



THE SAN ANTONIO RIVER AUTHORITY FRESHWATER MUSSEL PROGRAM



Committed to Safe, Clean, Enjoyable Creeks and Rivers.

Holistic Mussel Project

- Determine freshwater mussel densities and species richness in the San Antonio River Basin

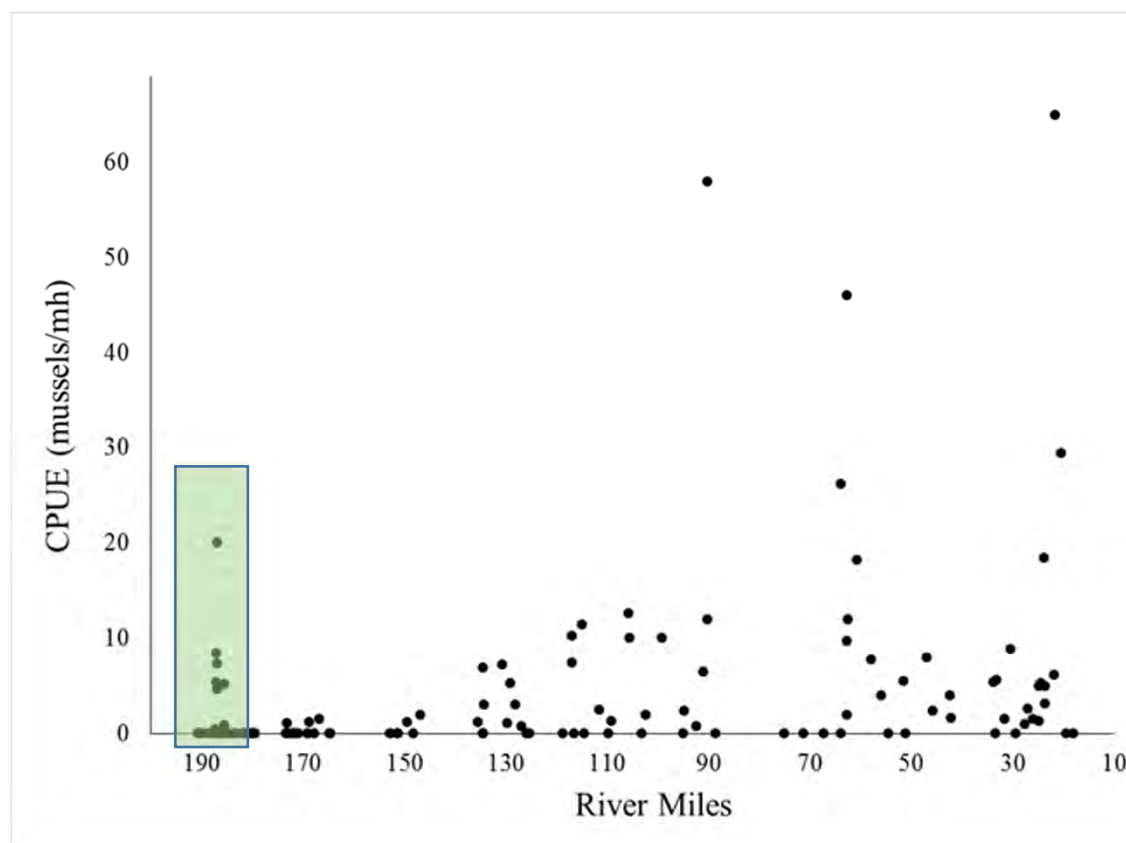


Holistic Mussel Project

- Identify mussel species throughout the SAR basin
- Quantitative and qualitative surveys
- Over 250 sites
- 13 species identified
- Habitat surveys
 - Substrate type
 - Water velocity



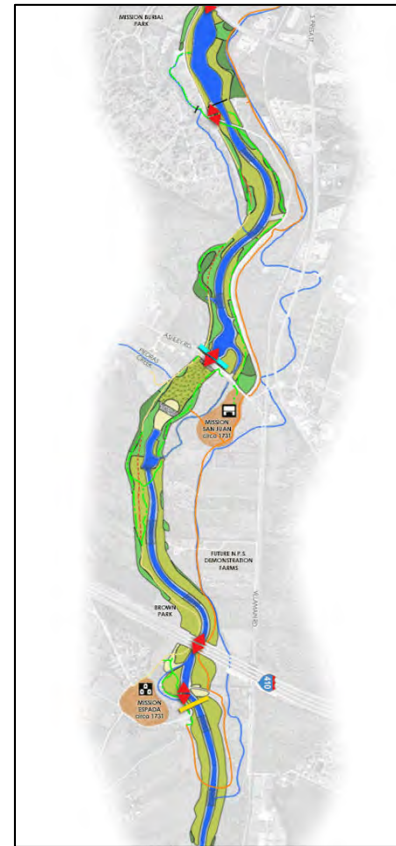
Holistic Mussel Project



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The Upper San Antonio River

- Freshwater mussels were historically present in the Upper San Antonio River
- Mostly extirpated because of urbanization
- Relict populations remain in the remnant channels
- Ecosystem restoration of an 8-mile stretch



