

# *Land Trend Demography & Endangered Species Information and Updates*

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## *Texas A&M NRI*

“At the Texas A&M Natural Resources Institute, our work improves the conservation and management of natural resources through interdisciplinary and applied research. We are committed to solving natural resource issues and engaging policymakers, land managers and citizens throughout the process.”

- Our capacity to respond to conservation challenges results from our:
  - team of researchers who have broad ranging expertise
  - ability to identify and fill information gaps necessary for scientifically sound and effective natural resource policies
  - dedicated staff working at the intersection of research, management, policy and outreach
  - strong partnerships and collaborations with universities, government agencies, nongovernmental organizations and other stakeholders

Where natural resource conservation and applied research meet

About Us



# *Land*

- Our **Land Trends and Demography Program** applies innovative solutions to private land conservation using geospatial tools and landscape planning. The program also provides geospatial and data analytic support to research and extension projects to aid in data-driven decision-making.



# *Wildlife*

- Our **Wildlife Conservation and Mitigation Program** conducts problem-driven research addressing today's challenging wildlife and habitat management questions. We promote stewardship of wildlife populations, including game, nongame, endangered and threatened species, and their habitats, through the application and translation of sound science and outreach efforts.



# *Military*

- Our **Military Land Sustainability Program** supports the military's mission through integrated land management and collaborative regional planning. These efforts support the twin imperatives of military readiness and land stewardship.



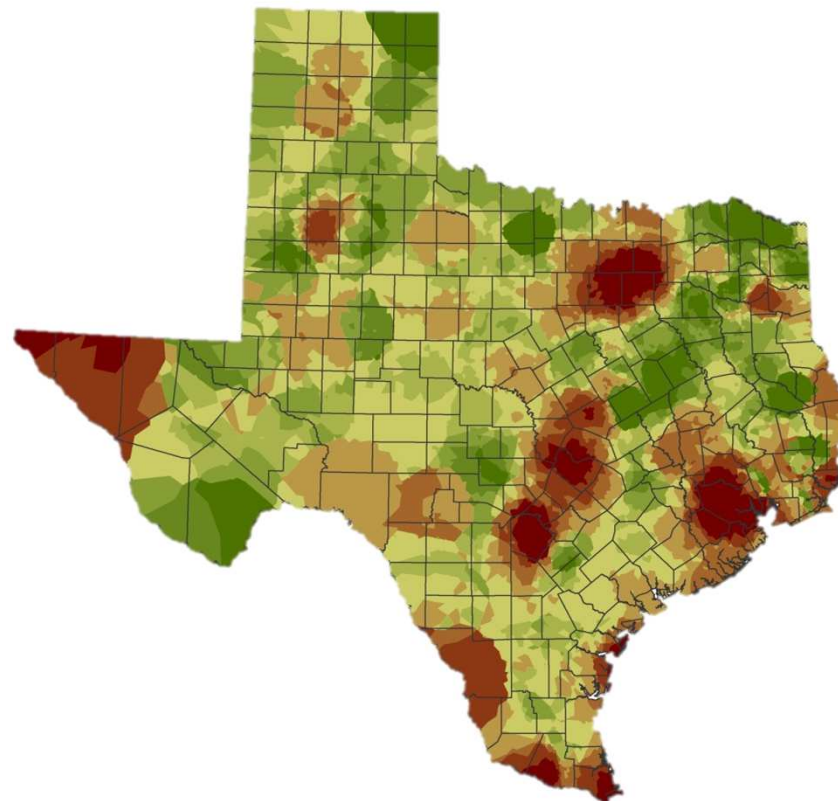
# *Stewardship*

- Our **Private Land Stewardship Program** fosters stewardship of private lands and their associated public benefits through engagement and partnerships. Our work and rapport with private landowners and private landowner groups offer unique engagement opportunities to relay research results and pragmatic solutions to emerging natural resource challenges.



Brian Hays

# *Texas Land Trends: Challenges and Opportunities for the Future*





# Value of Rural Lands

- Rural working lands play an unseen yet critical role in water/food sustainability and national/energy security.
- *Effective* conservation will require innovative solutions to sustaining private rural working lands.



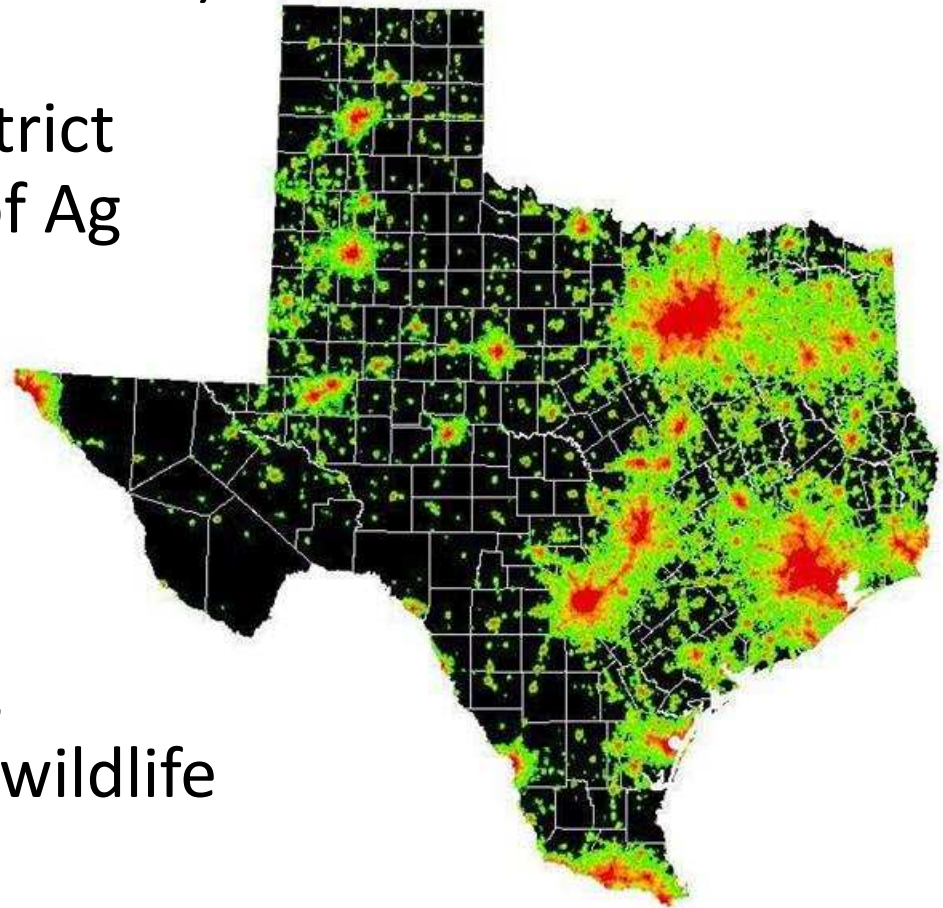
# Outline and The Data....

