



# **THE SAN ANTONIO RIVER AUTHORITY FRESHWATER MUSSEL REINTRODUCTION PROJECT**

**September 17, 2021**



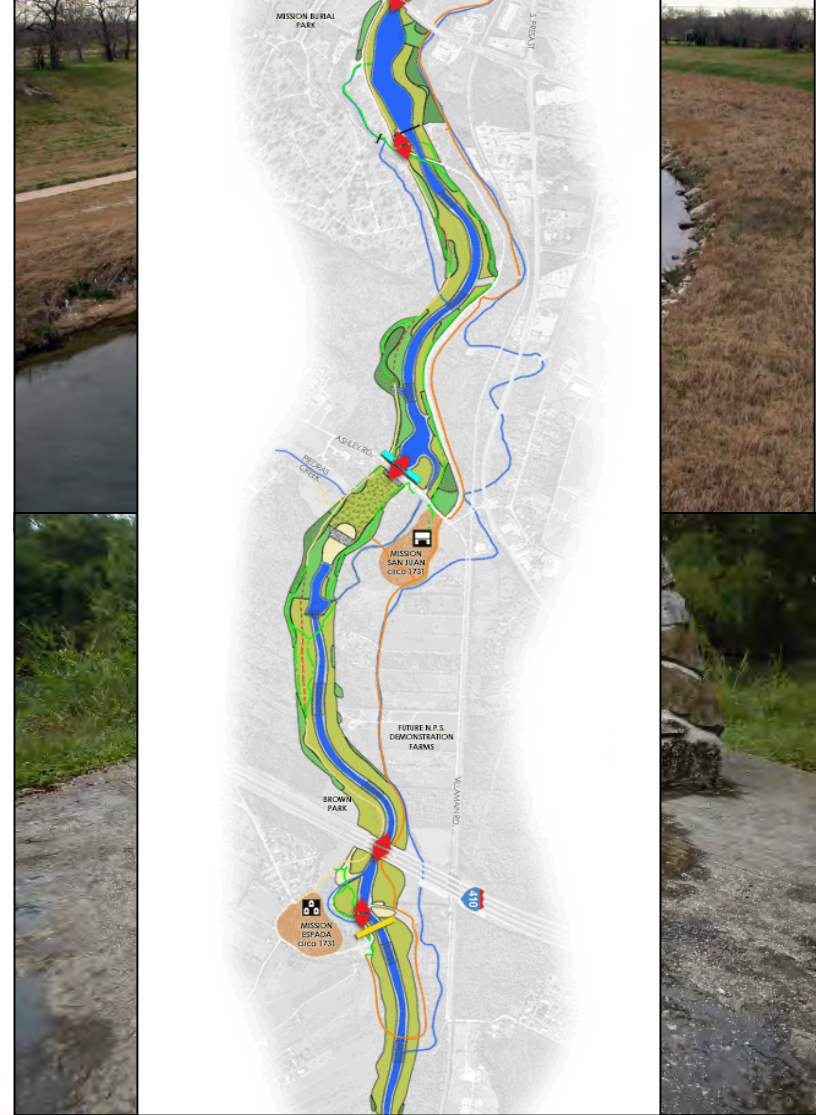
# Holistic Mussel Project

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



# The Upper San Antonio River

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





# The Upper San Antonio River

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



# Determining Reintroduction Feasibility

- Can adult mussels survive/thrive/reproduce in the Mission Reach?
- Can juvenile mussels survive in the Mission Reach?
- Are the necessary host fish present?

