

Evaluating pectoral spine microchemistry for identifying stocked Channel Catfish and inferring fish size

Morgan Winstead¹, Allison Asher², and Gregory Whitedge¹

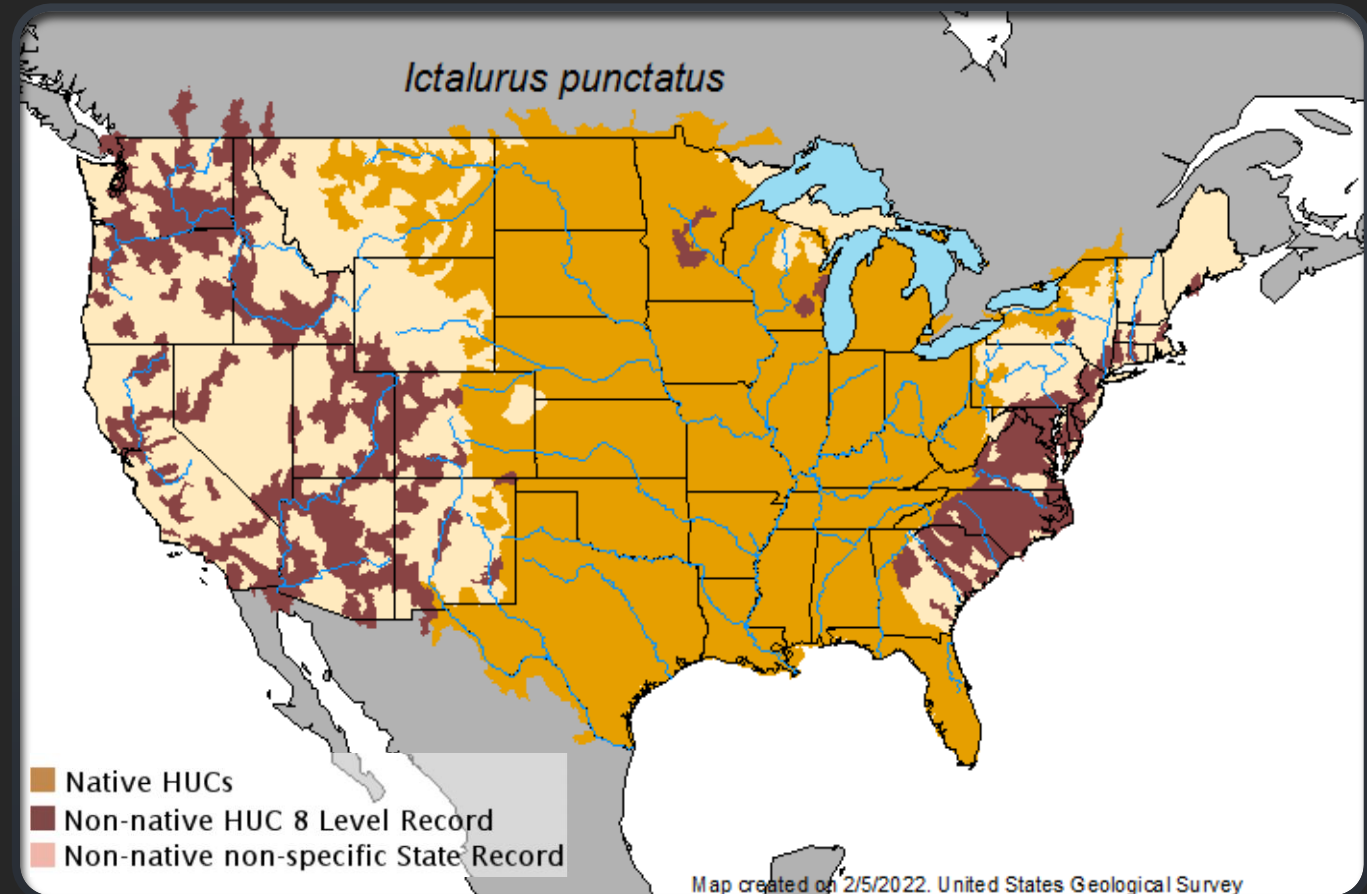
¹Center for Fisheries, Aquaculture, and Aquatic Science, Southern Illinois University, Carbondale, IL 62901

²Arkansas Game and Fish Commission, Jonesboro, AR 72404



Background

- Channel Catfish occur in most of the United States and are used for recreational and commercial purposes
- They are the third most pursued freshwater fish in the United States
- To supplement high harvest & low reproduction many are stocked in lakes & rivers