- More people...
- Less farms and ranches...
- Changing landowners....
  
- Use of data to give a perspective on challenges:
  - The Good, The Bad, and The Ugly
- Opportunities and approaches...



# Texas Land Trends

- Trends in land use (1997-2012)
- Primary datasets used
  - County Appraisal District
  - USDA NASS Census of Ag
  - Others
- Relationships among
  - Land Value
  - Land Ownership
  - Land Use
- **Working Lands** – farms, ranches, family forests, wildlife (e.g., 1D, 1D1)



# Texas Landowner Survey



Landowner Survey

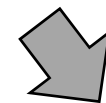
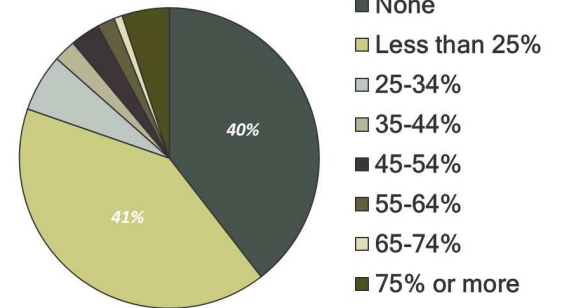


Land Trends

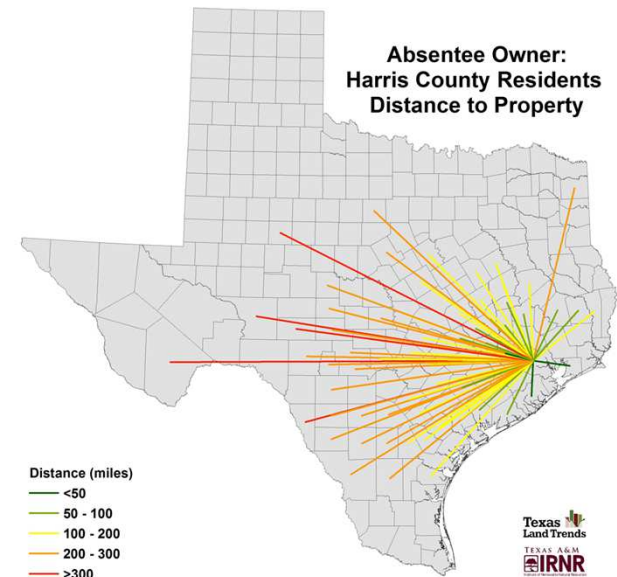
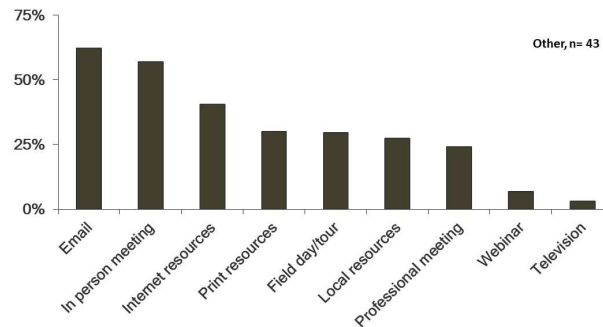
## Regional Differences?