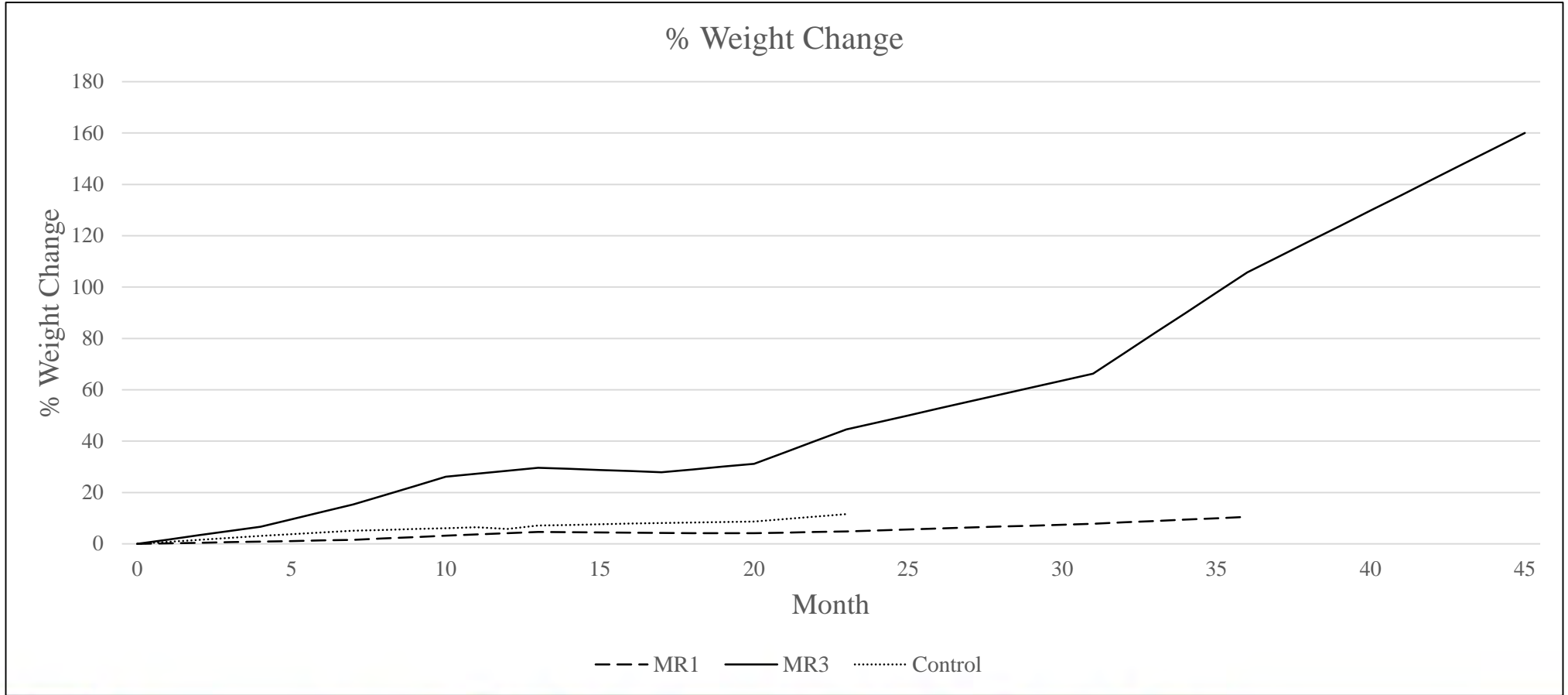


# Mission Reach Mussel Survivability Study

- 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

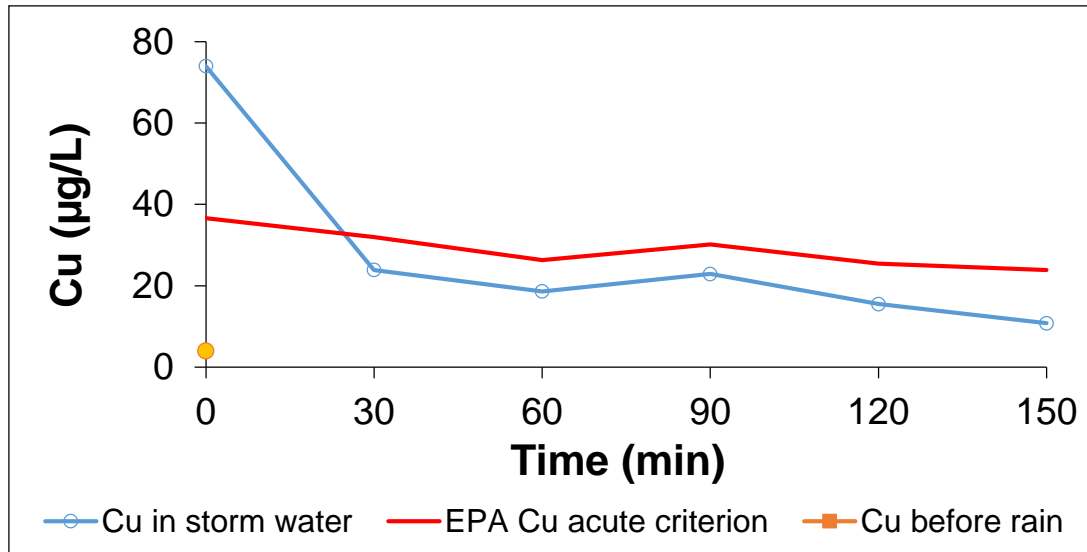


# Mission Reach Mussel Survivability Study





# Mussel Toxicology Research





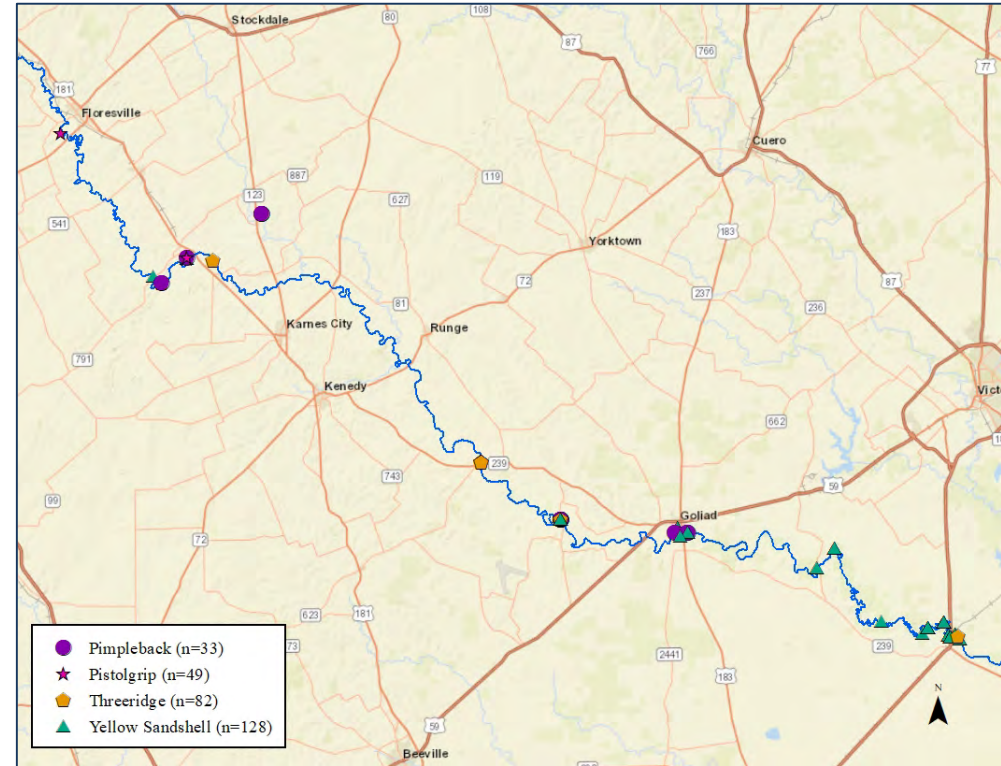
# Mussel Toxicology Research

- Desktop analysis of downstream vs Mission Reach water quality
