Loss of Rural Working Lands in Texas: implications for natural resources







The Issue: Loss of rural working lands

- Private lands in the U.S. are undergoing significant changes (e.g., >1 acre of farmland lost/minute).
- Most lands in U.S. are privately-owned and play an unseen yet critical role in water/food sustainability and national/energy security.





The disconnect

- 95% of Texas is privately owned
- 90% of Texans live in urban areas
- Policy is heavily influenced by the 90%
- Privately owned working lands provide:
 - Food
 - Fiber
 - Timber
 - Water
 - Recreation
- We need to make the case for rural lands
- First, we need to understand the drivers



Understanding the drivers

Texas--Statewide

Brazos River Basin

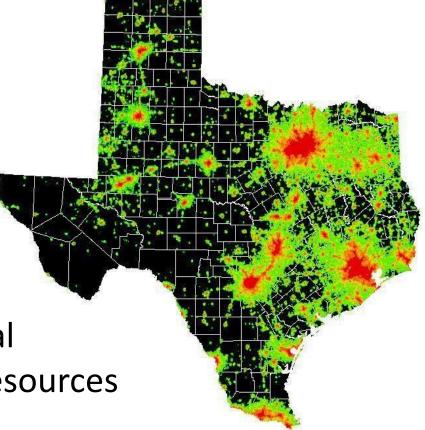
Greater Waco Area



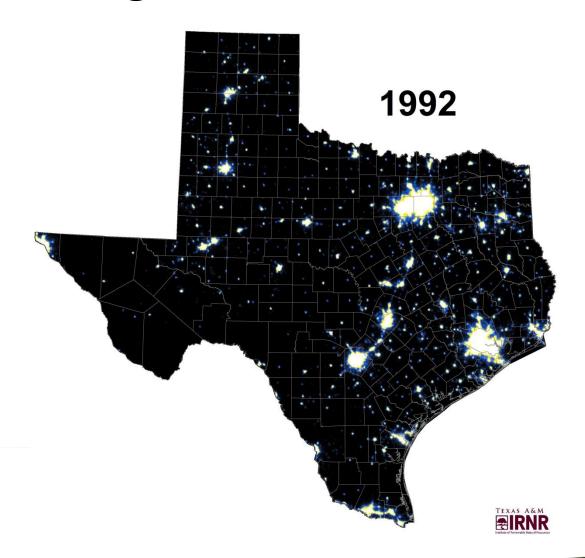


Texas Land Trends – The Data

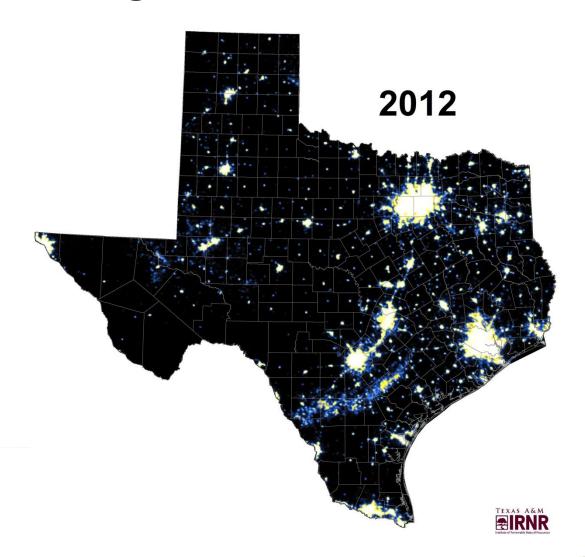
- Trends in land use (1997-2012)
- Primary datasets used
 - County Appraisal District
 - USDA NASS Census of Ag
- Relationships among
 - Land Value
 - Land Ownership
 - Land Use
- Challenges to sustaining rural working lands and natural resources
- http://txlandtrends.org/



Statewide Night Time Illumination



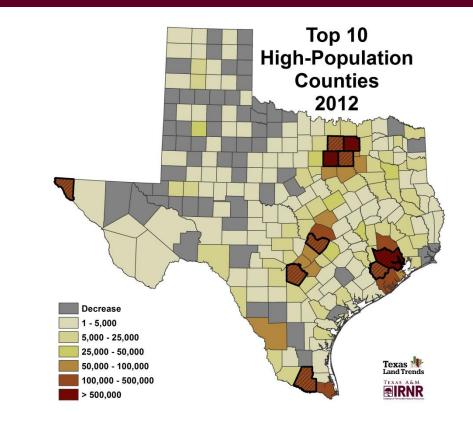
Statewide Night Time Illumination

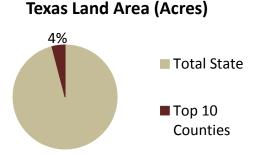


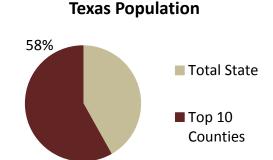


Texas Population

- 1997 19 Million
- 2012 26 Million
- 36% increase
- 500,000/year
- 65% of increase occurred within Top TenPopulated Counties







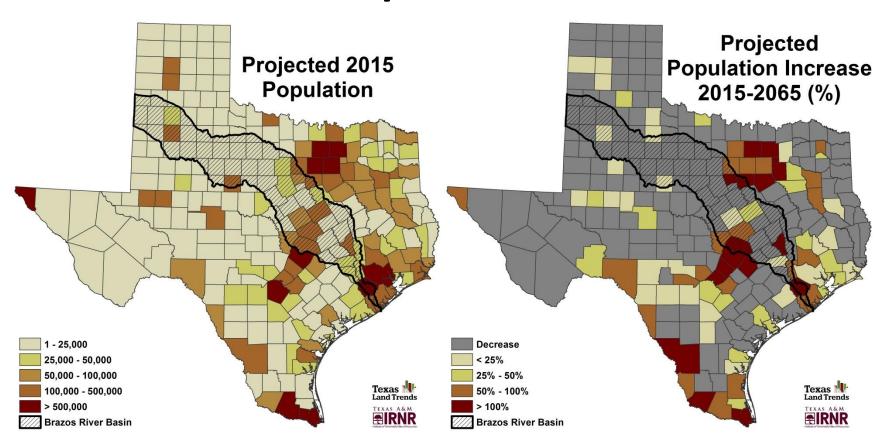
Brazos River Basin

- 27.5 million acres
- 7,720 stream miles
- 52 counties
- NW Texas through Greater Waco Area to Gulf Coast