Spatial Demographics for Texas Landowners

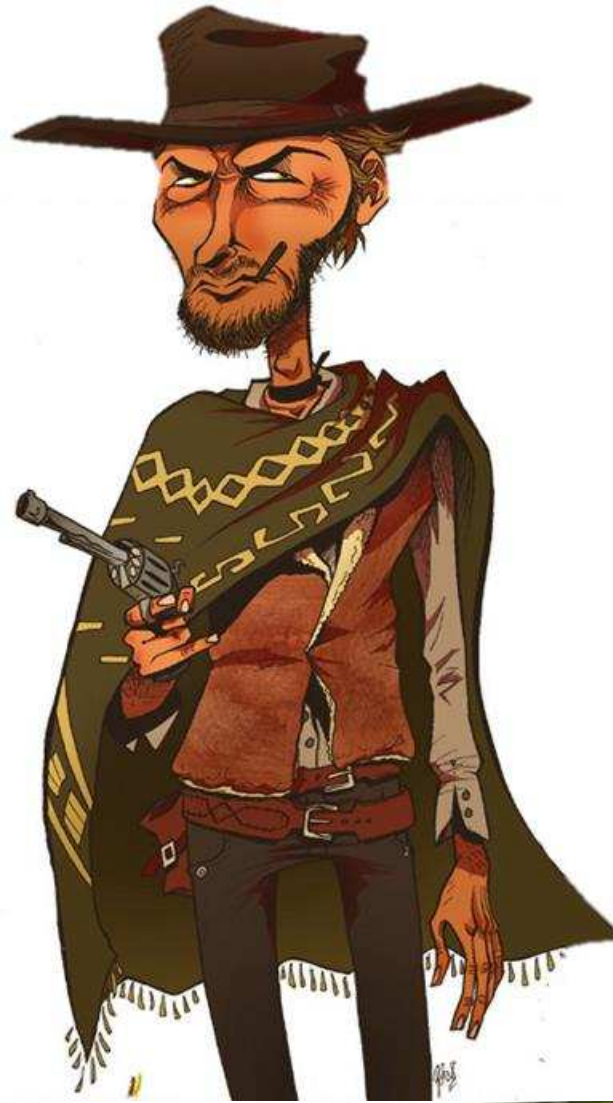
## Annual income (%) from farm/ranch



## Preferred method for information

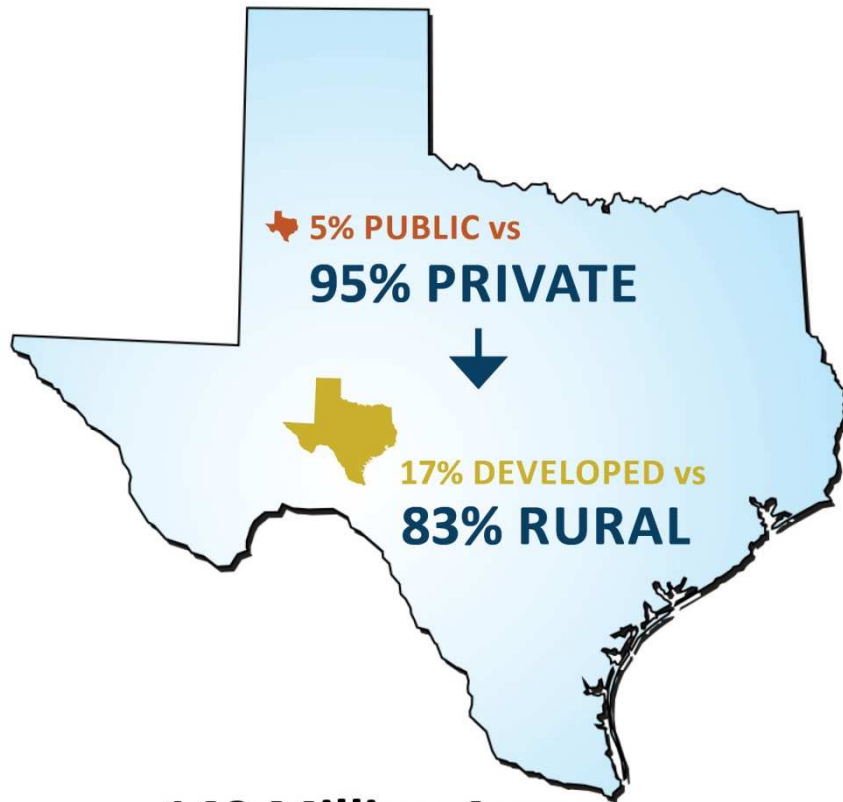


