker integration can be used to better understand these estuarine systems and the species they support

Preliminary results, subject to revision and not for citation



# Summary and Next-Steps:

Biomarker integration can be used to better understand these estuarine systems and the species they support

Conduct temporal comparison between the 2018 (siphon off) and 2021 (siphon on) conditions

# Acknowledgements

This study is part of the Linking Community and Food-Web Approaches to Restoration project, funded by the NOAA RESTORE Science Program. We would like to thank our entire research team for their input and logistical support

The Office of Undergraduate Research and Honors College at UNC Charlotte provided funding for KB.

Preliminary results, subject to revision and not for citation