Population

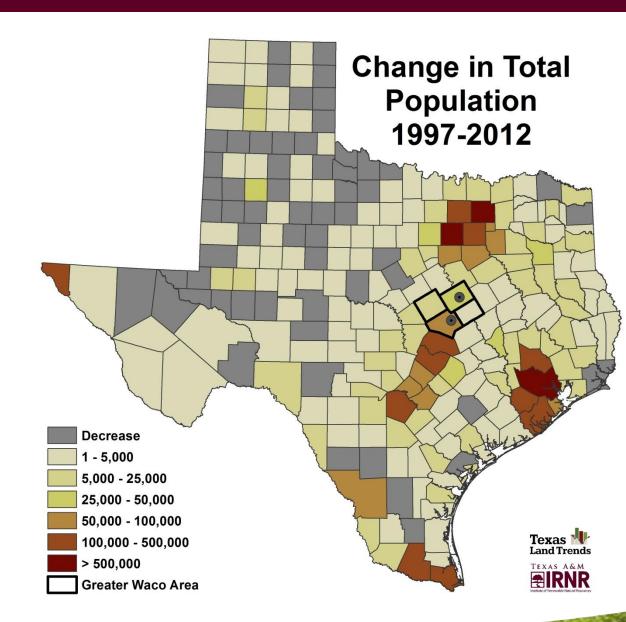


- 2015 estimated population: 3.3 million
- 69% projected increase over next 50 years



Greater Waco Area

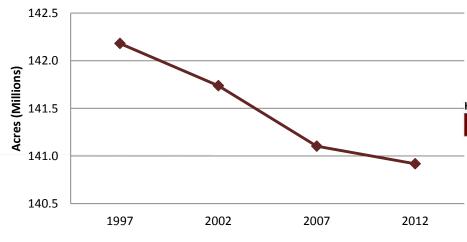
- 1997 523K
- 2012 641K
- Increase- 118K
- 23% increase

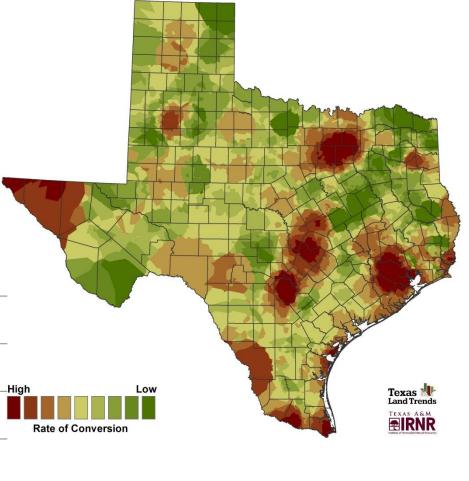


Statewide Working Land Loss

- 1997 142 Million acres
- 2012 141 Million acres
- Loss 1 Million acres

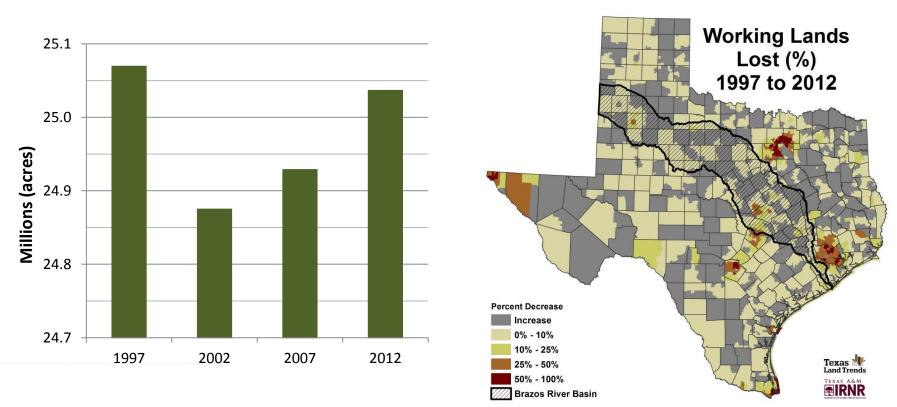






Brazos River Basin Working Lands

Almost 33K acres lost from 1997 to 2012.



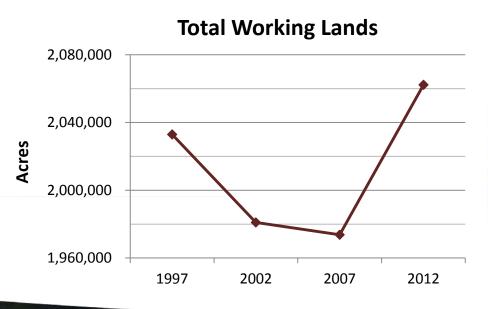
^{*}Working lands are privately owned *farms, ranches, and forests* that produce food and fiber, support rural economies, and provide wildlife habitat, clean air and water, and recreational opportunities.

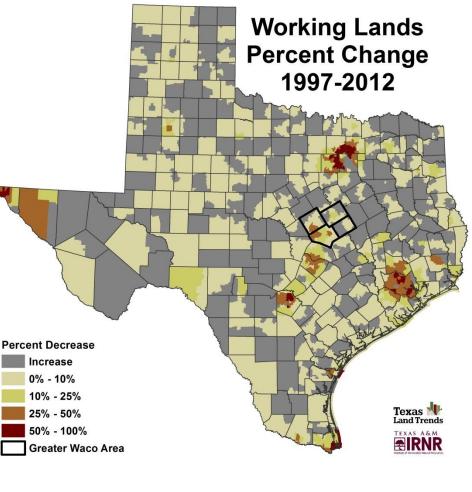


Working Lands

Greater Waco Area

- 1997- 2.03 Million Acres
- 2012- 2.06 Million Acres
- Increase- 29K Acres
- 78% of total county land area



