ENVIRONMENTAL FACTORS THAT REDUCE PREDATION BY NONNATIVE FISHES ON NATIVE FISHES OF THE COLORADO RIVER

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Outline

- Introduction
- Methods
- Experimental Design
- Results
- Conclusion
- Why we should care about the Results
- Recommendations
Introduction

- The predation causing rapid extirpation of native species in most locations
- In Lake Mead fishes are able to survive and recruit despite the presence of nonnative
- Indicates specific environmental conditions may help reduce predation vulnerability
Introduction

- No study has dealt with bonytail and environmental conditions that may reduce predation.
- This study quantified predation vulnerability of juvenile bonytail to largemouth bass and green sunfish in relation to cover type.
Methods
Treatment groups
- Clear (Control)
- Turbidity (500 NTU & 1000 NTU)
- Artificial Water Colorant
- Woody debris
- Aquatic Vegetation
- Rock Piles
Clear Treatment
Artificial colorant
Aquatic Vegetation
Woody debris
Methods
Experimental design

- 150 Gallon tank
- N=12 BTC
- N=4 LMB or GRS
- Its respective treatment
Results

Largemouth Bass

- There was a statistically significant difference between trial groups with largemouth bass as
  - one-way ANOVA ($F(6,15) = 6.2514$, $p = 0.0019$).
  - Tukey–Kramer HSD tests revealed that turbidity is the only trial group that is statistically unique ($\alpha = 0.05$, $q^* = 3.38$).
Results
Largemouth Bass
Results

Green sunfish

- There was no statistically significant difference between trial groups with green sunfish as determined by one-way ANOVA ($F(4,10) = 3.0794, p = 0.0679$)
Results
Green Sunfish

- Although not statistically significant there is still a clear pattern.
Conclusion

- Turbidity above 1,000 NTU reduced predation vulnerability by up to 50%, with no other treatment significantly reducing predation mortality.
Why care about Results?

- Help explain why Bonytail are found one year after release in Turbid Bill Williams River.
- Help suggest new stocking locations for Bonytail. Seek out high turbid areas of the river.
Recommendations

- If funding permits, perform the same experiment with razorback suckers.
- This could help explain why Razorback are found at the Lake Mead inflow.
Questions?