Background

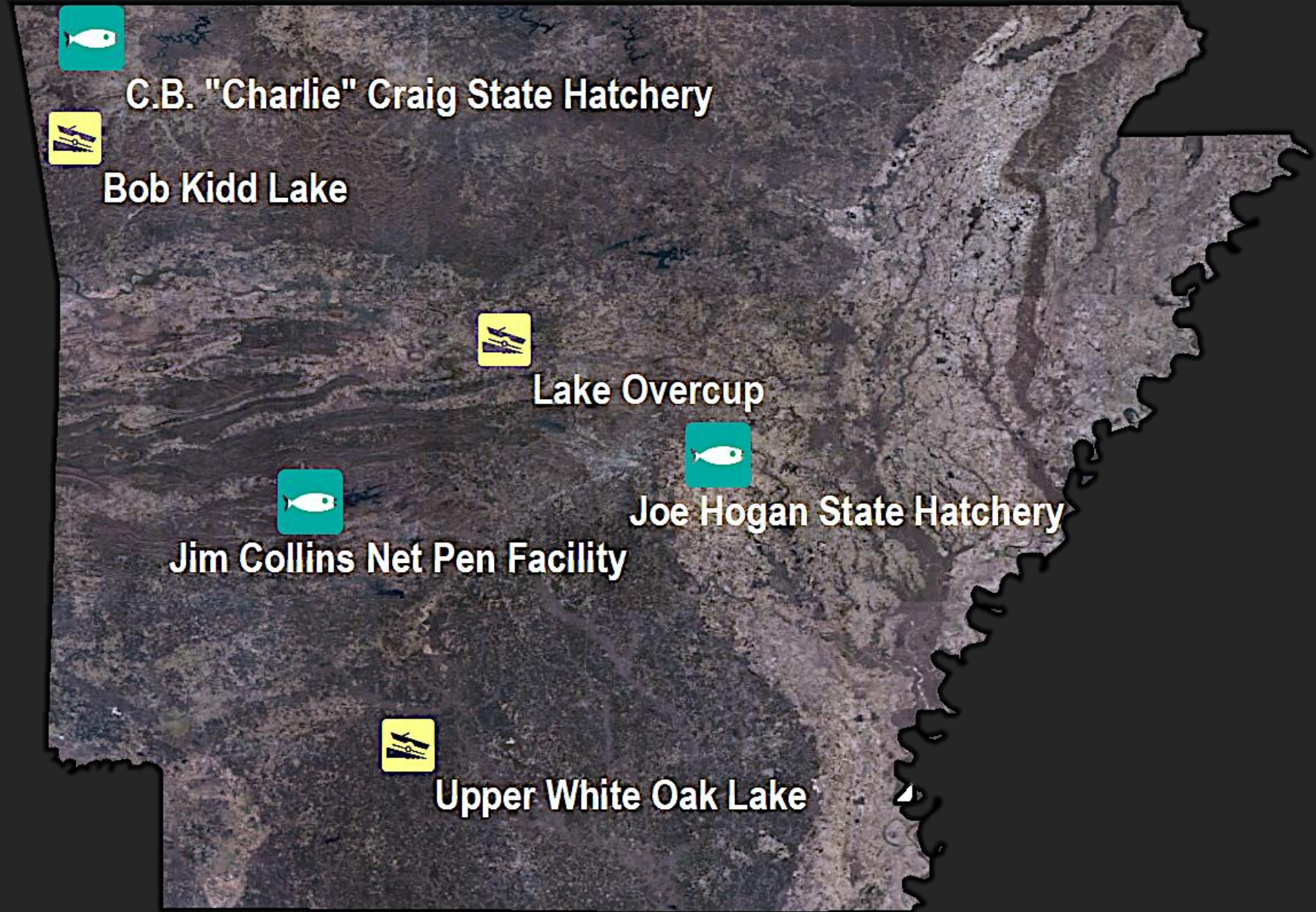
- Within Arkansas Channel Catfish accounting for 18% of sport fishing efforts
- AGFC hatcheries produce up to 1.3 million catfish each year to provide anglers with increased angling opportunities
 - Variety of sizes are stocked
 - Fingerling- 1-3 inches
 - Yearling- 8-10 inches
 - Catchable- 12-14 inches and 1 pound
- Knowing the contribution of stocked fish to the wild population and size at stocking is beneficial for future management and stocking of lakes

Goal of this Research

- I. Evaluate the application of pectoral spine microchemistry for distinguishing stocked and wild Channel Catfish from lakes in different regions
- II. Identify contribution of stocking and size of individuals
- III. Use these results to better inform stocking and management strategies of Channel Catfish