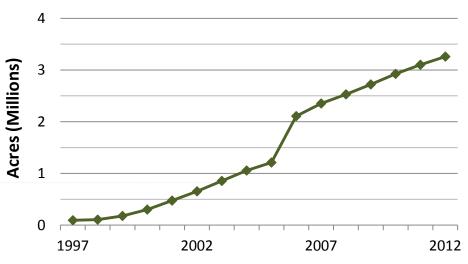


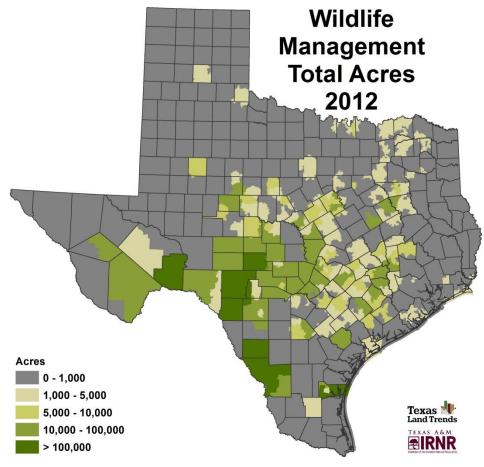
Wildlife Management

Statewide

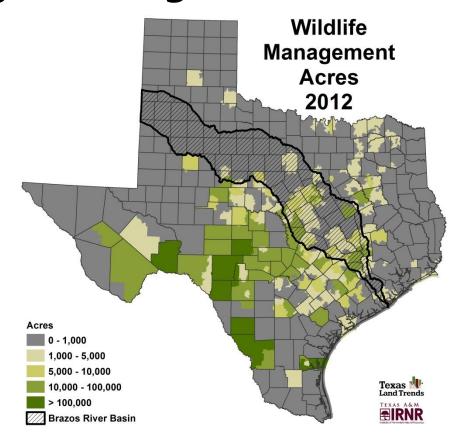
- 1997 92K acres
- 2012 3.3 Million acres
- Gain of 3.2 Million acres

Wildlife Management Use 1997-2012





Wildlife Management in the Brazos



- 317,666 acres under wildlife management in 2012
 - 10,937 acres listed in 1997
 - 2,805% increase

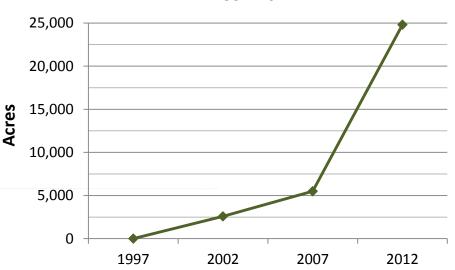


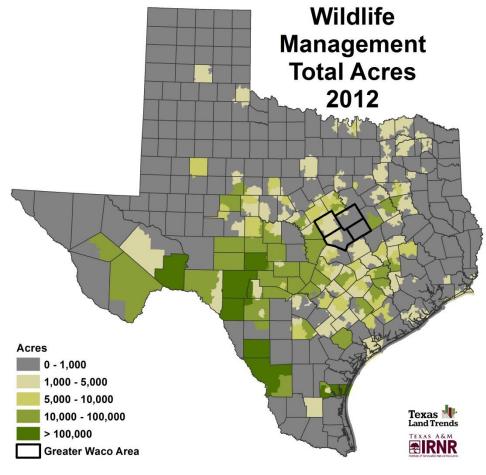
Wildlife Management

Greater Waco Area

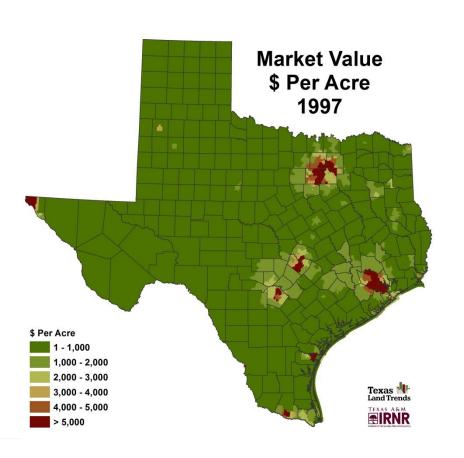
- 1997 0 acres
- 2012 25K acres
- Gain of 25K acres

