



Brazos River Authority

Federal Endangered/Threatened and Invasive Species



Federal Endangered & Threatened Species

Nationwide

- **1215 animals**
- **752 plants**
- **249 candidates**

Texas

- **65 animals**
- **28 plants**
- **21 candidates**



Houston Toad



Smooth Pimpleback



Golden Cheeked Warbler



Federal Listing Process

- **USFWS process -
2½ year minimum**
- **Citizen petition
most common
route for listings**
- **Lawsuits often
force decisions**
- **Process the same
for de-listing**



Navasota Ladies'-Tresses



Five Factors for Listing

- **Present or threatened destruction, modification or curtailment of the species' range or habitat**
- **Overuse of the species for commercial, recreational, scientific or educational purposes**
- **Disease or predation affecting the survival of the species**
- **Inadequate existing regulatory mechanisms to protect and conserve the species**
- **Other natural or manmade factors affecting the species' continued existence**



Listing Process

- **Citizen Petition or Internal Review**
- **90-day Review – does substantial information exist to indicating listing may be warranted,**
 - **If no – publish results in Federal Register**
 - **If yes:**
 - **12-month Review – further review and determine if species warrants listing; does not warrant listing; or does warrant listing, but is precluded**



Key Definitions

- **Endangered – Any species in danger of extinction throughout all or a significant portion of its range**
- **Threatened – Any species likely to become endangered in the foreseeable future**
- **Candidate – Listing is warranted but precluded by higher priority species**



Candidate Species

- **Annual Candidate Review**
 - annual review to determine if listing is still warranted for each species
- **Listing Priority Number**
 - Assists USFWS in prioritizing conservation efforts
 - Assign based on magnitude and immediacy of threats, as well as its taxonomic distinctiveness.
 - Listing priority numbers range from 1 to 12
 - 1 = highest priority for listing



Federally Listed Brazos Basin Species

Endangered

- **Golden Cheeked Warbler**
- **Black Capped Vireo**
- **Houston Toad**
- **Navasota Ladies'-Tresses**
- **Interior Least Tern**
- **Small Tooth Sawfish**
- **Attwater's Prairie Chicken**

Candidates

- **Small Eye Shiner**
- **Sharpnose Shiner**
- **Georgetown Salamander**
- **Salado Springs Salamander**
- **Jollyville Plateau Salamander**
- **Smooth Pimpleback***
- **Texas Fawnsfoot***

* Decision October 6, 2011



September 9, 2011

- **USFWS settled lawsuits with the Center for Biological Diversity (CBD) and Wild Earth Guardians (WEG)**
- **Listing Work Plan (Deadline March 30, 2017)**
 - **Multi-year work plan, over a period of six years,**
 - **Systematically review and address the needs of more than 250 species listed on the 2010 Candidate List**
 - **Determine if species should be elevated to endangered status or issue not-warranted decision**
 - **Prepare proposed and final rules for specified candidate listed species (listed prior to December 2010)**
 - **Critical habitat must be determined at time of listing**



43 Texas Species Under Review

- **12 mussels**
- **6 amphibians**
- **8 fish**
- **1 snail 4 insects**
- **1 crustacean**
- **1 bird**
- **10 plants**



