



Central Texas Freshwater Mussels

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Species Research Program

- 2013 and 2015 - Legislature appropriated a total of \$10 million for research by state universities on petitioned or listed species
- To date, approximately \$8 million has been allocated for research on 24 species, including 12 freshwater mussels
- Priorities are identified based on:
 1. Immediacy of listing decision
 2. Existing data gaps
 3. Potential impacts of listing

Proposed Listing of Texas Hornshell

- U.S. FWS proposed listing of the Texas Hornshell as endangered in 2016
- Key threats noted by FWS
 - Water quality impairment
 - Loss of flowing water
 - Increased fine sediment
 - Barriers to fish movement

The listing decision will be based on a **range wide** assessment of the species

Mussels in Texas

Mussel Species	Package Name and Grouping	Historical Range in Texas River Basin	Federal ESA Listing Status
False Spike	Central Texas Mussels (2018)	Brazos, Colorado, Guadalupe	Petitioned
Texas Fatmucket		Colorado, Guadalupe	Candidate
Texas Pimpleback		Colorado, Guadalupe	Candidate
Texas Fawnsfoot		Brazos, Colorado	Candidate
Triangle Pigtoe	East Texas Mussels (2019)	Neches, San Jacinto	Petitioned
Louisiana Pigtoe		San Jacinto, Trinity, Neches, Sabine	Petitioned
Texas Heelsplitter		Neches, Trinity, Sabine	Petitioned
Golden Orb	Texas Quadrula Species (2020)	Guadalupe, San Antonio, Nueces-Frio	Candidates
Smooth Pimpleback		Brazos, Colorado	Candidate
Mexican Fawnsfoot	Rio Grande Mussels (2022)	Rio Grande, Pecos, Rio Salado	Petitioned
Salina Mucket		Rio Grande	Petitioned
Texas Hornshell	-	Rio Grande	Proposed Endangered

FWS 12-Month Finding

- All mussels likely face the same or very similar threats
- Decline of mussels in Texas and throughout the U.S. is mainly due to **habitat loss and degradation** primarily caused by:

- **Impoundments**
- **Sedimentation**
- **Dewatering**
- **Sand and gravel mining**
- **Chemical contaminants**

- Additional factors – nonnative species, climate change, inadequacy of existing regulatory mechanisms

Impoundments

- Fluctuation in flow regime
- Scouring and erosion
- Impaired water quality
- Changes in reproductive cycle
- Decreased DO and temperature
- Increased sedimentation



Sedimentation



- Livestock access, grazing
- Removal of vegetation
- Urbanization, population growth
 - Increased impervious surface
 - Construction
 - Road crossings

Dewatering

- Surface water diversions
- Groundwater pumping
- Hydropower facilities
- Construction
- Drought



Chemical Contaminants



- Chemical spills
- Industrial waste
- Municipal effluents
- Animal feedlots
- Fertilizer use
- Pesticide use
- Emerging contaminants

Sand and Gravel Mining

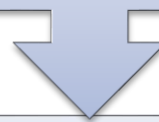
- Channel degradation and erosion, turbidity, bank and stream instability
- Changes in water flow, temperature, quality
- Increased fine sediment, suspended sediment



Objectives

Ensure accurate science is available to inform listing decisions

If listings occur, ensure that compliance is cost-effective



Assist in the development of voluntary conservation measures if stakeholders are interested in pursuing

New Research: Texas State University

- Surveys throughout historical range– combined with other efforts to determine distribution
- Applied research to understand potential threats – applicable range wide
- Long-term captive propagation study to gather information needed for future reintroduction efforts

Research is designed to ensure science is available for listing decisions and for the development of any voluntary conservation efforts

Freshwater Mussel Work Group: Stakeholder Process

- Listing status updates
- Discussions about options for voluntary conservation
- Research updates
- Primarily focused on the species with 2018 listing deadlines

Upcoming Meetings

May 16, 2017

June 20, 2017

July 19, 2017

Research Program Contacts

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