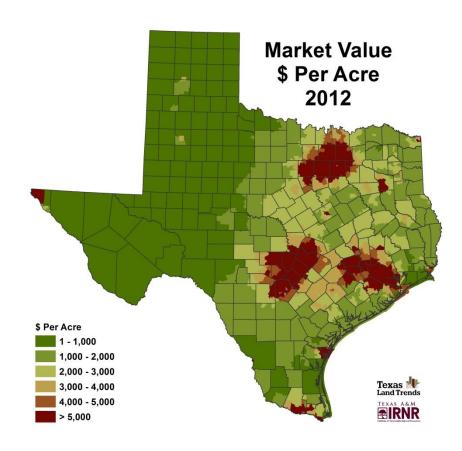
Wildlife Management Use 1997-2012





Market Value: Statewide

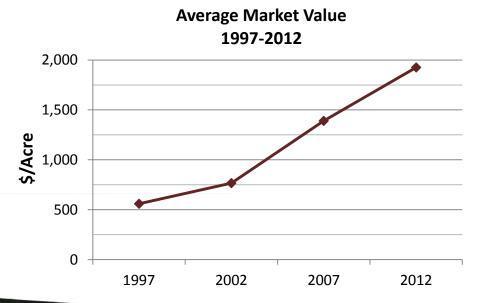


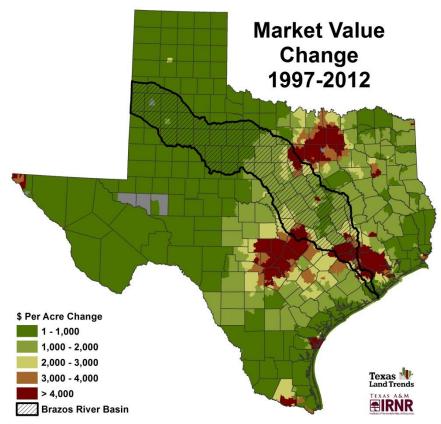


Market Value

Brazos River Basin

- 1997 \$560/Acre
- 2012 \$1,924/Acre
- Gain of \$1,365/Acre



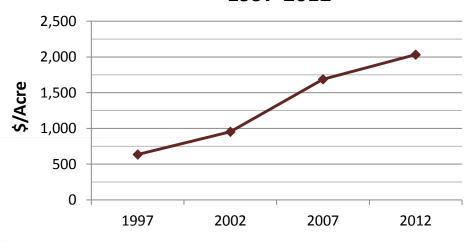


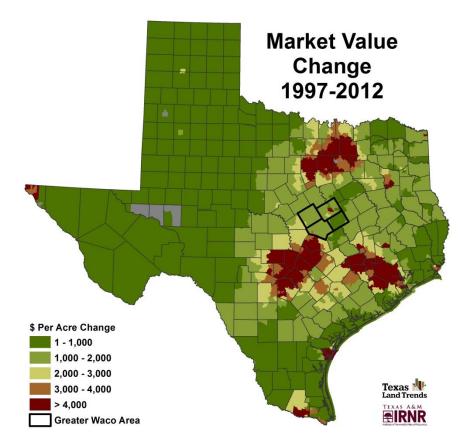
Market Value

Greater Waco Area

- 1997 \$635/Acre
- 2012 \$2,032/Acre
- Gain of \$1,397/Acre

Average Market Value 1997-2012

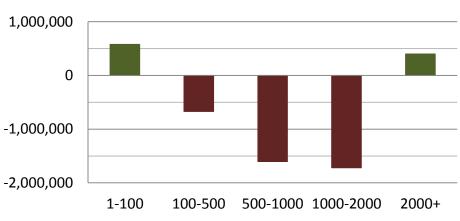




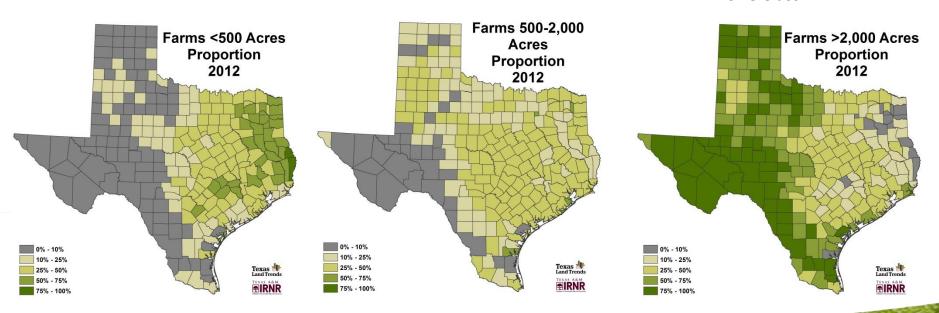
Ownership Size

- Farms <100 acres in size
 - Increase of 500K+ acres
- Farms 100-2,000 acres in size
 - Decrease of 4M acres
- Farms > 2,000 acres in size
 - Increase of 400K acres

Acres Change By Size Class (1997-2012)



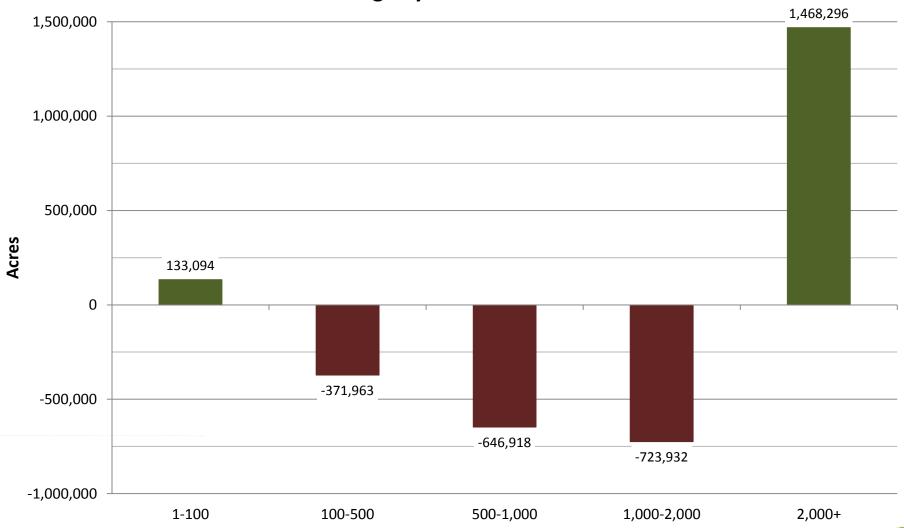
Size Class





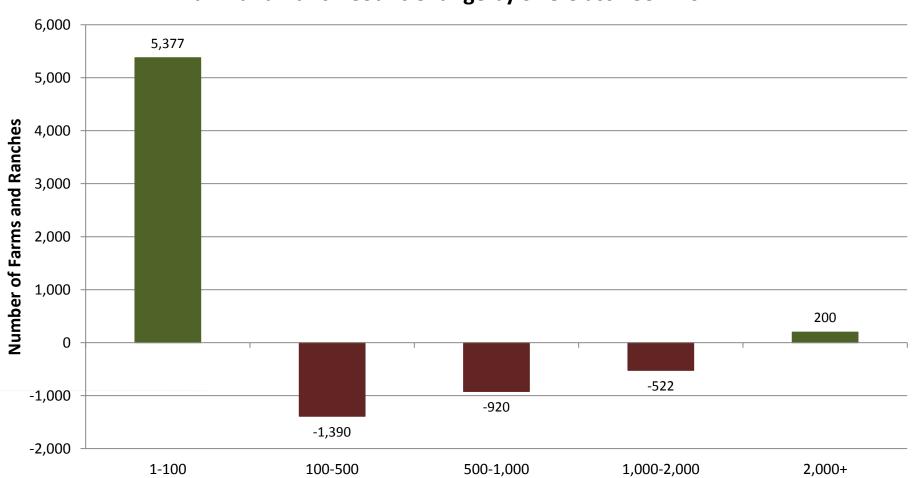
Change in Acres of Land Ownership: Brazos River Basin

Acres Change by Size Class 1997-2012



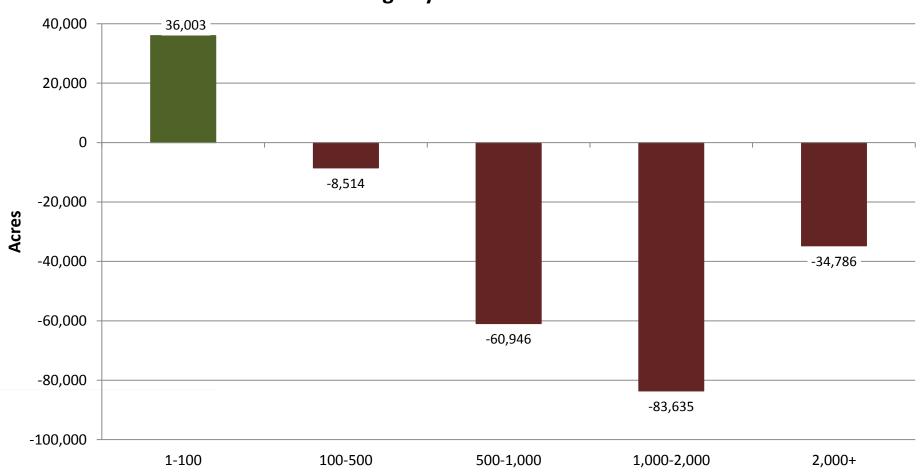
Change in Number of Land Ownerships: Brazos River Basin