Study Locations

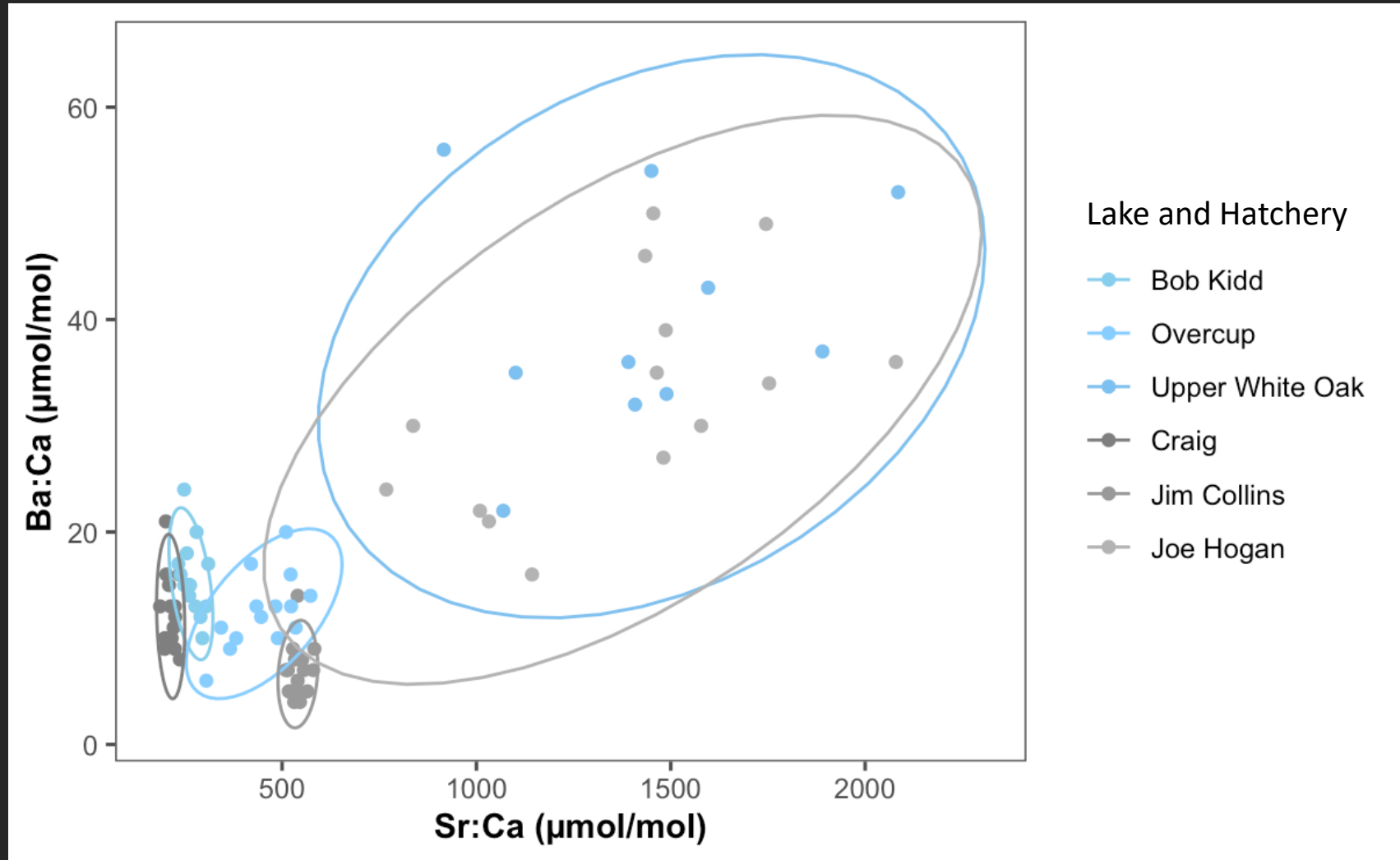


Methods

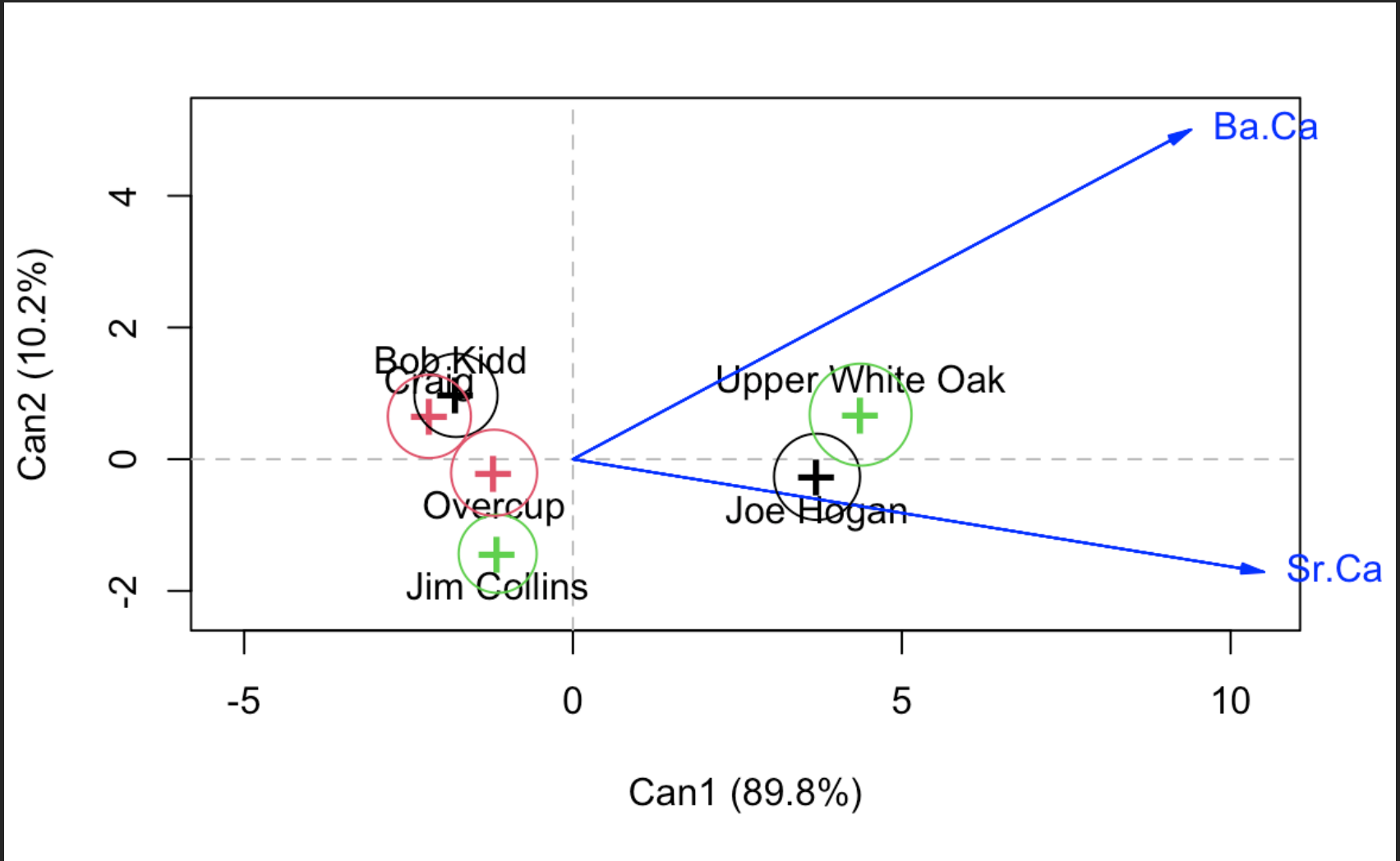
- Channel Catfish spines were sectioned and analyzed for Sr:Ca and Ba:Ca along a transect from core to edge using laser ablation ICPMS
- Created a known source location dataset from all spine edge signatures
- Used known source dataset in a linear discriminant function to infer natal origin