*More people....*



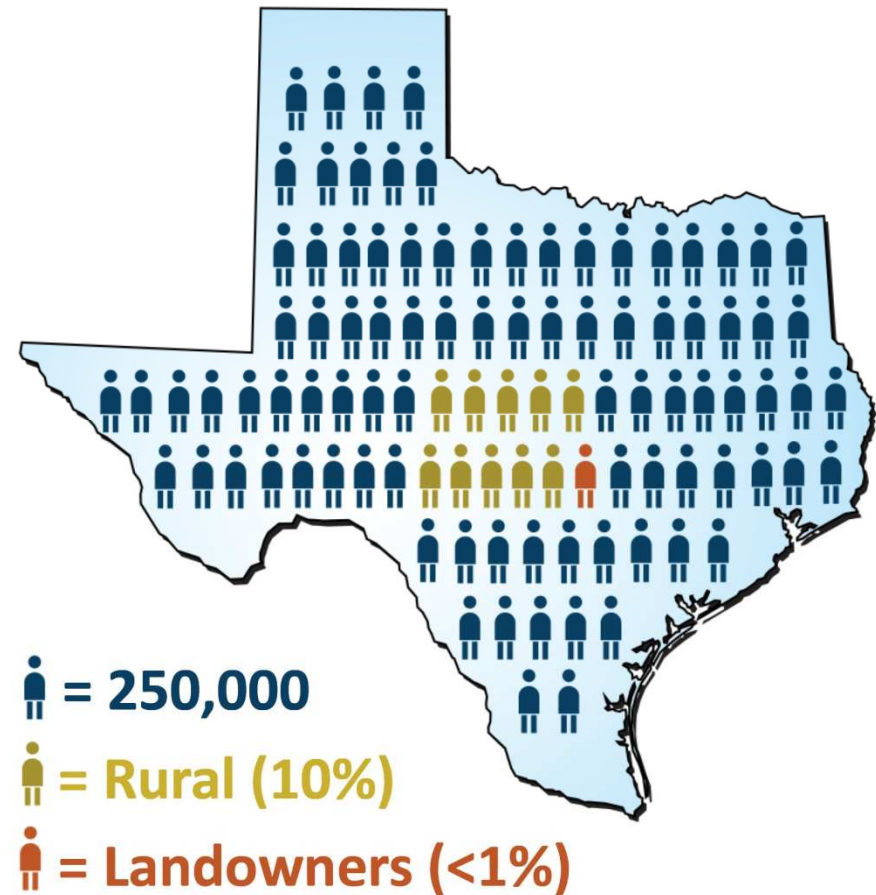
# Changing Texas

171 Million Acres...



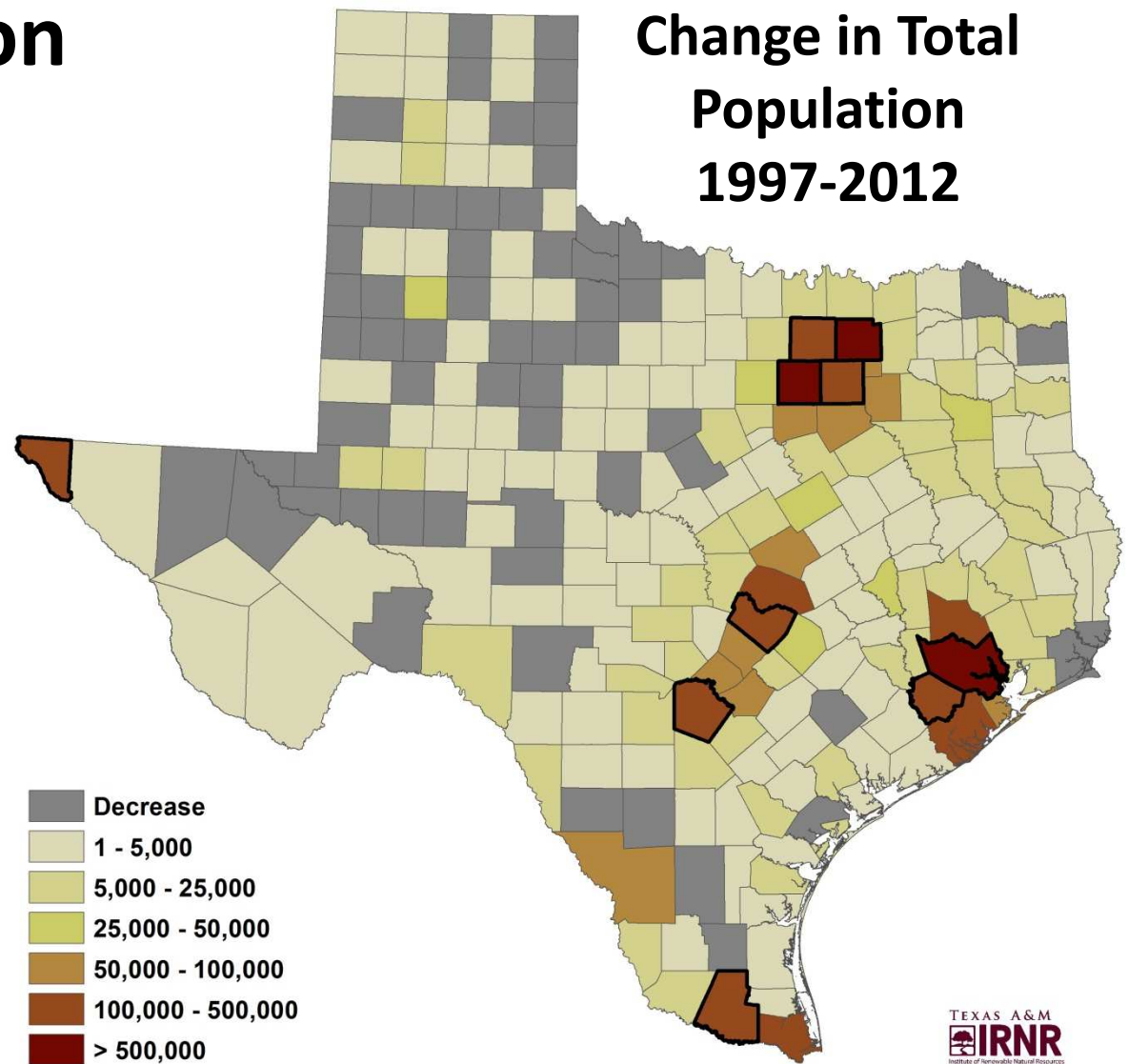
...142 Million Acres  
*Private Working Lands*

Population: 26 Million...