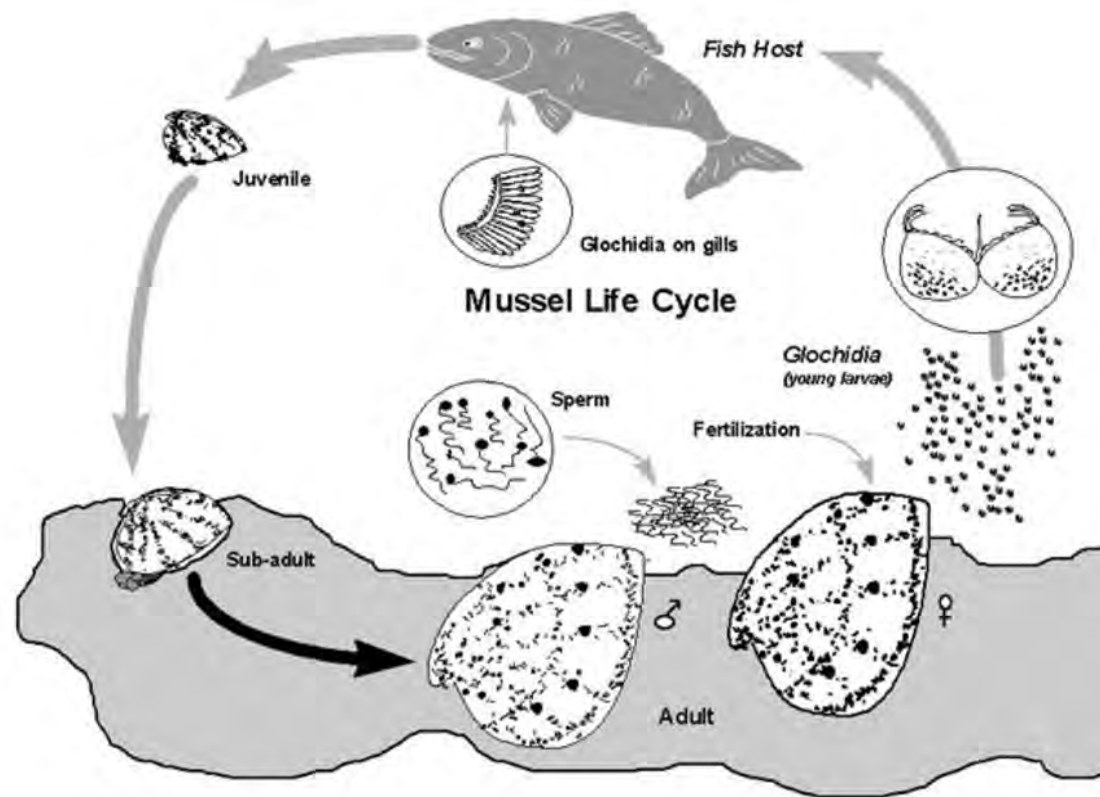
The Upper San Antonio River

- Restoration is a means for improved biological resiliency
- Is it enough to sustain historic residents to the stream?





Determining Reintroduction Feasibility



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Species of Interest



Yellow Sandshell



Threeridge



Pistolgrip



Pimpleback



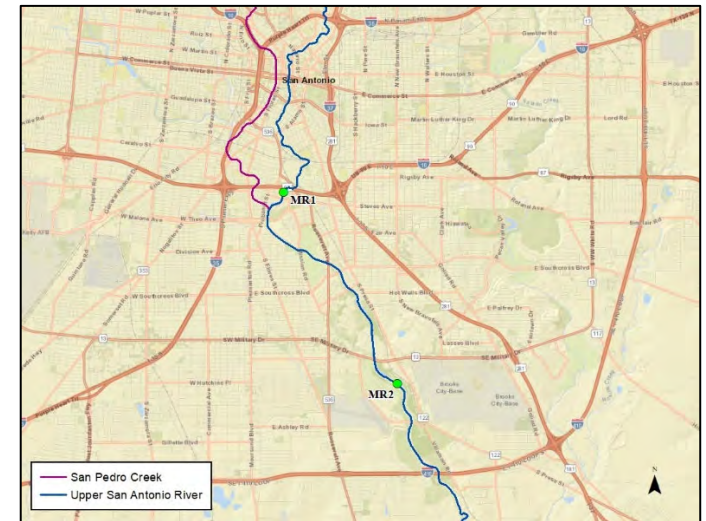
Mission Reach Mussel Survivability Study