Farm and Ranch Count Change by Size Class 1997-2012



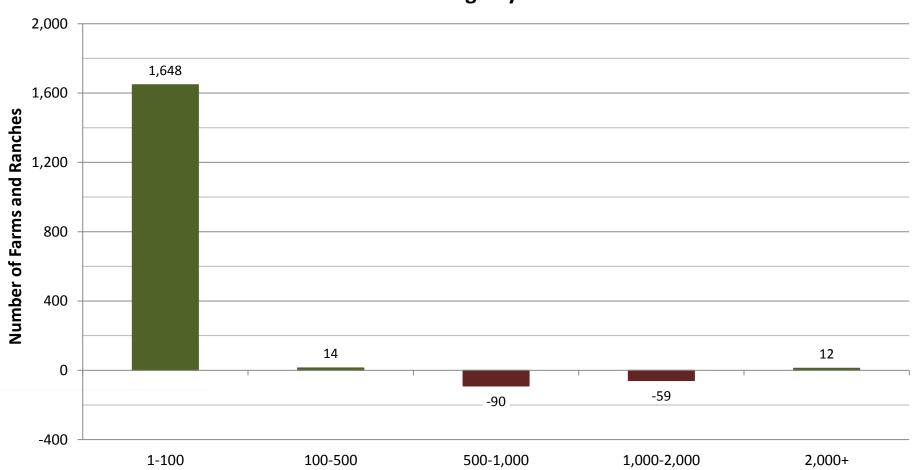
Change in Acres of Land Ownership: Greater Waco Area

Acres Change by Size Class 1997-2012



Change in Number of Land Ownerships: Greater Waco Area

Farm and Ranch Count Change by Size Class 1997-2012



Other Basin Items of Interest

- Drought Update
- Energy Development
- Impaired Streams
- Threatened, Endangered, and Candidate Species

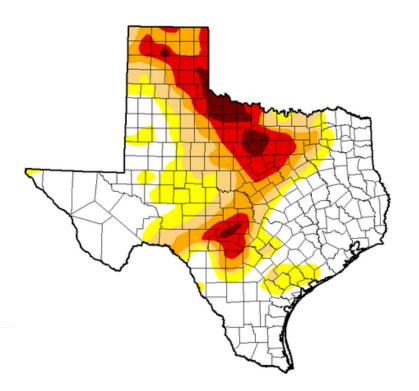






We Still Need Rain!

U.S. Drought Monitor
Texas



March 24, 2015

(Released Thursday March 26, 2015) Valid 8 a.m. EDT

<u>Statistics type</u>:

Traditional (D0-D4, D1-D4, etc.)
Categorical (D0, D1, etc.)

Drought Condition (Percent Area):

| 3 | | | | | | | |
|---------------------------|------------------------------|-------|-------|-------|-------|-------|------|
| Week | Date | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
| Current | 2015-03- 24 | 49.50 | 50.50 | 36.35 | 24.92 | 13.67 | 3.31 |
| Last Week | 2015-03- 17 | 43.46 | 56.54 | 39.93 | 27.12 | 14.48 | 2.97 |
| 3 Months Ago | 2014-12- 23 | 34.32 | 65.68 | 43.42 | 23.35 | 10.36 | 2.97 |
| Start of Calendar Year | 2014-12- 30 | 34.37 | 65.63 | 44.68 | 25.73 | 11.70 | 3.17 |
| Start of Water Year | <u>2014-09-</u> <u>30</u> | 28.92 | 71.08 | 48.95 | 29.54 | 11.26 | 2.69 |
| One Year Ago | 2014-03- 25 | 14.73 | 85.27 | 67.43 | 41.85 | 24.97 | 3.48 |

Population Affected by Drought: 9,023,182

View More Statistics

Intensity:

D0 - Abnormally Dry

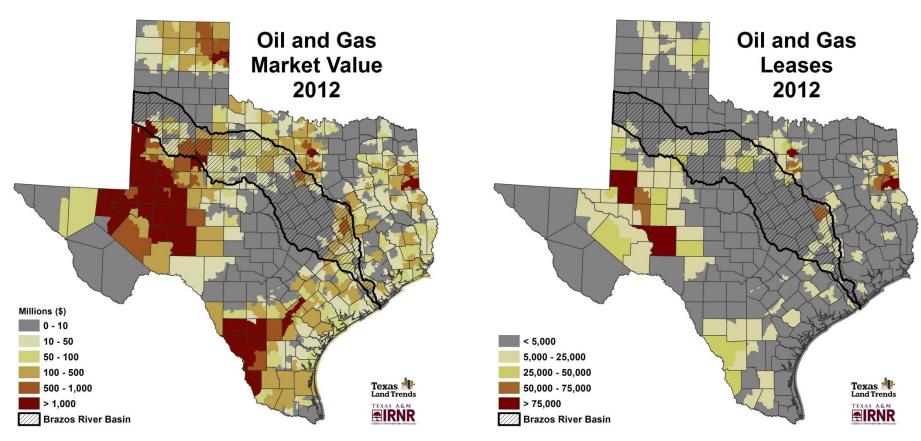
D1 - Moderate Drought

D2 - Severe Drought

D3 - Extreme Drought
D4 - Exceptional Drought



Energy



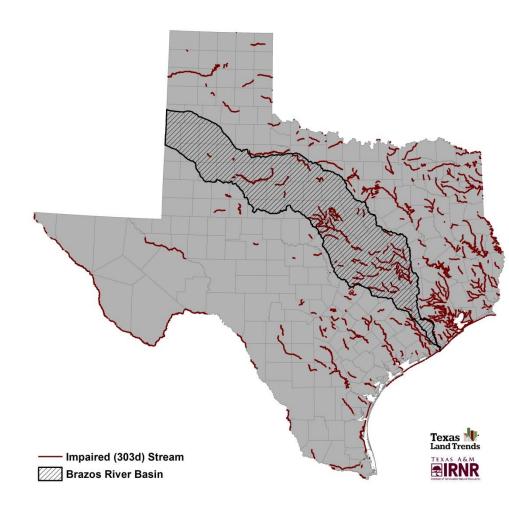
From 1997 to 2012:

- 104% increase in number of oil/gas leases
- \$8.6 billion increase in market value