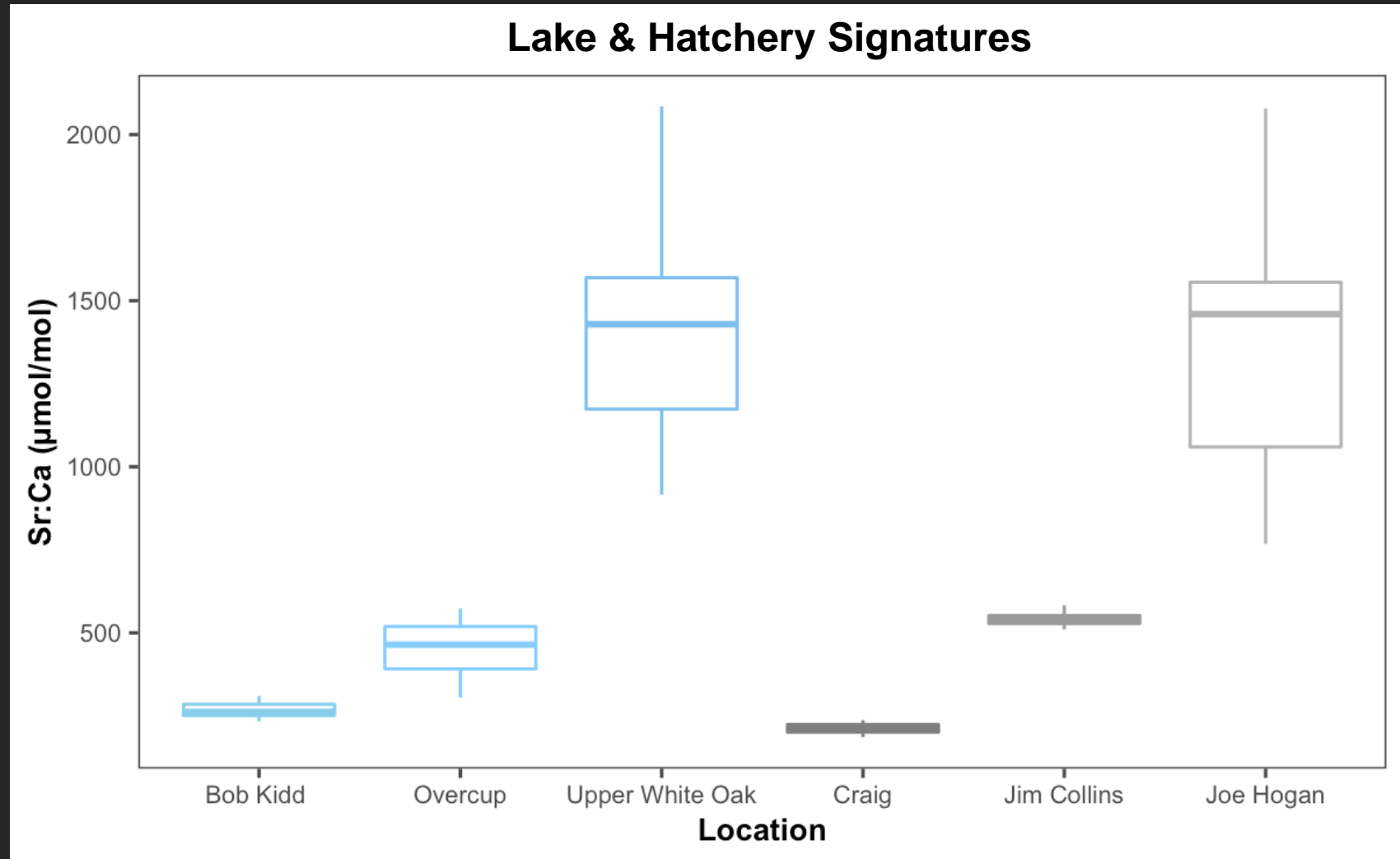
Goal I- Signatures Across Locations



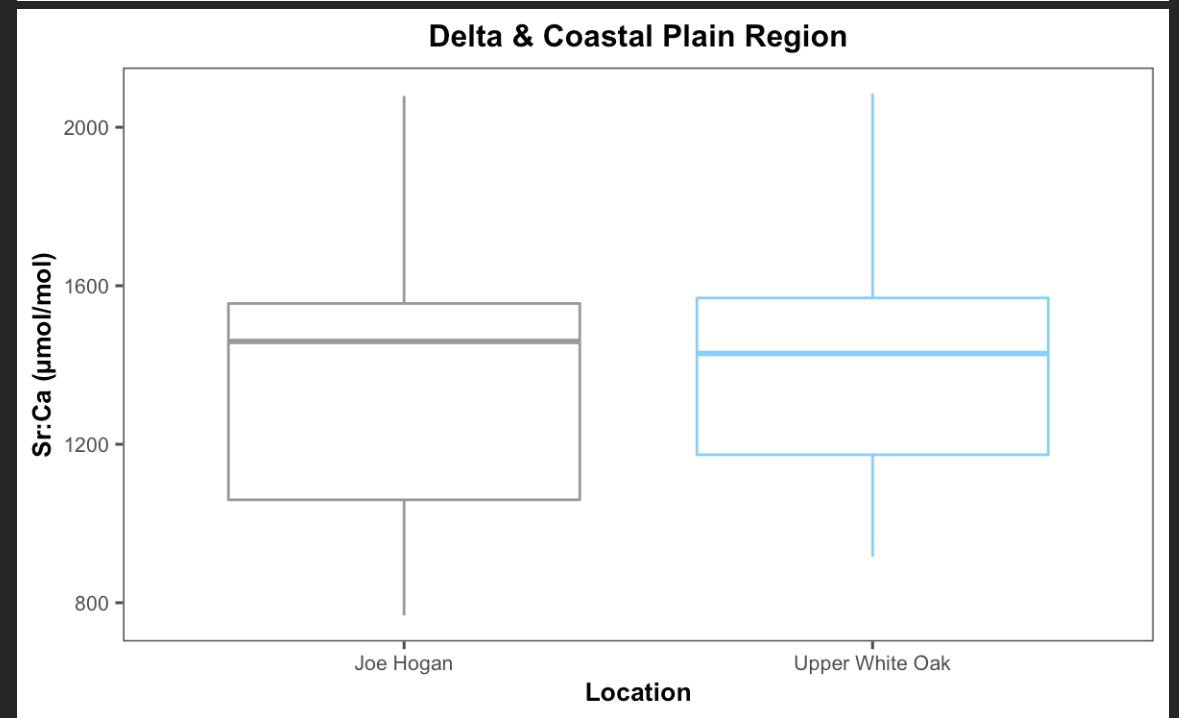