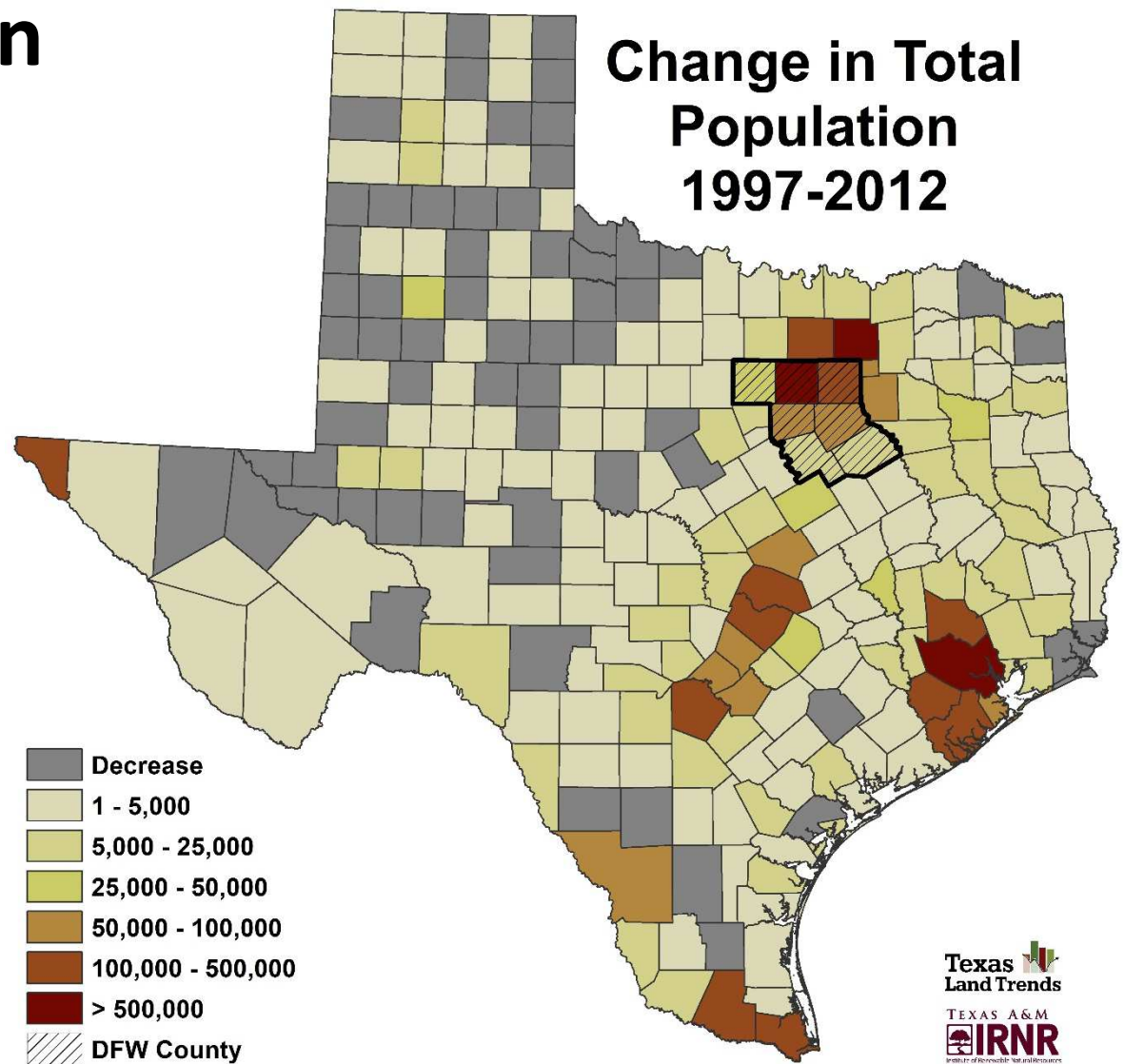
# Texas Population

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



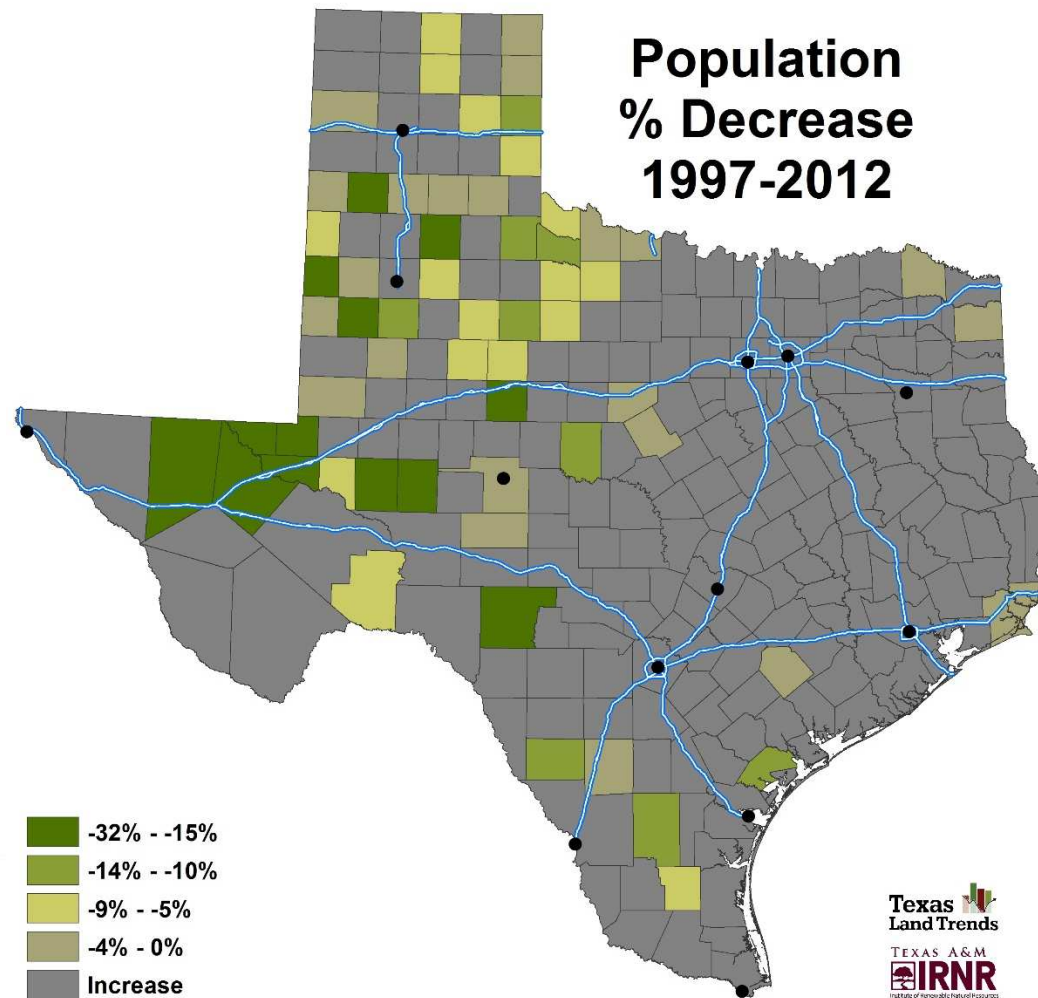
# DFW Population

- 1997 – 3.7M
- 2012 – 4.9M
- Increase- 1.2M
- 34% increase
- 84,070/year