- Analyzed adult mussel survival and growth
 - Threeridge, Pimpleback, Yellow Sandshell, Pistolgrip
- Two experimental sites in the Mission Reach
- One control site in Goliad County in the Lower San Antonio River



Mission Reach Mussel Survivability Study

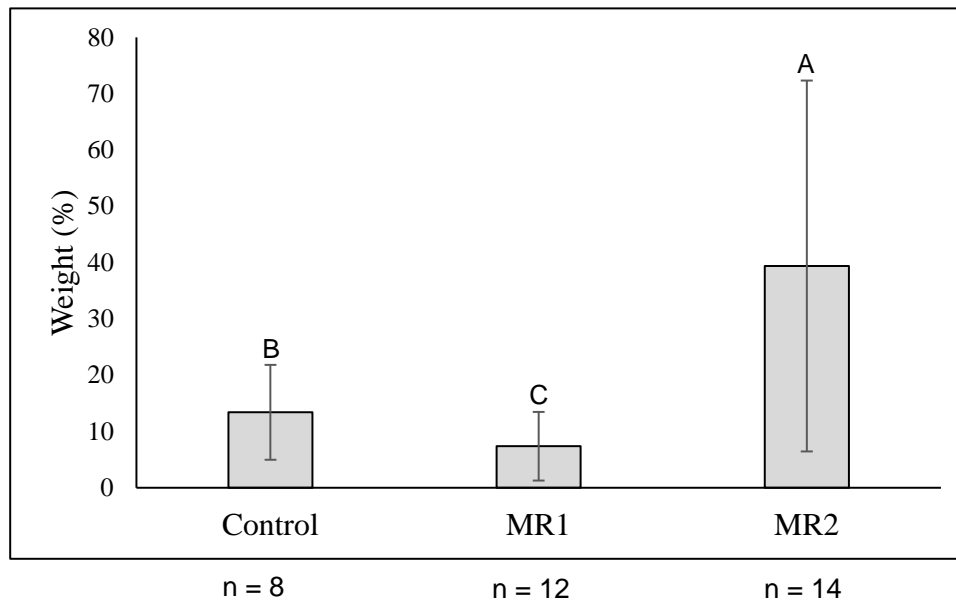
- Mission Reach sites
 - 83% average survival
 - MR 2 grew significantly better than control
- Control site
 - High survival
 - Lower rate of growth



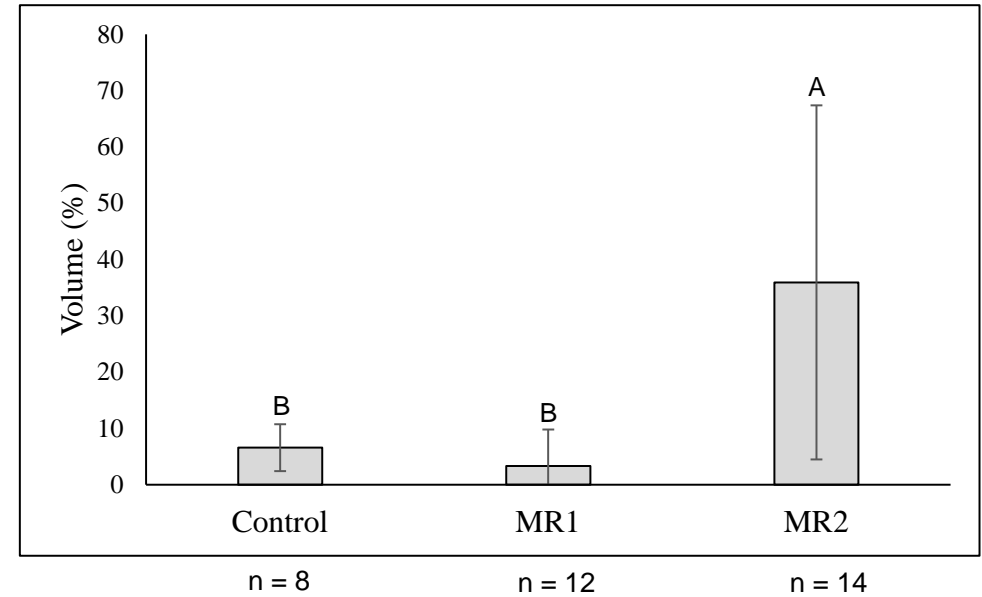
Site	% Survival
Control	93.8
MR1	78.0
MR2	87.5