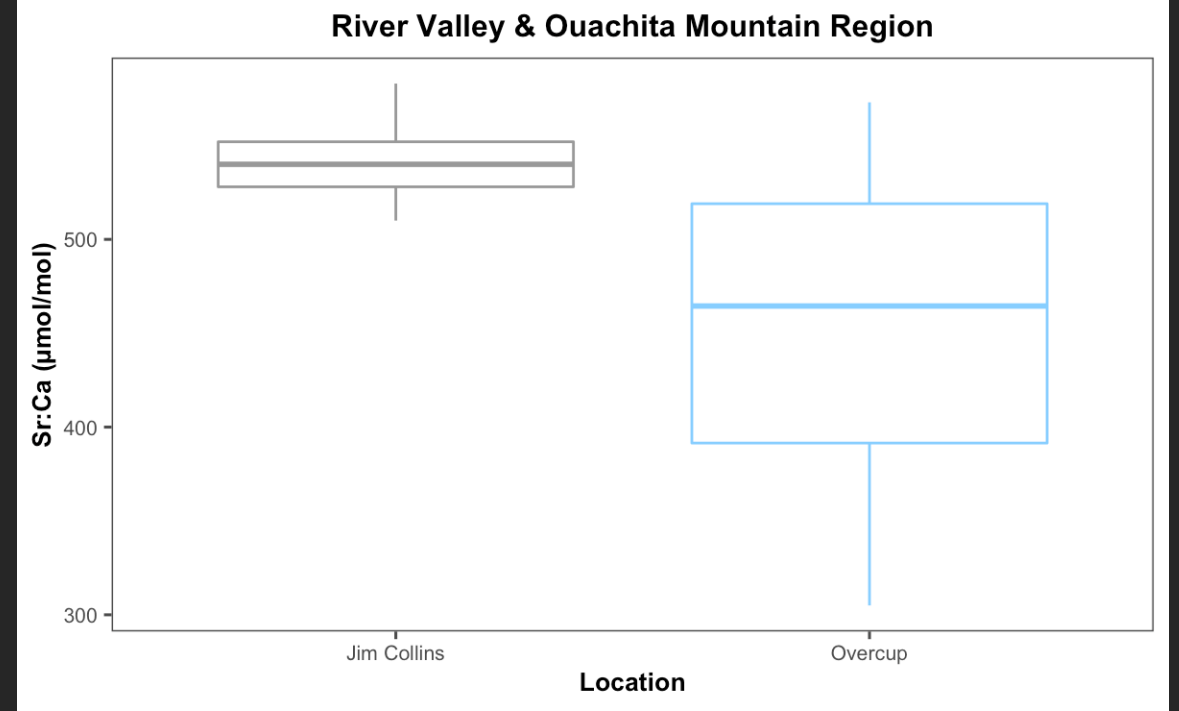
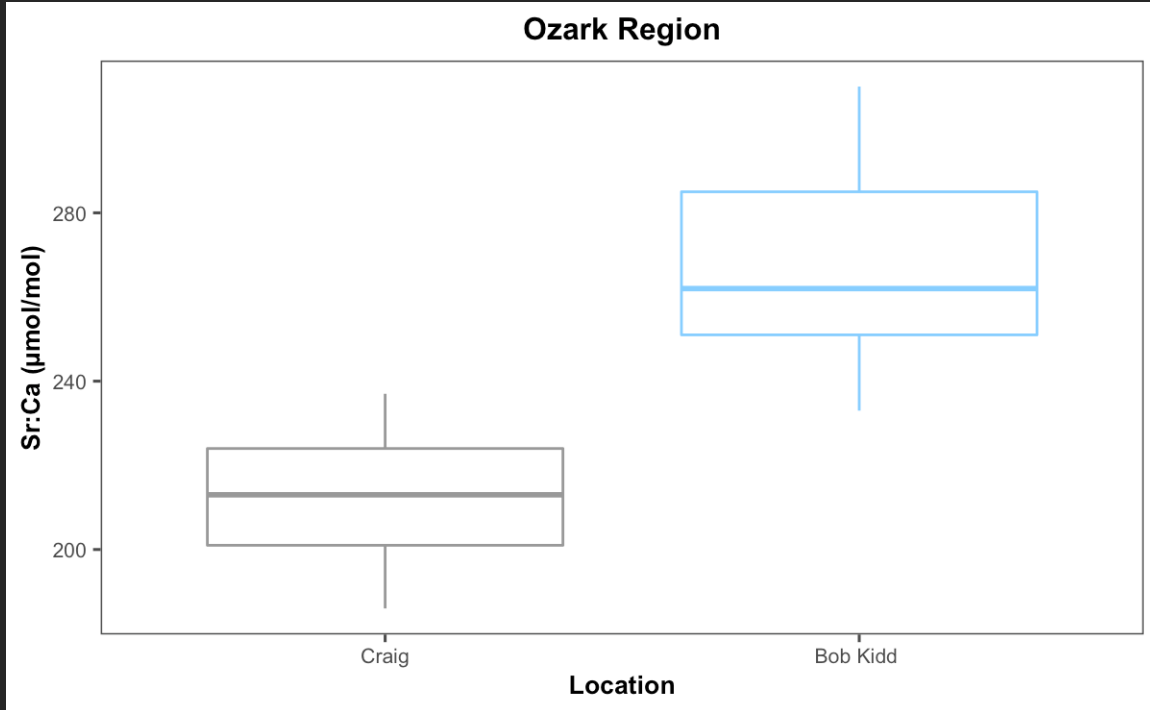