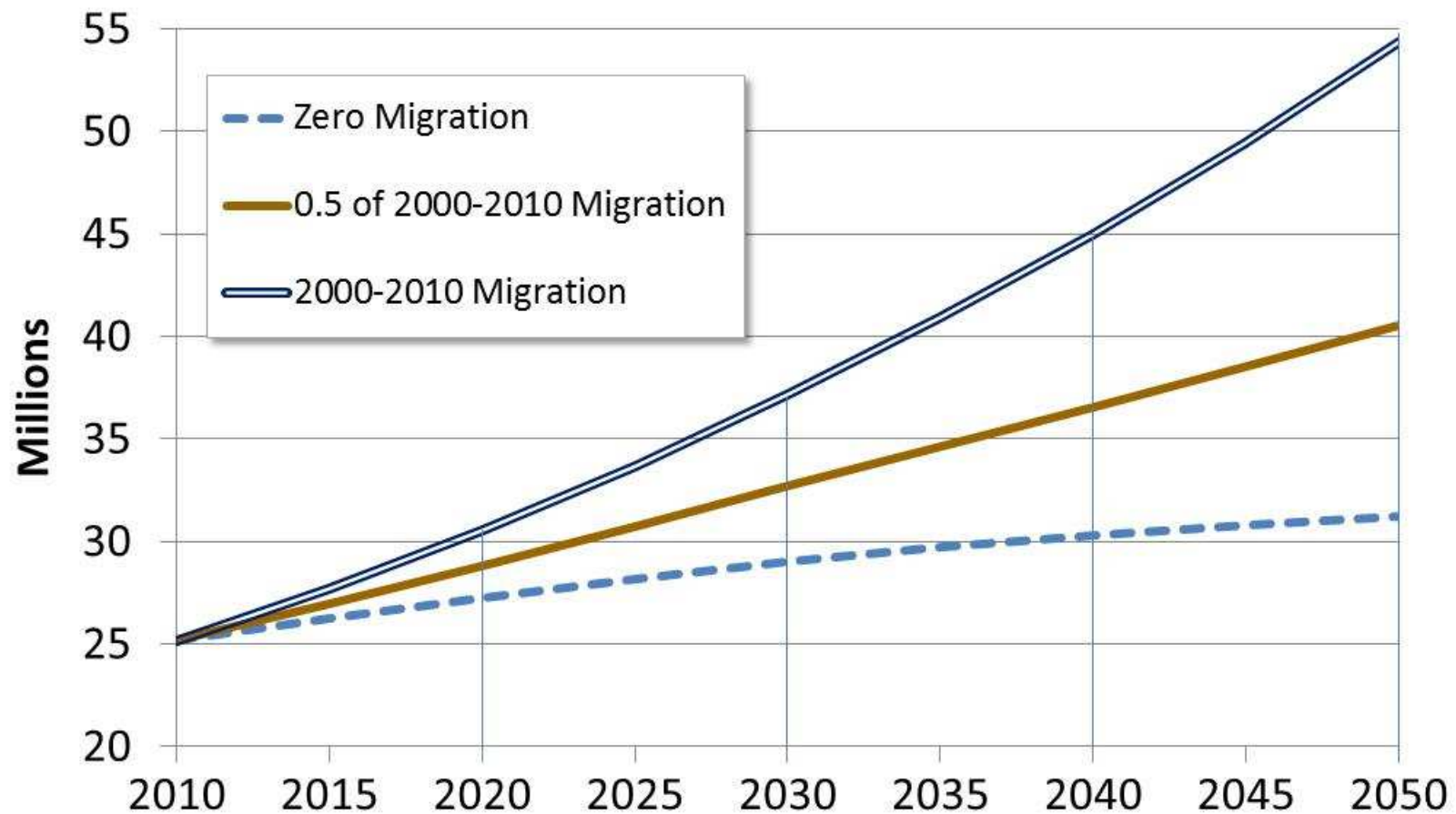




# Population Percent Change – *Top 25 Counties*

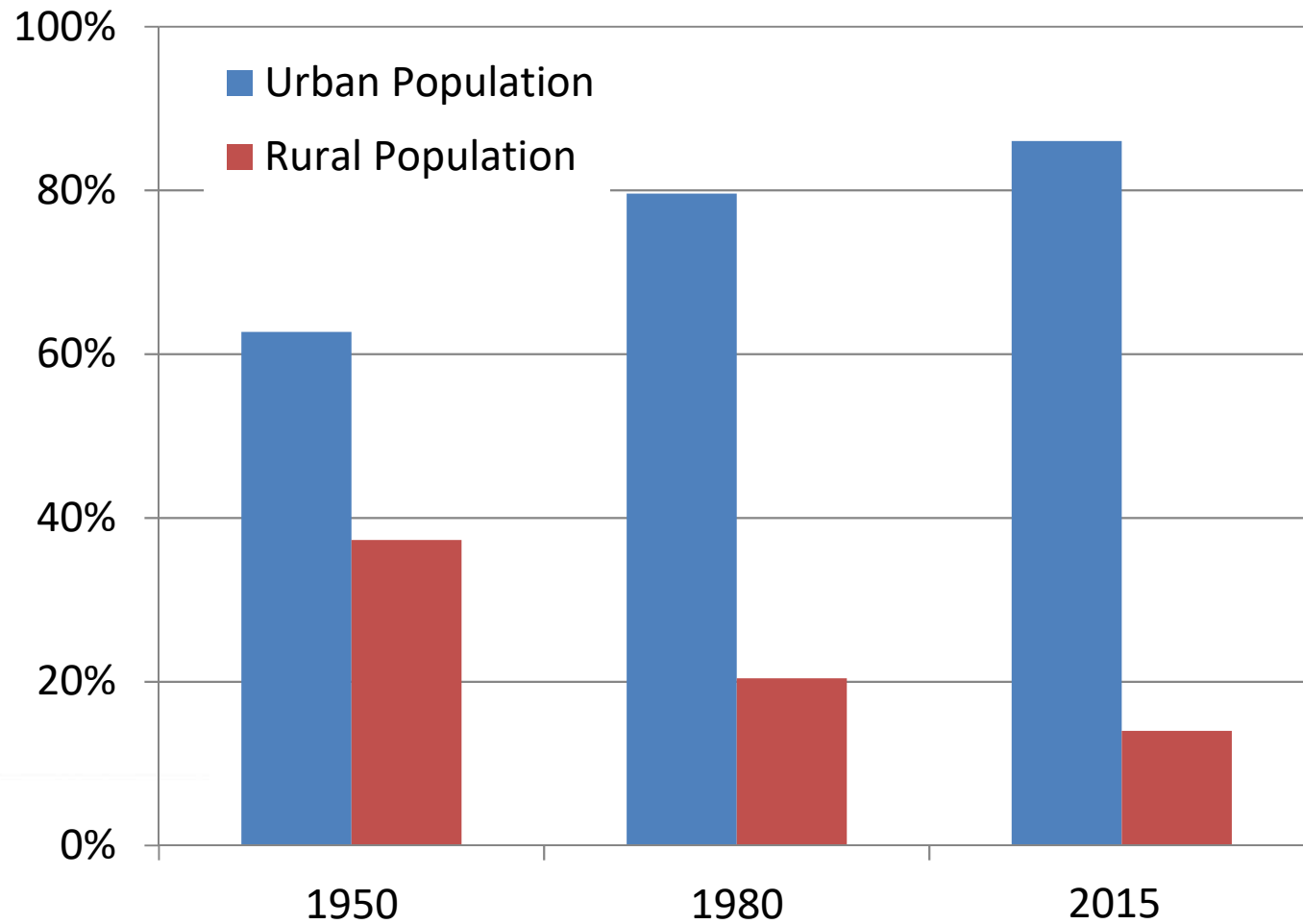


# Texas Projections (2010-2050)



Source: State Demographer

# Texas Rural and Urban Populations



*Less farms and ranches....*

