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
  o Water quality impairment
  o Loss of flowing water
  o Increased fine sediment
  o Barriers to fish movement

The listing decision will be based on a range wide assessment of the species
# Mussels in Texas

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

SUMMARY OF POTENTIAL THREATS IDENTIFIED BY FWS 12-MONTH FINDING
Sedimentation

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

SUMMARY OF POTENTIAL THREATS IDENTIFIED BY FWS 12-MONTH FINDING
Dewatering

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

SUMMARY OF POTENTIAL THREATS IDENTIFIED BY FWS 12-MONTH FINDING
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

SUMMARY OF POTENTIAL THREATS IDENTIFIED BY FWS 12-MONTH FINDING
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
June 20, 2017
July 19, 2017
August 16, 2017
Research Program Contacts

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