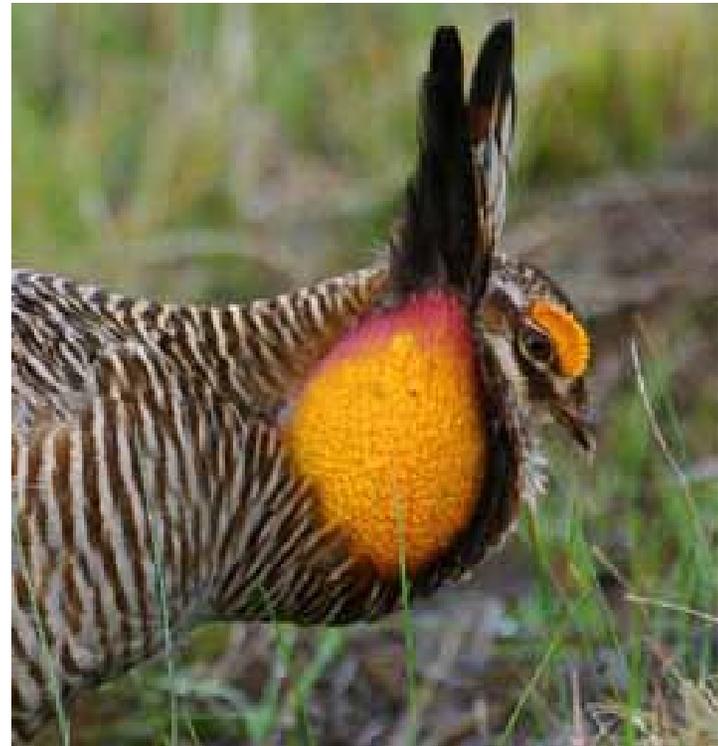
Georgetown Salamander

If all listed it will represent a 46% increase in ESA listed species for Texas.



Critical Habitat

- **Geographic area essential for a species**
- **May include an area not currently occupied by the species**
- **May require special management or protection of habitat**
- **Must go through public comment process**



Attwater's Prairie Chicken



Trends in Endangered Species Activities

- **Extreme Political Pressure to List Species**
- **Shift of focus from individual listings to Group Listings**
 - **Edwards Aquifer**
 - **Freshwater Mussels**
 - **Desert Fishes**
- **Focus on water-dependant species.**
- **Larger Processes**
- **Greater Uncertainty**



Smalleye Shiner



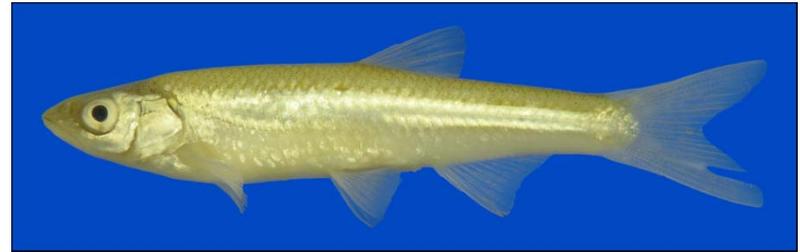
Shiners

- **2 candidate species known to currently have living populations in the Brazos Basin**
 - **Smalleye Shiner**
 - **Sharpnose Shiner**
- **Candidate listed May 2004**
- **Annual Candidate Review – Oct 2011**
 - **Listing still warranted for both**
 - **Listing Priority Number - 5 for both**
 - **Threat non-imminent because most significant threat, reservoir building, not likely to occur in the near future**



Threats to Brazos Shiners

- **Impoundments**
- **Irrigation and water diversion**
- **Sedimentation**
- **Gravel mining**
- **Desalination**
- **Industrial and municipal discharges**
- **Introduction of competitive species**
- **Invasive species**
 - **Saltcedar**
 - **Golden Algae**



Sharpnose Shiner



Brazos Shiner Status

- **Populations persist in the Brazos River upstream of Possum Kingdom Reservoir**
 - **Stable**
 - **Reproducing**
- **The sharpnose has been eliminated from the Wichita River in the Red River Basin**
- **The sharpnose can still be caught in Lower Brazos River but rare**
- **The smalleye has not been caught in Lower Brazos River since 1986**
- **Vulnerable to catastrophic events**
 - **Introduction of competitive species**
 - **Drought**



When Could the Shiners be Elevated to Endangered?