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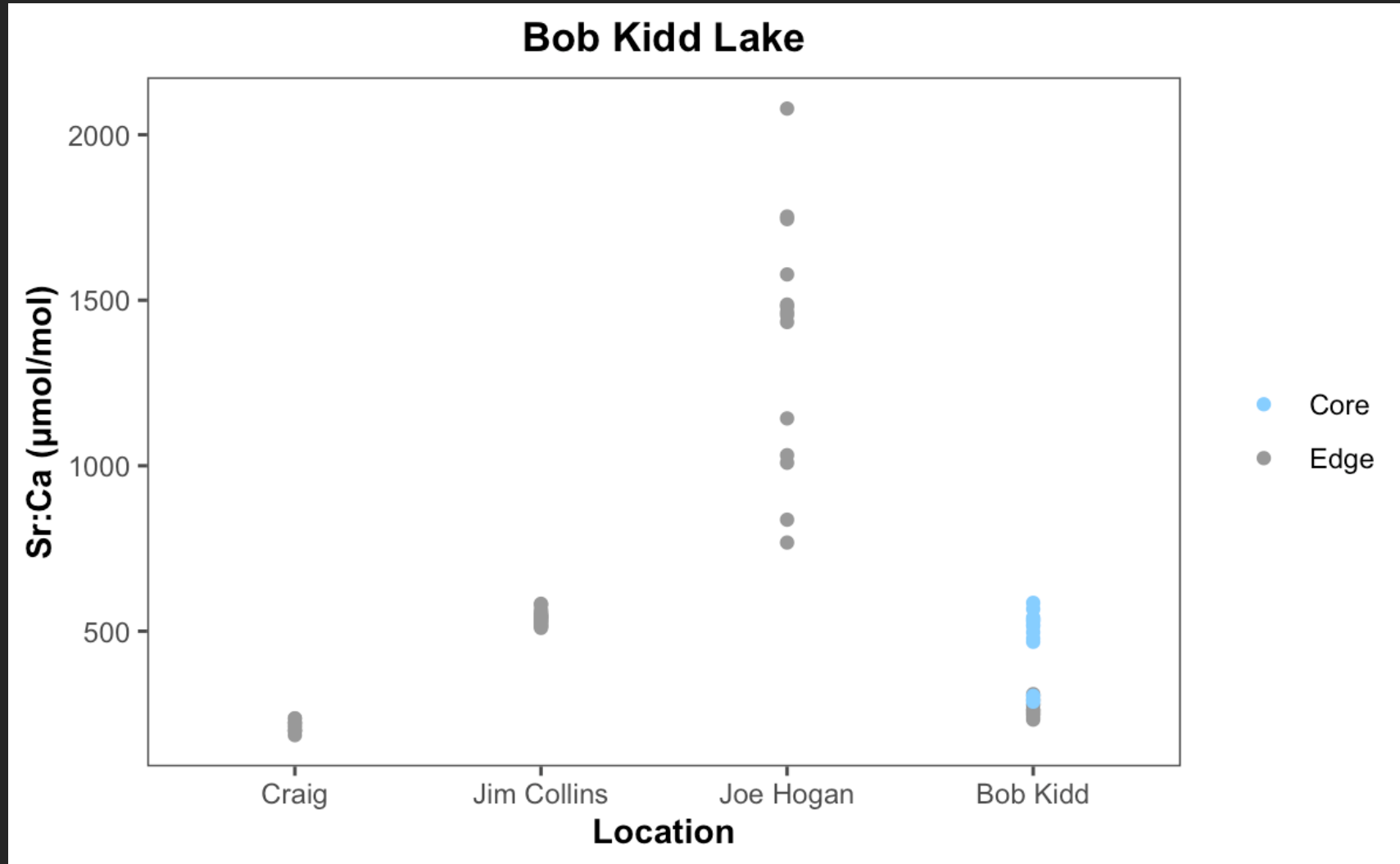