Cumulative Weight (g) Gain

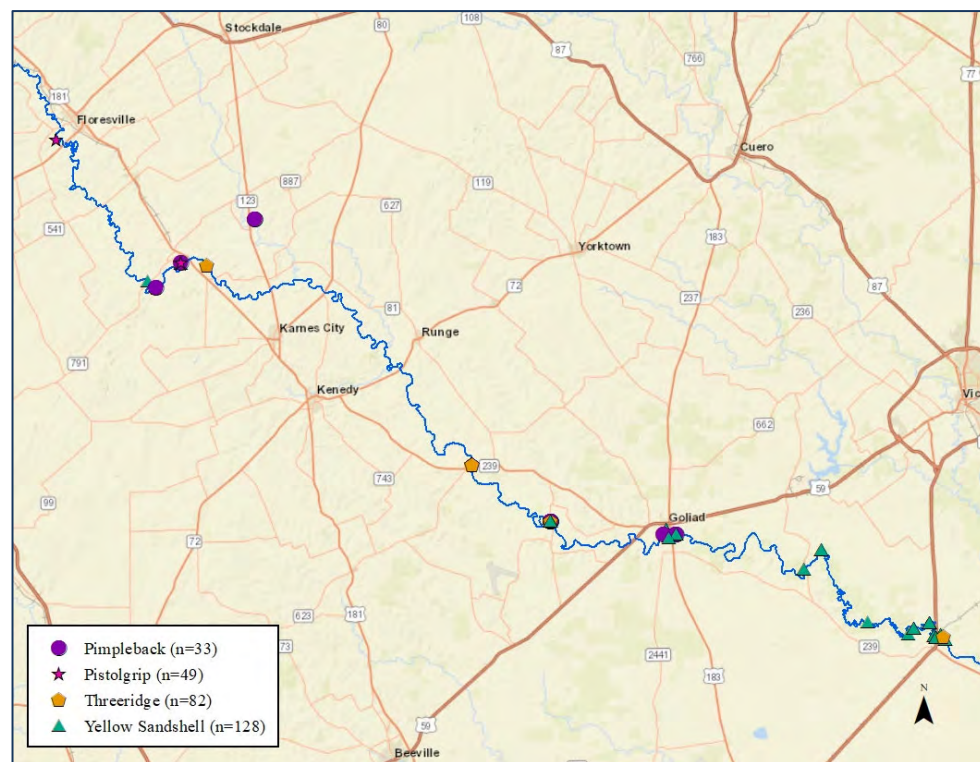


Cumulative Volume (mm³) Gain



Genetic Management Plan

- Around 300 mantle clips from a ~175 mile stretch of river
- Goal is to determine magnitude of longitudinal gene flow to best guide brood stock collection