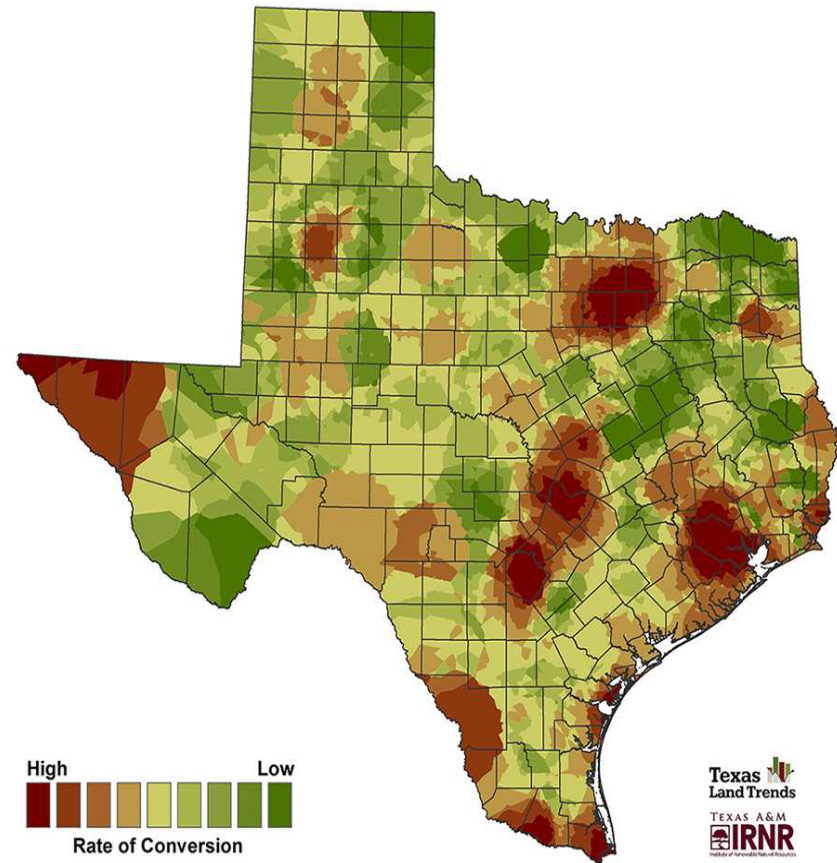


# Working Lands?

- Taxed on productivity valuation (Ag appraisal, timber appraisal)

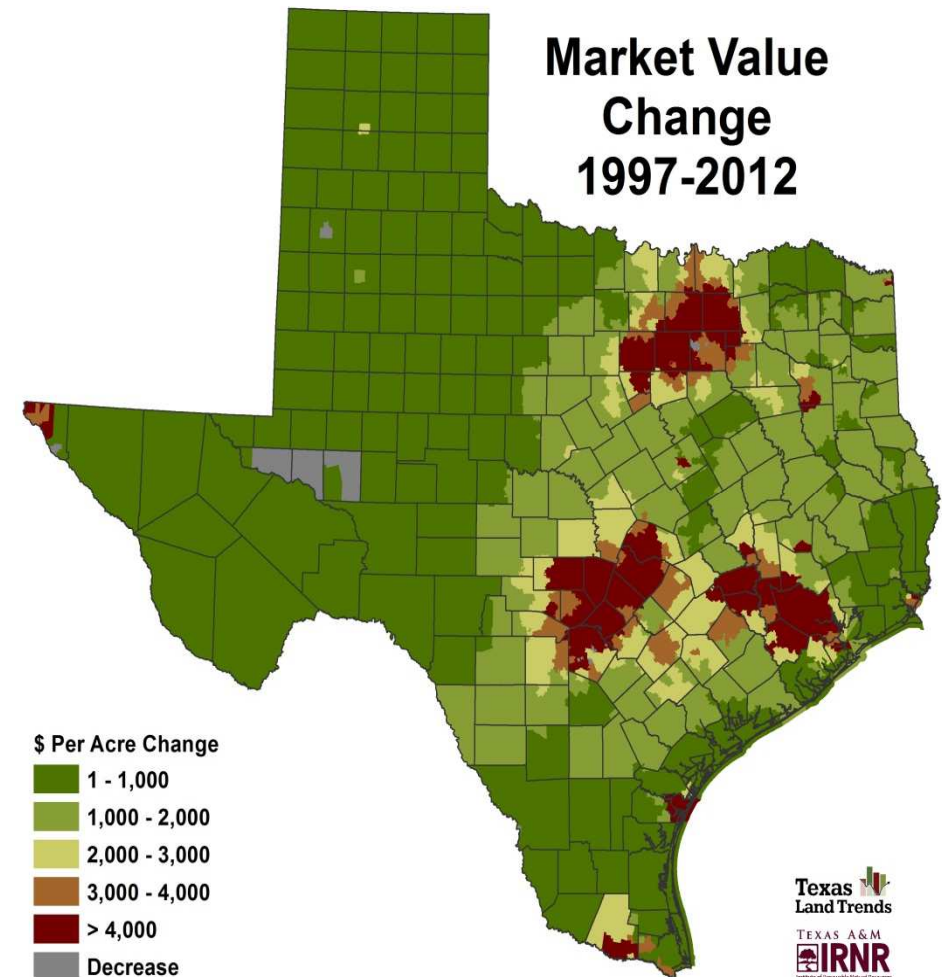
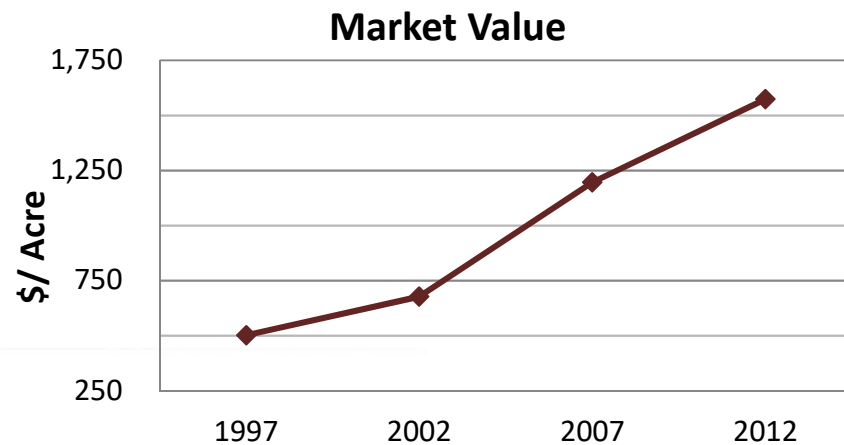
# Working Land Loss – *Conversion*