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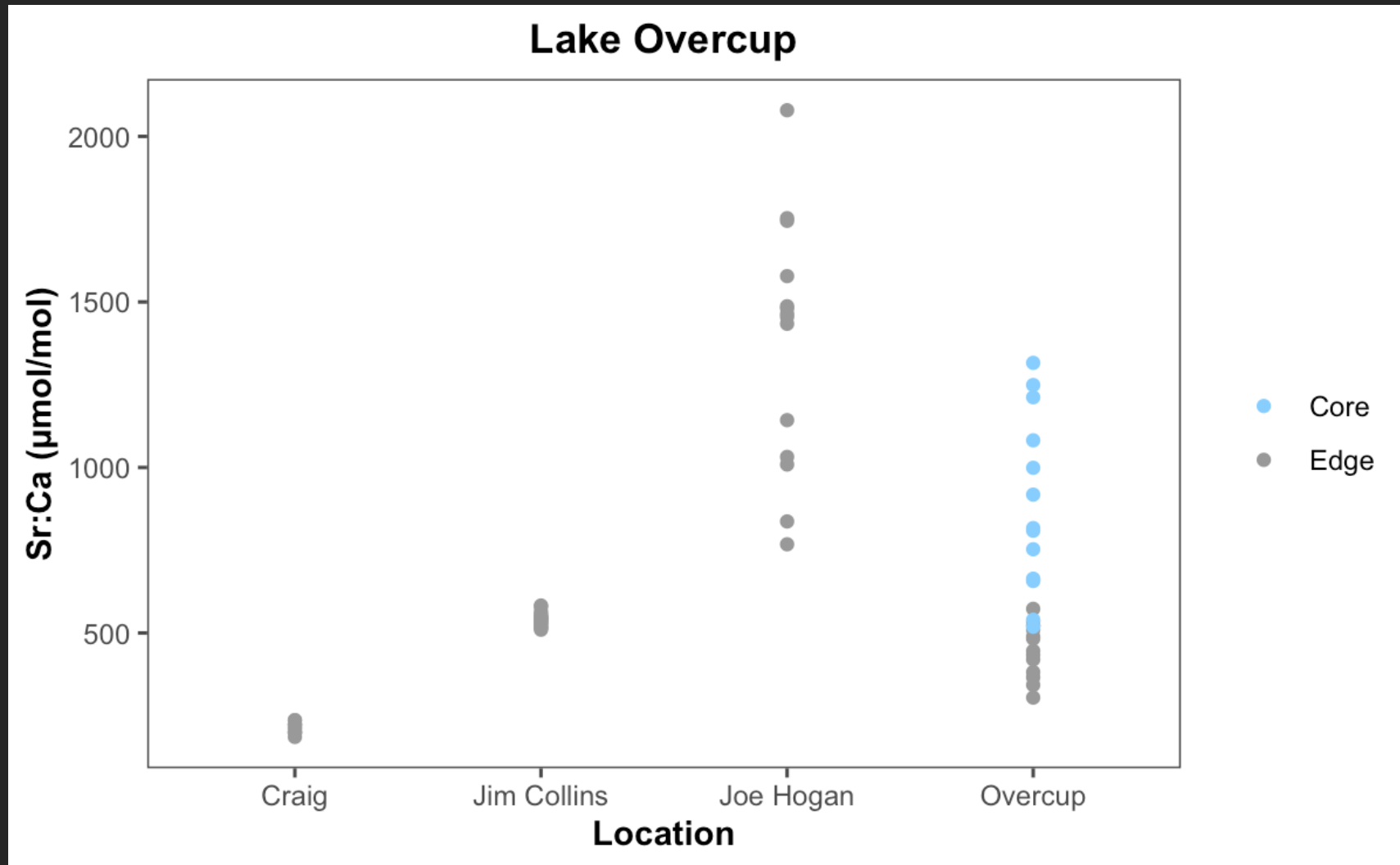
Region Signatures