- **USFWS Work Plan**
 - Does not expect to begin work on proposed listing rules for 5 Central Texas Mussels before April 2017
 - Critical Habitat would be developed prior to publication of listing rule
- **Annual Candidate Review**



5 Central Texas Mussels

- **2 species known to currently have living populations in the Brazos Basin**
 - Smooth Pimpleback
 - Texas Fawnsfoot
- **Candidate listed October 6, 2011**
- **Listing Priority Number**
 - Smooth Pimpleback = 8
 - Texas Fawnsfoot = 2



Threats to 5 Central Texas Mussels

- **Habitat modification**
- **Point source pollution**
- **Non-point source pollution**
 - **Fertilizers**
 - **Pesticides**
 - **Herbicides**
- **Invasive, non-native species**
 - **Golden Algae**
 - **Zebra Mussels**



Texas Fawnsfoot



5 Central Texas Mussels

Why Care?

- **Monitors of Aquatic Health**
 - Indicators of healthy ecosystems
 - If mussels present water quality acceptable for other species
- **Ecological Value**
 - Filter feeders, help clean water
 - Food for many other species
- **Cultural Value**

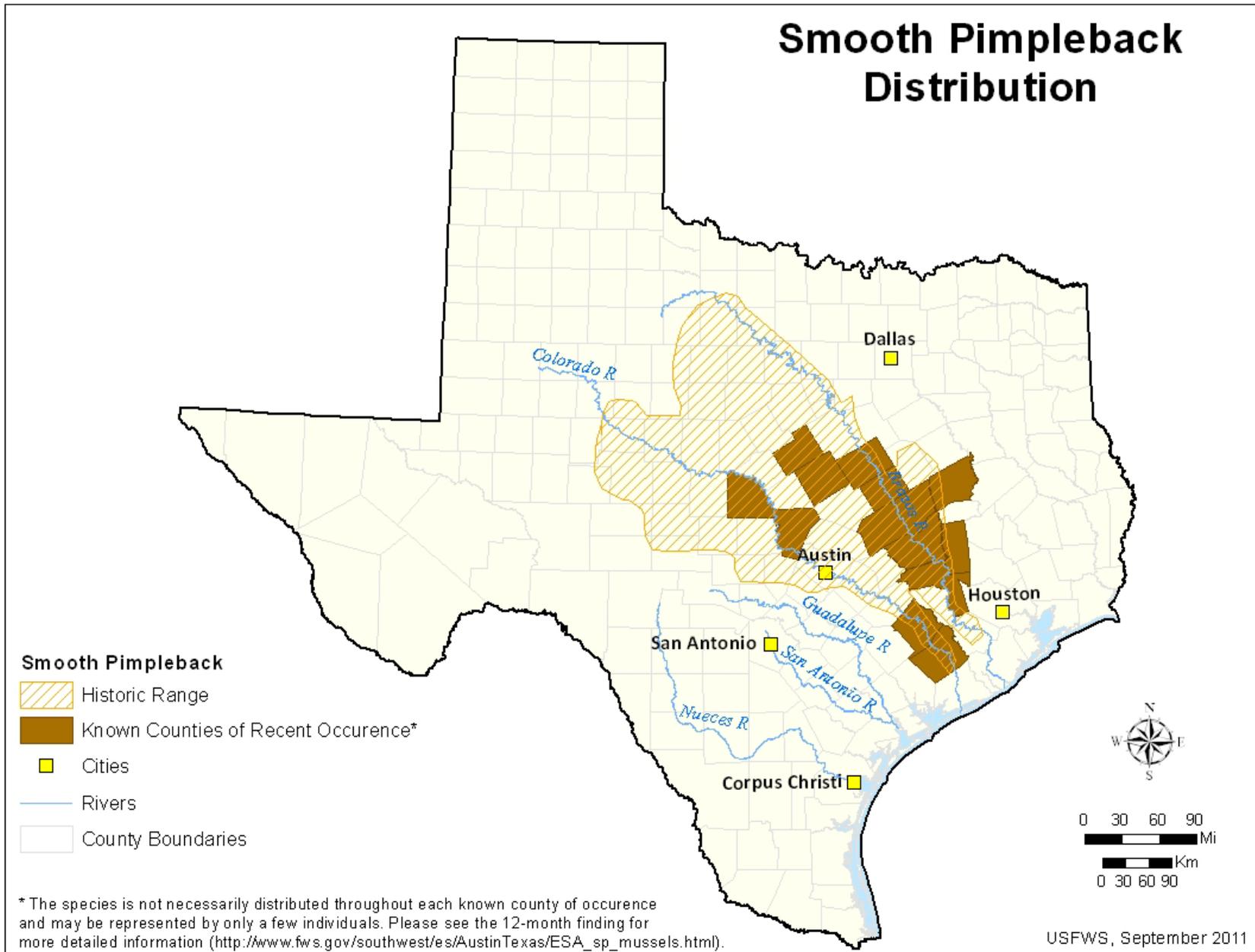


Status of Smooth Pimpleback in Brazos Basin

- Listing Priority Number = 8
- Recent surveys suggest a greater abundance and distribution in the central Brazos River drainage than was previously thought
- Populations persist in the San Saba River, Lower Brazos River, Navasota River, Leon River and Yegua Creek
 - Stable
 - Reproducing
- The species has been eliminated from the upper Brazos River