- Increased monitoring of MIW and chlorophyll throughout the Mission Reach



# Genetic Management Plan

- GMP will guide broodstock collection
- 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





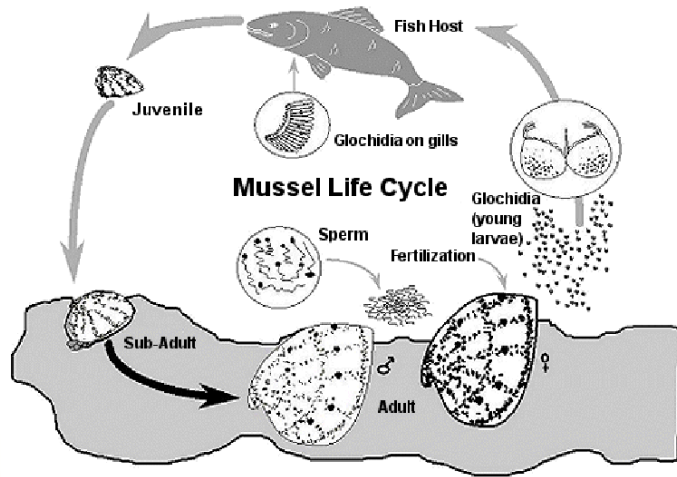
# Genetic Management Plan





# Mission Reach Intensive Nekton Survey

- Monitor trends in fish community health
- Analyze age/size structure
- Presence/absence of host fish for species of interest