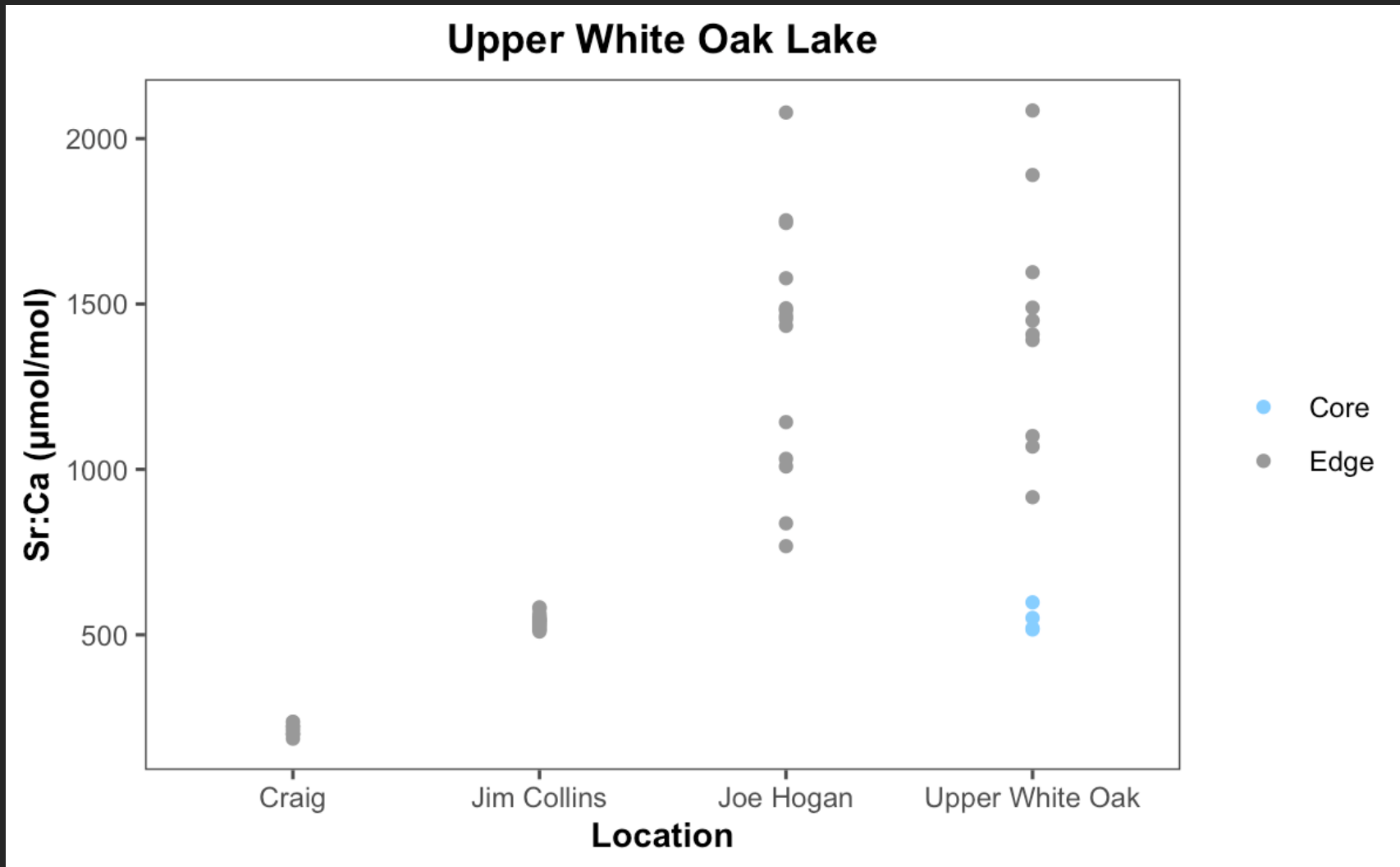
Goal II- Contribution of Stocked Fish



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Goal II- Contribution of Stocked Fish



A Channel Catfish is shown being released from a metal pipe. The fish is positioned at the end of the pipe, with water splashing around its head and mouth. The pipe has several circular openings with red caps. In the background, there is a white building with a red roof and some trees under a clear blue sky.

Goal II- Contribution of Stocked Fish

- In our initial sample, 93% of Channel Catfish collected from Bob Kidd and Overcup lakes were stocked based on fin spine core microchemistry
- 80% of the stocked fish were from stocking at catchable size

Conclusion

- Differences in elemental signatures among study locations reflect geological differences across the state
- Most catfish in our initial sample were stocked, which could be due to small sample size
- Stocked fish being primarily catchable size could be due to higher survival of larger fish or few fingerlings being stocked in the lake

Future Direction

- This information is important for the allocation of hatchery produced fish and biologists that are creating management plans for the lakes
- Plan to process more samples to increase sample size and possibly add more lakes



Acknowledgements

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- Center for Fisheries Aquaculture and Aquatic Sciences
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Questions:
morgan.winstead@siu.edu