Smooth Pimpleback Distribution



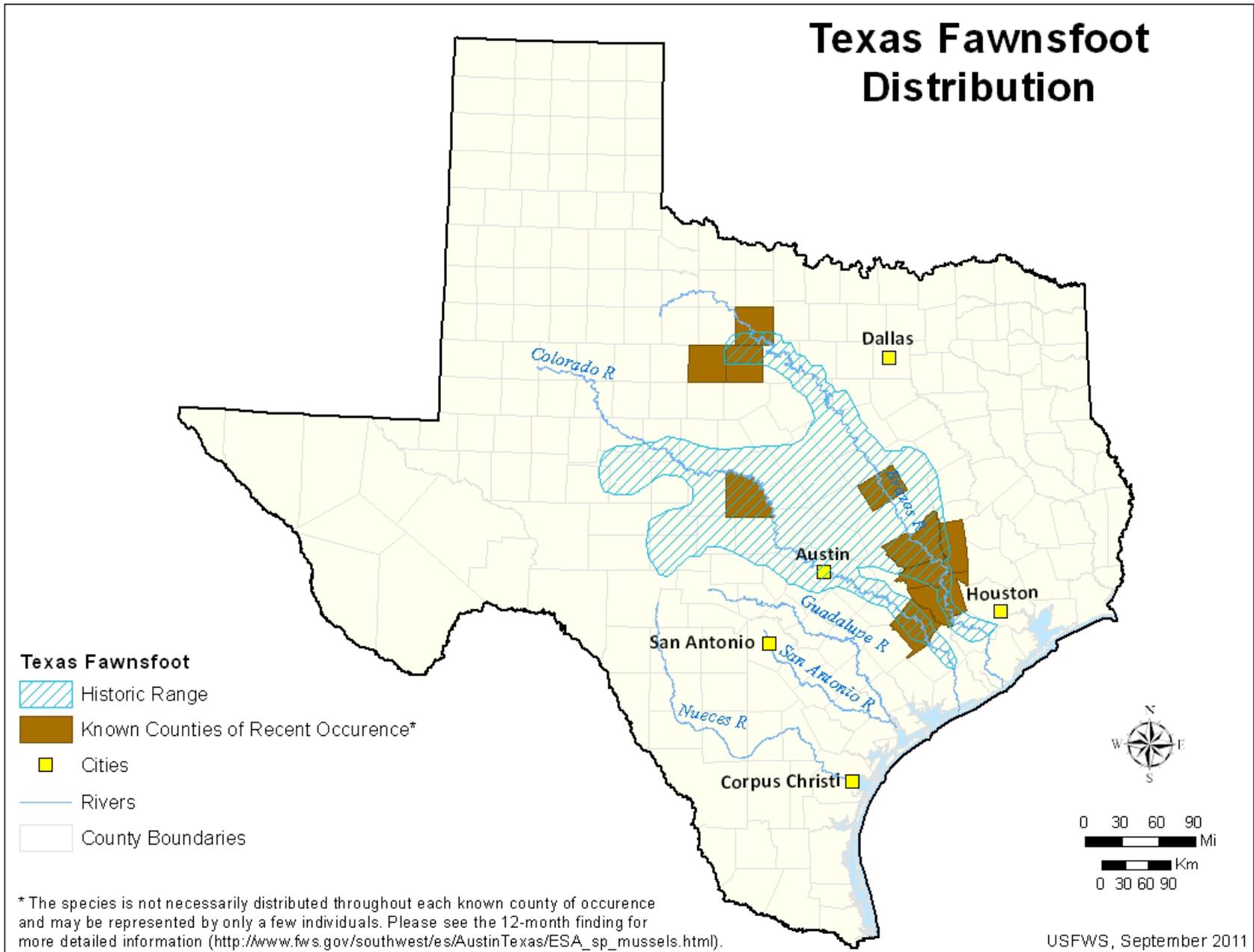


Status of Texas Fawnsfoot in Brazos Basin

- **The Texas fawnsfoot has declined rangewide and is now known from only five populations**
- **Populations persist in the San Saba River, and Brazos River**
 - **Stable**
 - **Reproducing**
- **Remaining populations are disjunct and restricted to short stream reaches**



Texas Fawnsfoot Distribution





When Could the Mussels be Elevated to Endangered?

- **USFWS Work Plan**
 - Does not expect to begin work on proposed listing rules for 5 Central Texas Mussels before FY 2017
 - Critical Habitat would be developed prior to publication of listing rule
- **Annual Candidate Review**



Salamanders

- **Proposed listing and critical habitat designation**

or

- **No substantial finding determination**
- **Anticipated in FY 2012**
- **Published in Federal Register**



More Information

- <http://www.fws.gov/Endangered/>
- <http://www.fws.gov/Southwest/>
- http://texasahead.org/texasfirst/resources/task_force/



Brazos River Authority

Zebra Mussels



Zebra Mussels

- **Non-native species**
- **Multiply quickly**
 - One mussel can produce 30,000 to a million offspring per year
 - Veligers (baby mussels) microscopic
- **Millions spent each year in US to control and clean**





Impacts

- **Clog water intake structures**
- **Interfere with dam gates**
- **Filter out nutrients and reduce primary productivity**
- **Declines in fish population**
- **Damage to other aquatic animals**
- **Sink navigational buoys**
- **Damage docks and boats**





