



Potential Threatened and Endangered Listing of Freshwater Mussels in the Brazos River Basin

***Presented by
Tiffany Morgan
Environmental Services Manager***



Threats to Native Mussels

- **Continued Urbanization**
- **Water Quality**
- **Habitat Destruction and Fragmentation**
- **Competition for Water Supply**
- **Climate Change**



Photo by Upper Trinity Freshwater Mussels Working Group



Three R's

- **Resiliency** – large populations able to withstand stochastic events
- **Redundancy** – number and distribution of populations to withstand catastrophic events
- **Representation** – genetic and ecological diversity to maintain adaptive potential



Texas Hornshell

- **Rio Grande Group**
- **Listing decision will be made by September 30, 2016**
- **Tone of Species Status Assessment (SSA) Report indicates listing highly likely**
- **Critical Habitat will be specified**
- **Indicator of how Central Texas Group will be viewed**





Proposed Listing of Freshwater Mussels in Texas

- **12 species**
- **Grouped into 4 listing packages**
 - **Central Texas**
 - **West Texas**
 - **East Texas**
 - **Rio Grande**
- **Lack of distribution information**
 - **Interpreted as range contraction or extirpation**
- **Imperative that BRA knows what and where species are in the basin**
- **Fill as many knowledge gaps as possible**



Central Texas Candidate Species

- **Texas Fatmucket**
- **Golden Orb**
- **Smooth Pimpleback**
- **Texas Pimpleback**
- **Texas Fawnsfoot**



Photo from Charles Randklev, Nathan Johnson, Tom Miller and Roel Lopez



Candidate Species in the Brazos Basin



Smooth Pimpleback



Texas Fawnsfoot

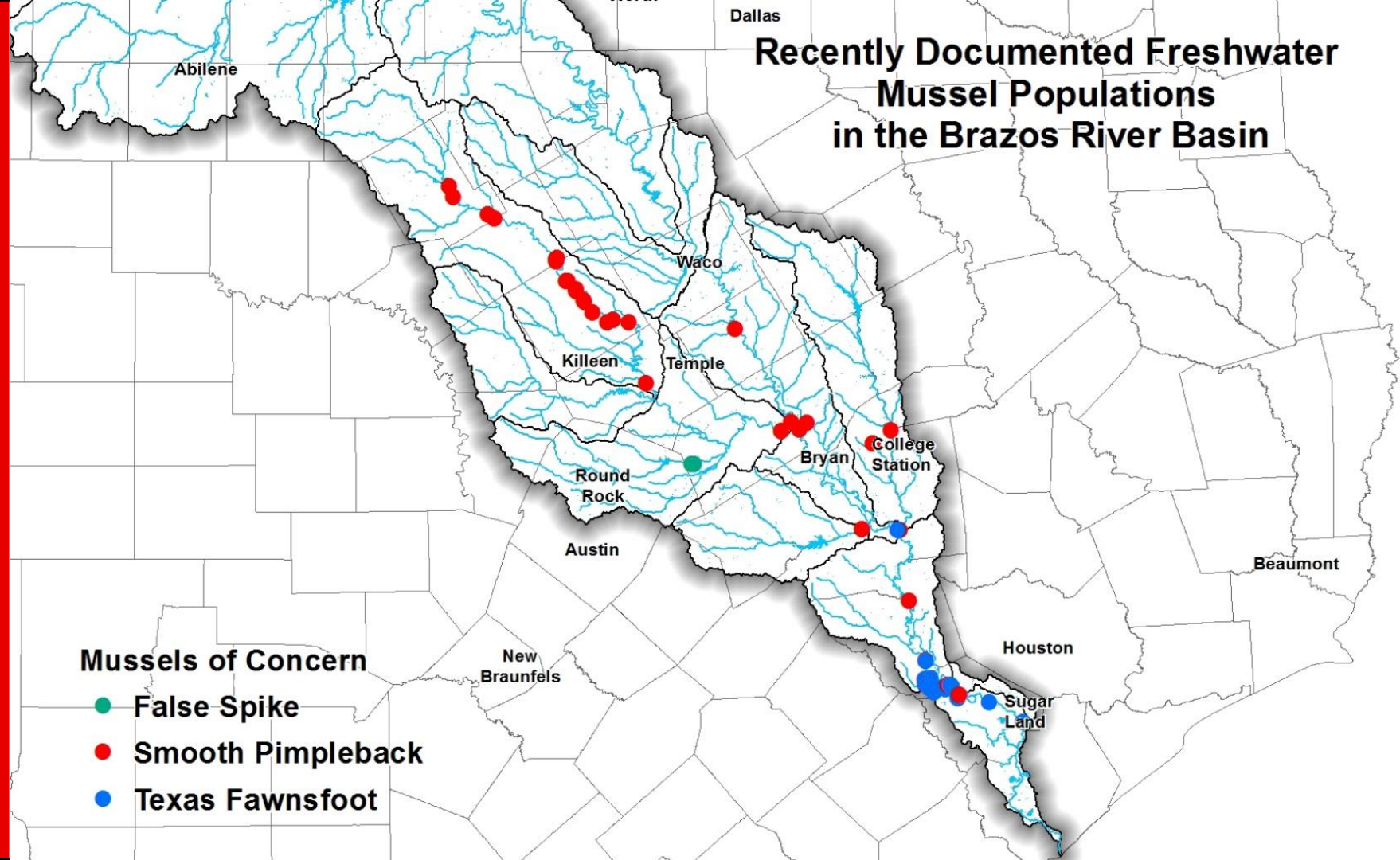


Species Pending Status Review in the Brazos Basin



Photo by Charles Randklev and Eric Tsakiris

False Spike





Brazos Basin Three R's by Species

- **Smooth Pimple back**
 - **Resiliency and Redundancy**
 - **Multiple populations across lower and central part of Brazos basin**
 - **Populations in Colorado basin**
 - **Representation –**
 - **Genetic diversity – unknown**
 - **Ecological variation - yes**
- **Texas Fawnsfoot**
 - **Several populations in lower Brazos basin**
 - **Populations in Colorado basin**
- **False Spike**
 - **Two populations in San Gabriel River**
 - **Two populations in San Saba River in Colorado basin**



Unknowns and Unanswered

- **How will SB3 Instream Flow standards impact listing decisions of central Texas mussels?**
 - Should provide added protection to the mussels
 - Were not mentioned at all in the Texas hornshell SSA
- **How much impact will projects in the regional water plans have of FWS scenario modeling and decision making?**
- **What operational impacts will listing have on water supplies stored in reservoirs?**
 - U.S. Army Corps of Engineers – federal nexus?
 - Non-COE lakes?
- **Recent genetic testing indicates smooth pimpleback and golden orb may be same species?**



Anticipated Listing Schedule for Central Texas Mussels

- **Process will begin for Central Texas mussels when Texas hornshell is complete**
 - September 30, 2016
- **Anticipate evaluation and addition of false spike to the Central Texas Mussel Group will be FWS' next step**
 - Process takes a minimum of 1-1.5 years
- **Evaluate Central Texas Mussel Group**
 - Decision by early 2019



**Brazos
River
Authority**