# Mission Reach Intensive Nekton Survey

- Host fish of all species except one have been detected
- Anecdotal evidence of missing species





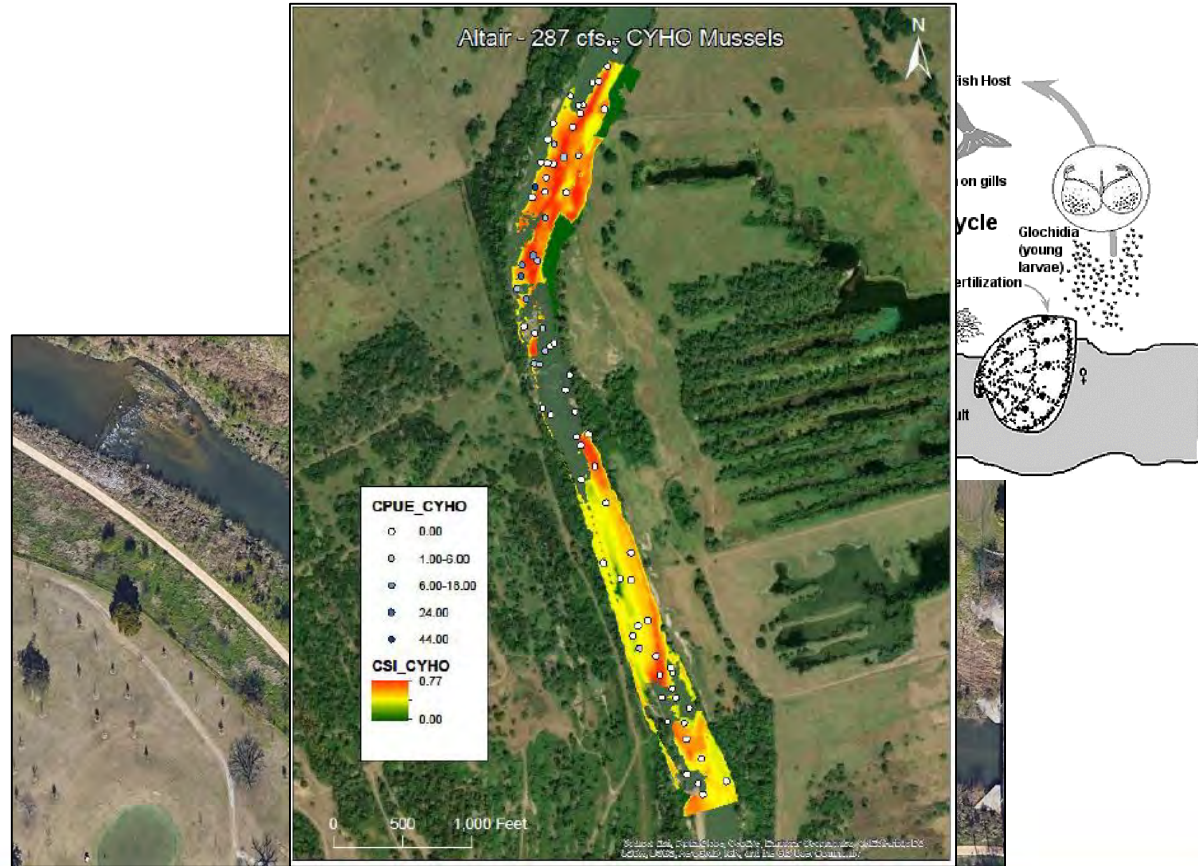


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# Habitat Suitability Modeling

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



# Next steps...

- Technique refinement
- Juvenile mussel stocking (Spring 2023)
- Routine monitoring
  - Recapture
  - Growth
  - Movement
- Adaptive management
  - Genetics
  - Recapture
  - Habitat modeling
- Fish stocking
  - Supplement host fish species
- Public involvement
  - Floating baskets
  - Signage





# Questions?

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