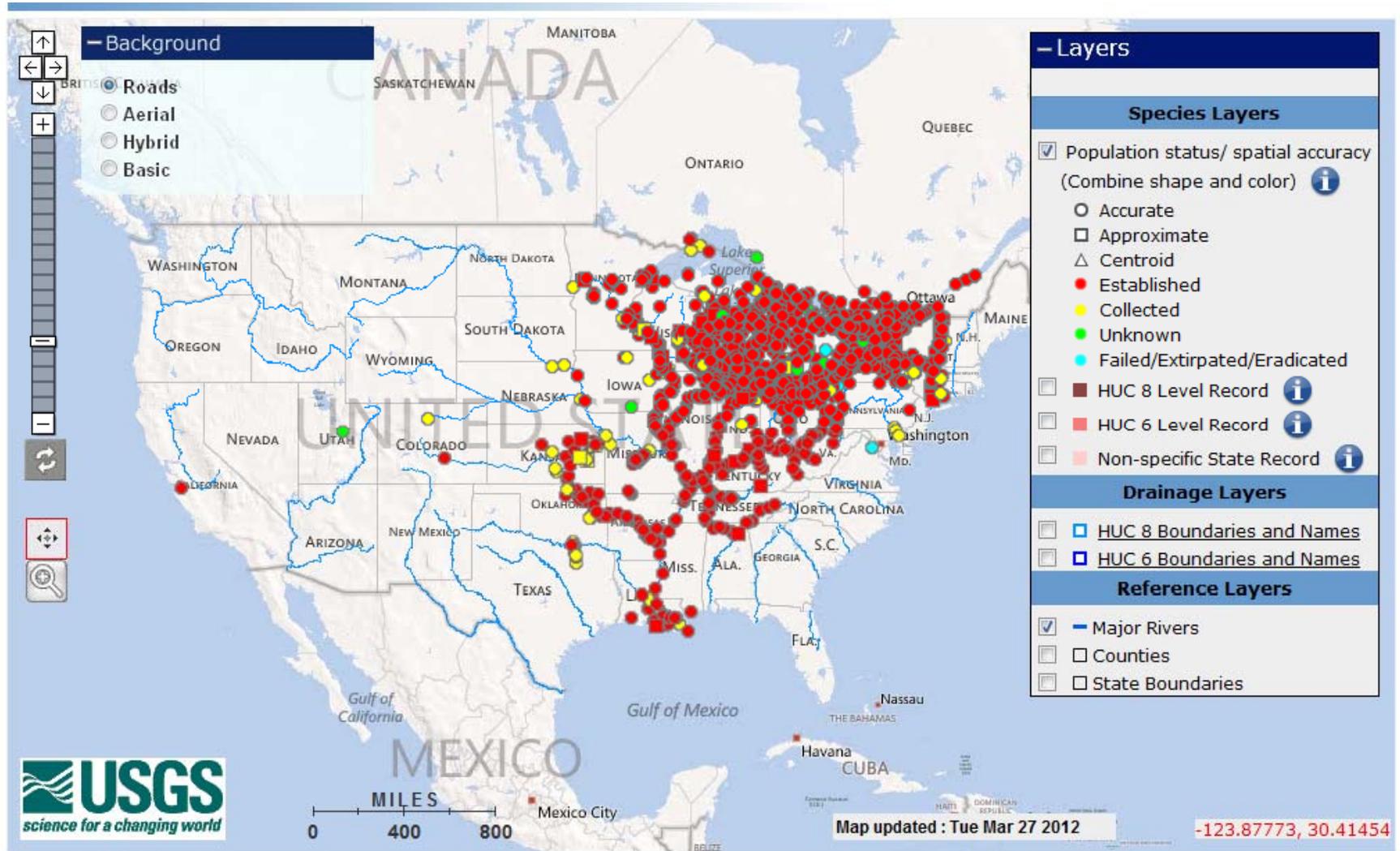
Where are they?

- **Lake St. Clair, Michigan in 1988**
- **All five Great Lakes by 1991**
- **Lake Texoma – 2009**
- **Will most likely spread throughout Red and Trinity Basins**
- **Will most likely spread throughout state**