Impaired (303d) Streams

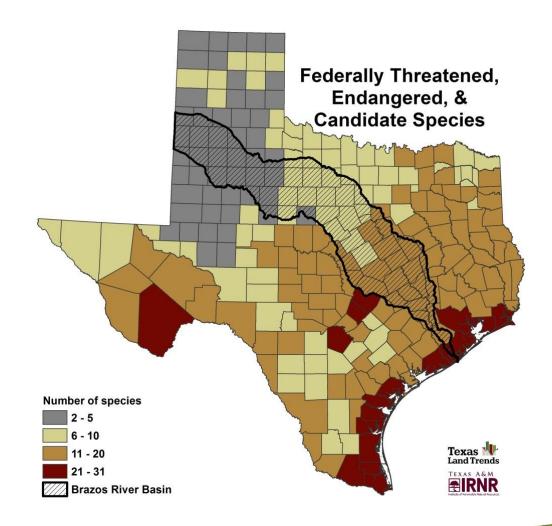
- 1,801 miles (23%)
 classified as impaired.
- Leon River Watershed
 - Several de-listings
 - WPP submitted in Feb
 - District water technician
 - Coryell septic program
 - Feral hog abatement





T&E and Candidate Species

Average of 10 listed/candidate species per county in basin



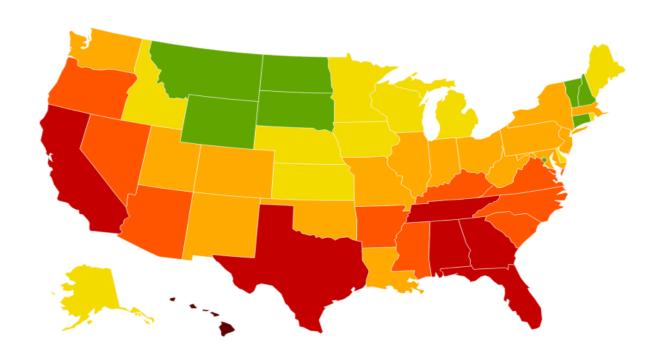


T&E and Candidate Species

Texas = 192 species (T&E + Candidate)

Species Count 16-30 31-45 46-90 91-180 181-372 541





Why so many species?

Number of Petitioned Species by Year

252

59

Download Data (csv)

200

100

Number of Species

Per the FWS, an average of **18 species** per year were petitioned for listing from 1989 to 2006. By contrast, since 2007, the FWS has been petitioned to list more than **1,300 species**, nearly as many species as it listed during the previous 30 years of administering the ESA.

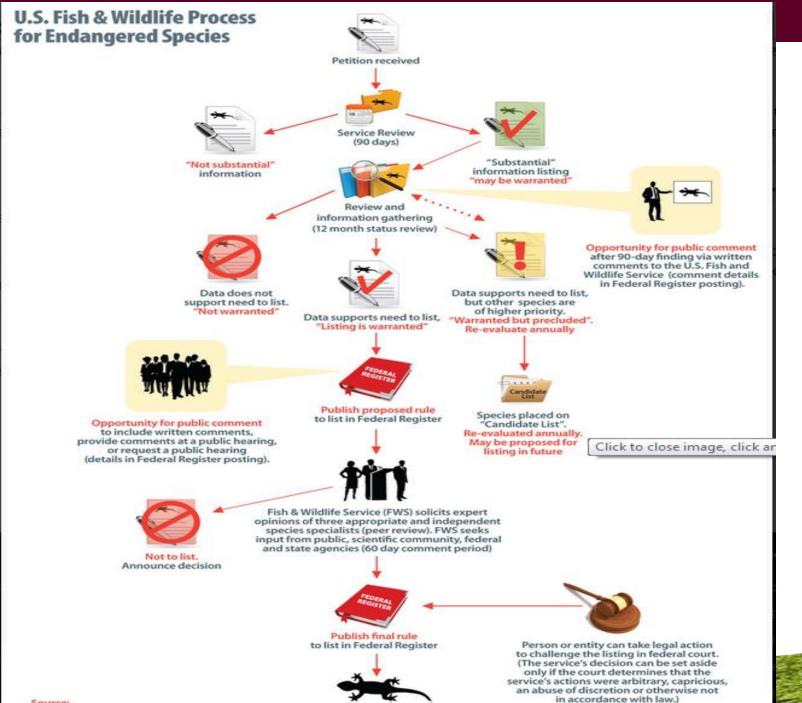
1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

Candidate species in McLennan and Bell Counties

- Sprague's pipit (McLennan & Bell)
- Plains Spotted Skunk (McLennan & Bell)
- Western Chicken Turtle (McLennan)
- Monarch Butterfly
- Freshwater Mussels
 - Texas Fawnsfoot (McLennan & Bell)
 - Smooth Pimpleback (McLennan & Bell)
 - False Spike (McLennan & Bell)



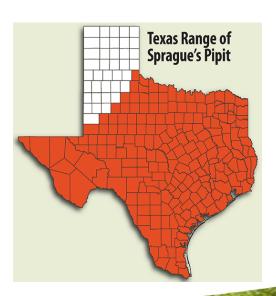




Sprague's Pipit

- Short-mixed prairie songbird
- Winters in SW U.S. and N. Mexico
- Candidate Species
- Expected proposed listing (FY2015)
- Expected final listing (FY 2016)
- Research Project (Texas State)
- Key economic sectors:
 - Agriculture
 - Ranching
 - Road Construction
 - Wind energy development
 - Oil and Gas Development





Plains Spotted Skunk

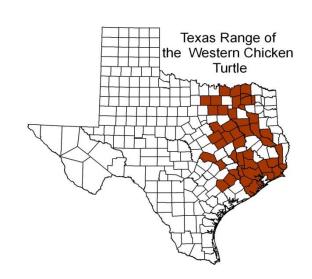
- Occupies a variety of habitats
- Requires extensive vegetative cover
- 90-day finding (Dec. 4, 2012)
- Under review for 12-month finding
- Research Project (Angelo State)
- Key economic sectors:
 - Agriculture
 - Ranching
 - Land development





Western Chicken Turtle

- Still water swamps, lakes, and ponds
- 90-day finding (Sept. 27, 2011)
- Under review for 12-month finding
- Research Project (Texas A&M)
- Key economic sectors:
 - Agriculture
 - Ranching
 - Road Construction
 - Water Development
 - Channel modification
 - Dam construction





Monarch Butterfly

- Host plant—milkweed
- 90% decline in past 2 decades
- Main threat—loss of native habitat
- Petitioned Aug. 26, 2014
- 12-month review Dec. 29, 2014
- Monarch Campaign
 - \$2 million
 - FWS and NFWF