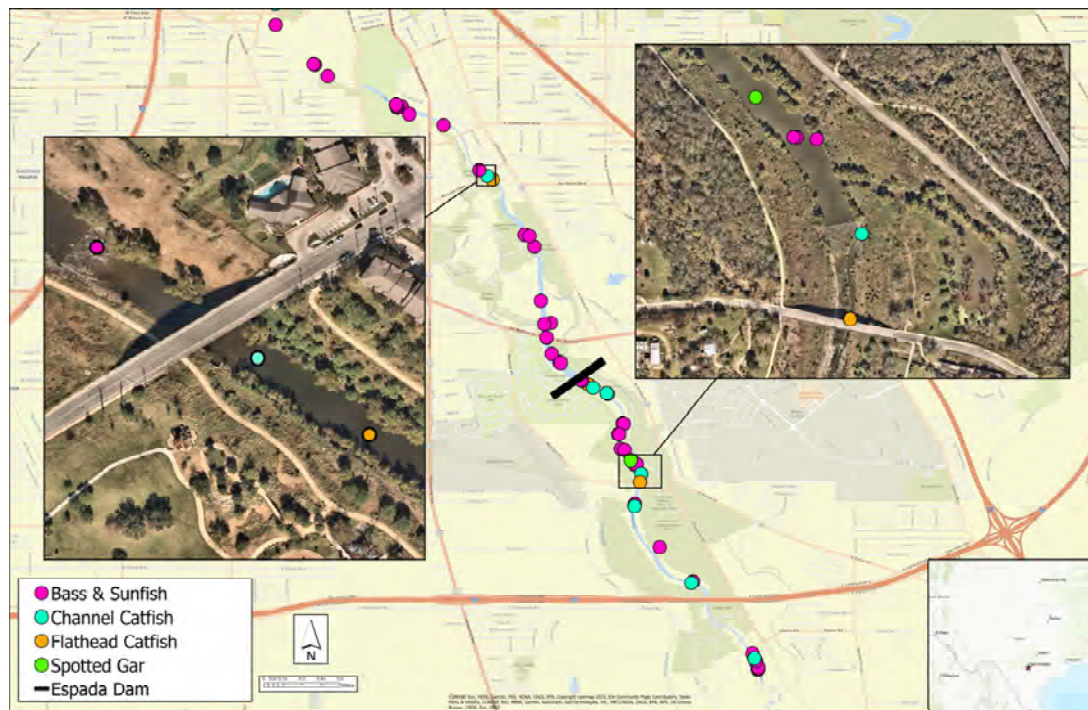


Mission Reach Intensive Nekton Survey

- Establish species diversity and abundance
- Analyze age/size structure
- Presence/absence of host fish for species of interest



Mission Reach Intensive Nekton Survey



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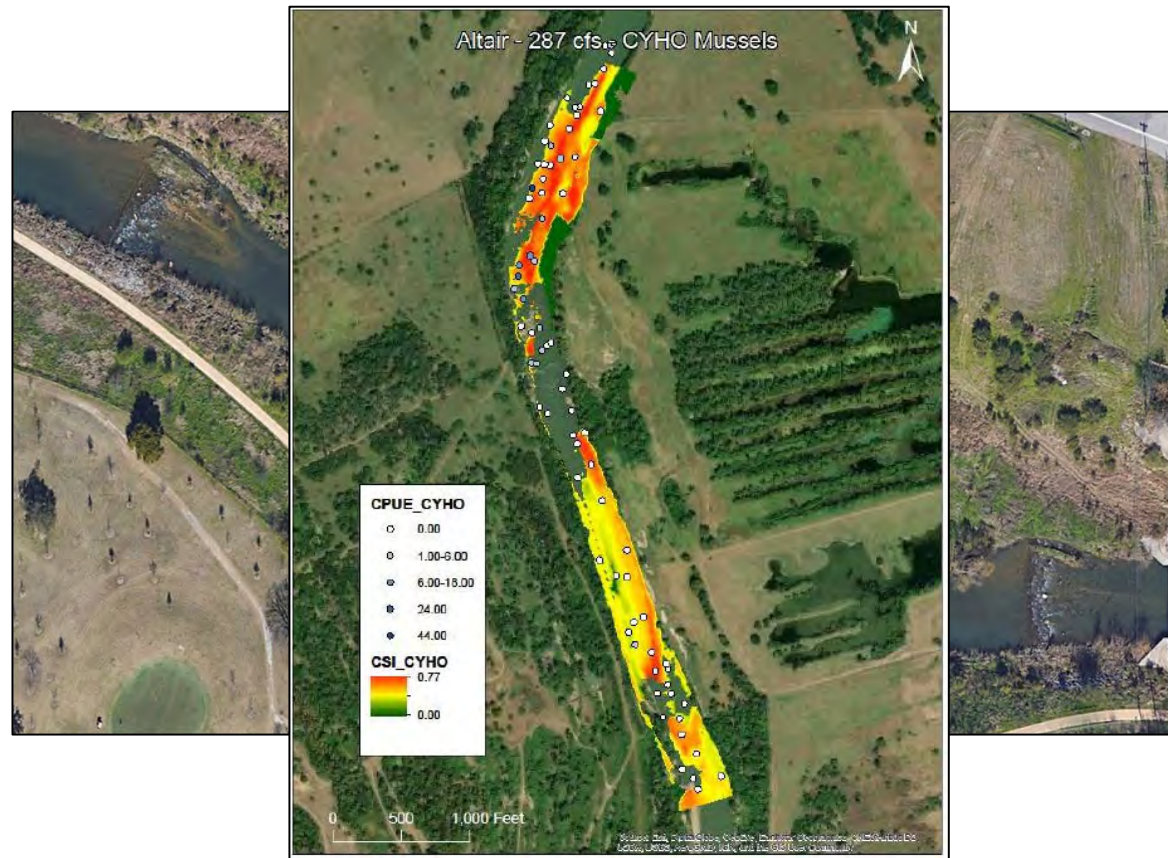
Habitat Suitability Modeling

- Working with outside partners to develop habitat suitability models
- Strategically selected ~5,000m of stream for initial assessment



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Summary

- Mission Reach Restoration
- MRMS
- Genetics
- MRINS
- Habitat Suitability



Questions?