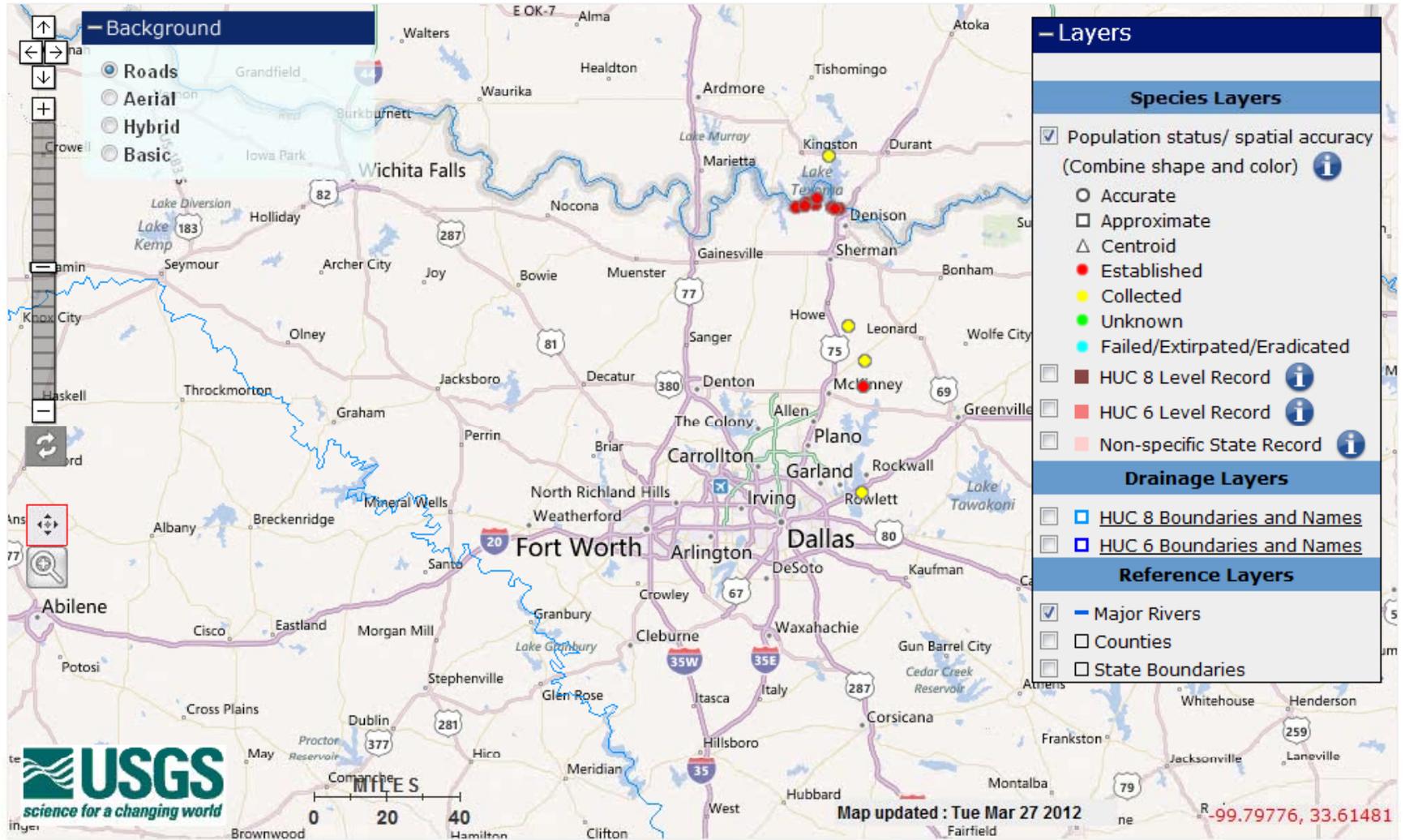


Zebra Mussel Locations in the US





Zebra Mussels in Texas





Prevent Spread

- **TPWD Public Awareness Campaign**
- **Clean, drain, and dry boats/jetskis when moving from waterbody to waterbody**
 - **Remove all vegetation, mud and algae**
 - **Drain all water from motors, livewells, bilge and other sources of water retention**
 - **Let boats dry for at least 7-10 days in the summer and 15-20 days in cooler months**
- **Clean and dry bait buckets and other fishing gear**
- **Texas Mussel Watch Volunteer**



More Information

- <http://texasinvasives.org/>
- http://www.tpwd.state.tx.us/newsmedia/releases/news_roundup/zebra_mussels/zebra_mussel_fast_facts.phtml
- http://www.tpwd.state.tx.us/learning/texas_nature_trackers/mussel/
- <http://www.fws.gov/midwest/endangered/clams/zebra.html>
- <http://nas.er.usgs.gov/taxgroup/mollusks/zebramusssel/>