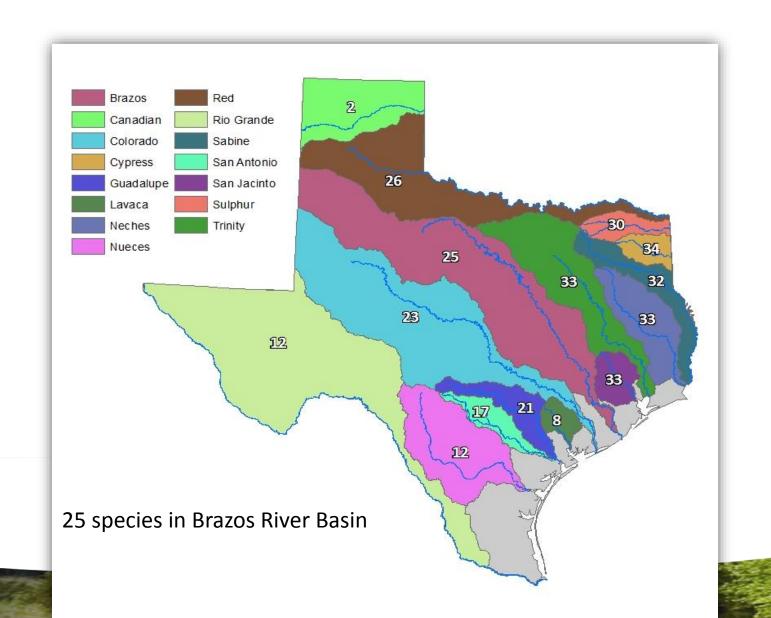
Texas freshwater mussels

- ~300 mussel species in North America; ~50 species in Texas
- Many Texas species are endemic
- Bottom-dwelling invertebrates
- Filter-feeders
- Occur in variety of habitats
- Most Texas species require free-flowing streams;
 some can survive in impounded areas





Number of species per river basin



Role in aquatic ecosystems

- Food sources for a variety of insects, fish, birds, and mammals
- Remove suspended particles and pollutants from the water column, helping to improve water quality
- Indicators of environmental quality



Primary threats

- Habitat alteration and degradation
 - Water flow alterations, impoundments
 - Sedimentation
 - Water pollution
 - Invasive species

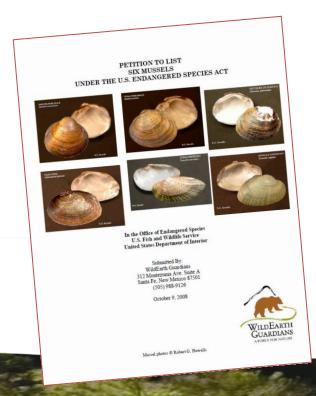






Listing status in Texas

- 15 species listed as state-threatened
- Federal status:
 - 6 species petitioned in 2007
 - Additional 6 species petitioned in 2008





Federal listing status

- Positive 90-day finding for 9 mussels, Dec 15, 2009
- Positive 90-day finding for 2 mussels, Dec 16, 2009
- Negative 90-day finding for 1 mussel, March 23, 2010
- 12-month finding for 5 central Texas mussels, Oct 6,
 2011

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS-R2-ES-2009-0076; 92210-1 B2]

Endangered and Threatened W and Plants; 90-Day Finding on Petitions To List Nine Species Mussels From Texas as Threat Endangered With Critical Habit

AGENCY: Fish and Wildlife Servi Interior.

DEPARTMENT OF THE INTERI

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R2-ES-2008-013 [92210-1111-0000-B2]

Endangered and Threatened W and Plants; Partial 90-Day Find a Petition to List 475 Species in Southwestern United States as Threatened or Endangered with Habitat

AGENCY: Fish and Wildlife Service, Interior.

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2010-0

[MO 92210-0-0008-B2]

Endangered and Threatened and Plants; 90-Day Finding of Petition to List the Southern Hickorynut Mussel (Obovan Jacksoniana) as Endangered Threatened

AGENCY: Fish and Wildlife Se Interior.

DEPARTMENT OF THE INTERIOR

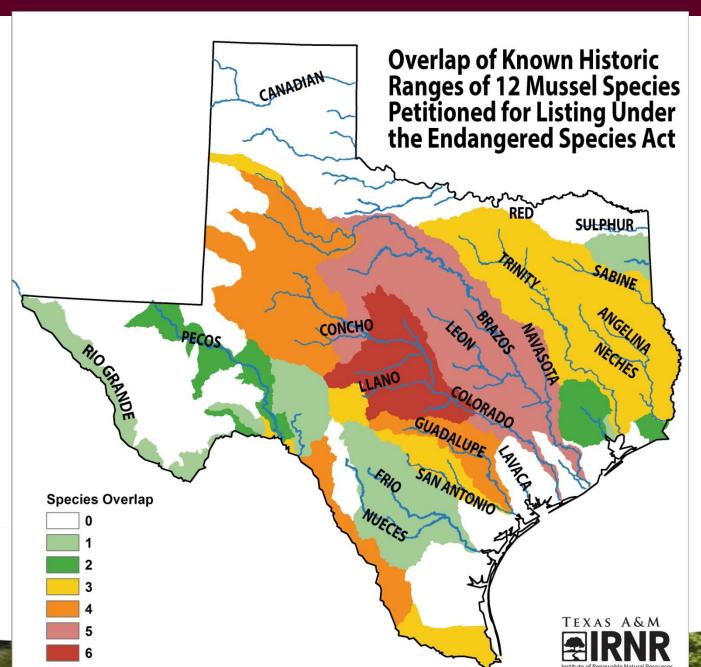
Fish and Wildlife Service

50 CFR Part 17

[FWS-R2-ES-2011-0079; MO 92210-0-0008 B2]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List Texas Fatmucket, Golden Orb, Smooth Pimpleback, Texas Pimpleback, and Texas Fawnsfoot as Threatened or Endangered

AGENCY: Fish and Wildlife Service, Interior.





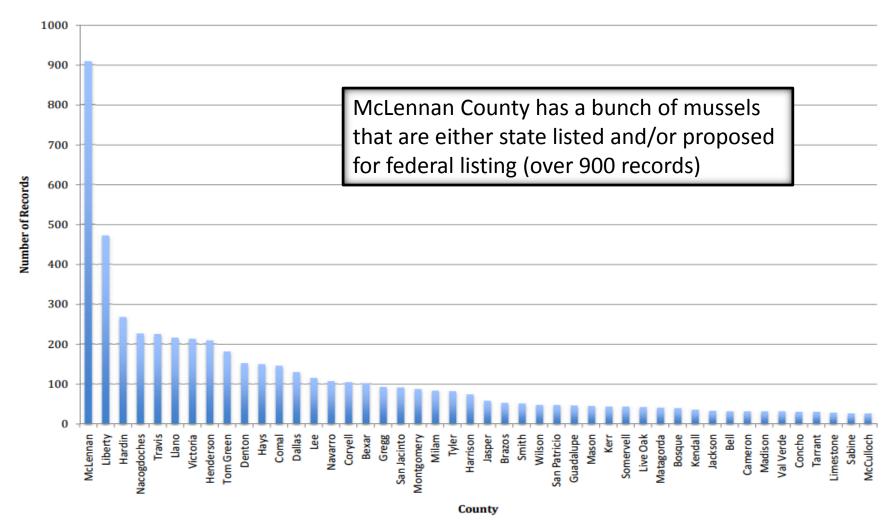
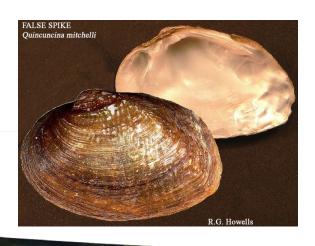
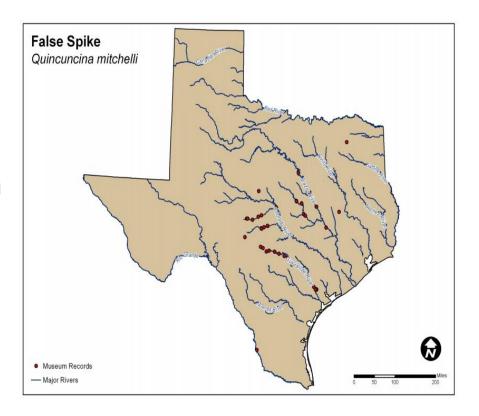


Figure 5. Location distribution by county of freshwater mussel species contained in the TFMD.

False Spike

- State Threatened
- Under Review for 12 month finding
- 16 records from basin





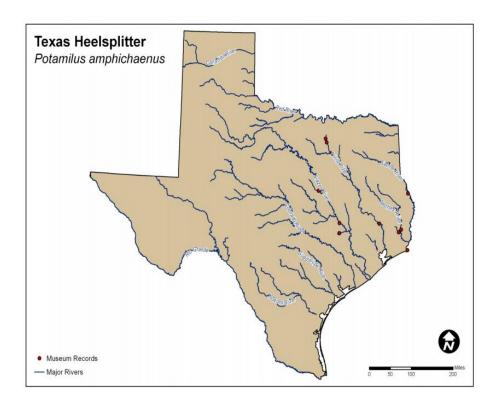




Texas Heelsplitter

- State Threatened
- Under Review for 12 month finding
- 7 records from basin



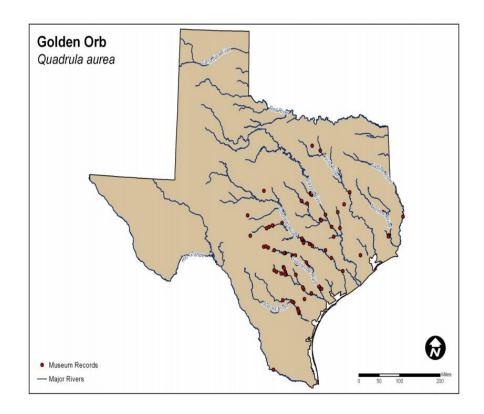




Golden Orb

- State Threatened
- Candidate for listing: warranted but precluded
- 45 records from basin

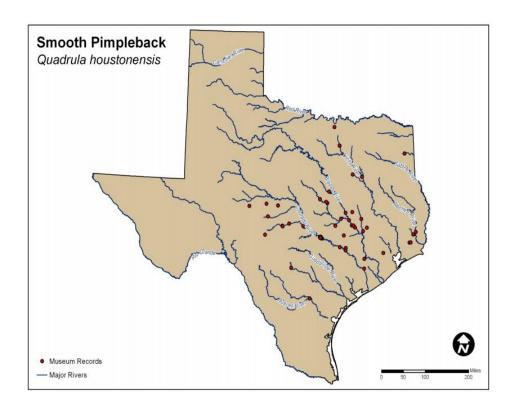




Smooth Pimpleback

- State Threatened
- Candidate for listing: warranted but preclude
- 28 records from basin



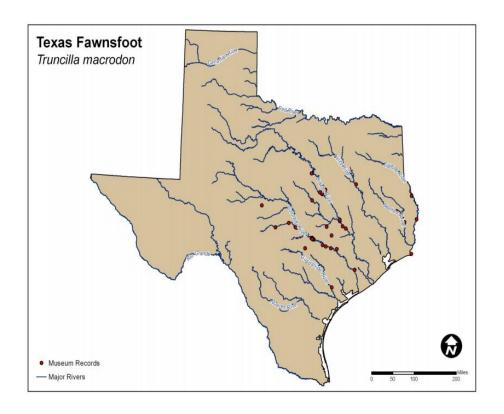




Texas Fawnsfoot

- State Threatened
- Candidate for listing: warranted but preclude
- 40 records from basin

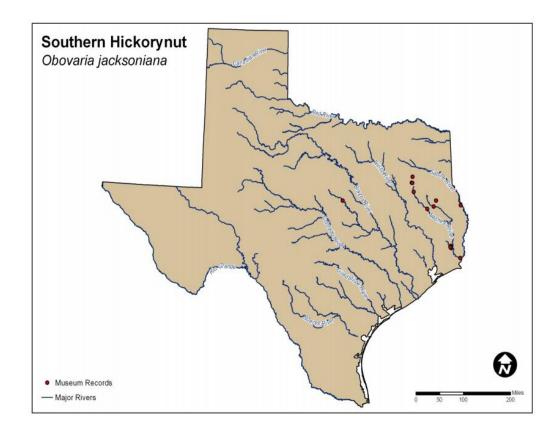




Southern Hickorynut

- State Threatened
- Not proposed for federal listing
- 1 record from basin



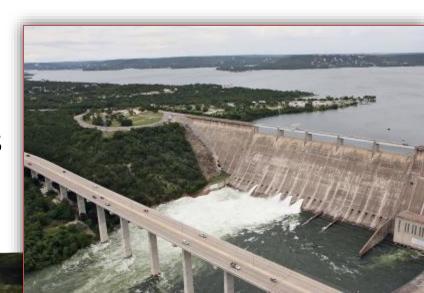




What does all this mean...

What might be impacted with federal listing?

- Potentially, any activity that pulls water out or puts water into aquatic system, or that may directly impact the system (e.g., bridge construction)
- Texas Department of Transportation
- Existing reservoirs
- New reservoirs
- Agricultural activities
- Power plants
- Wastewater treatment plants
- Recreational activities







Promoting Private Lands Stewardship through Research, Education, and Policy.

http://irnr.tamu.edu/ http://txlandtrends.org/



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