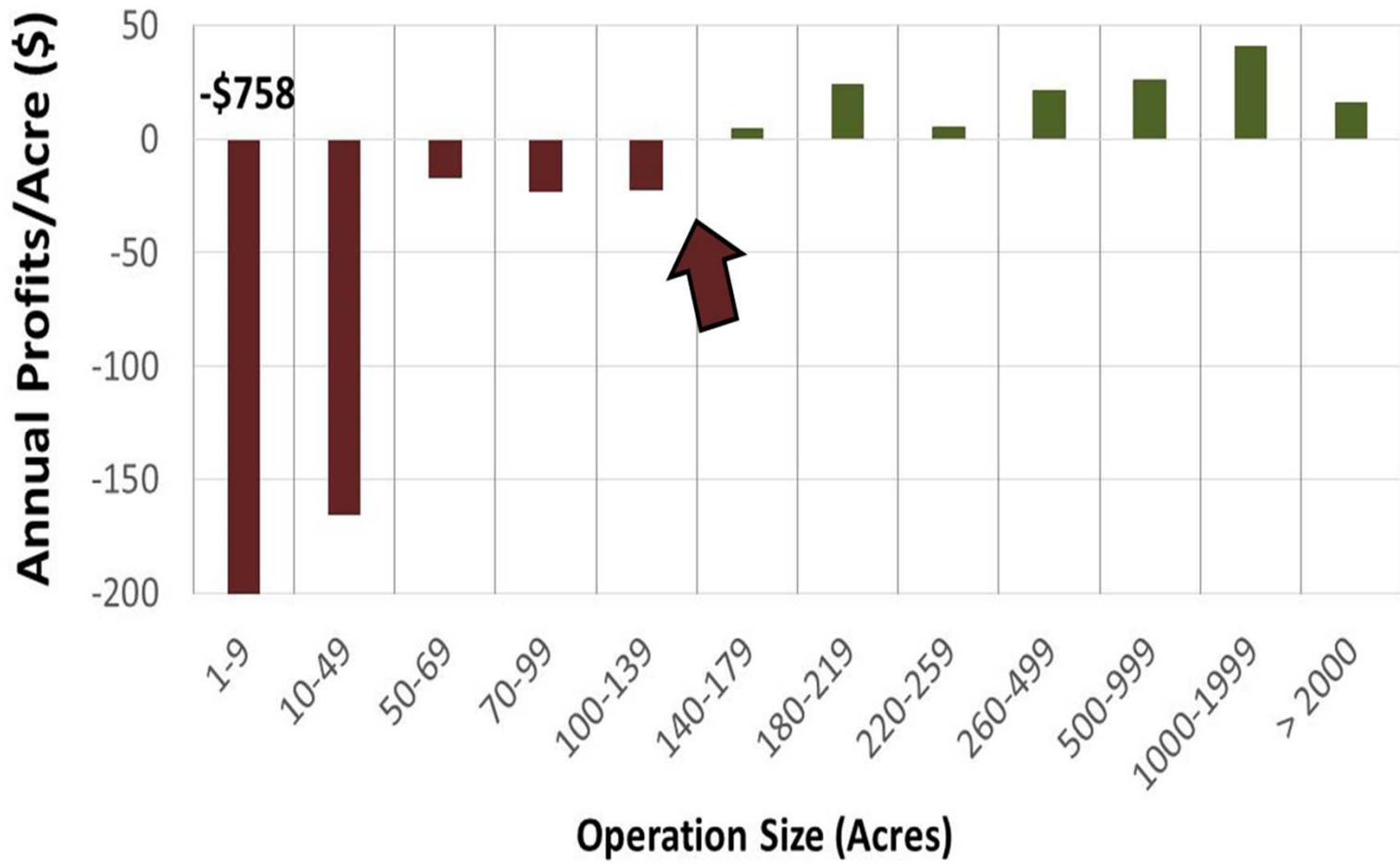
- 1997 – 143 Million acres
- 2012 – 142 Million acres
- Loss ~1 Million acres



# Market Value – *Driver*

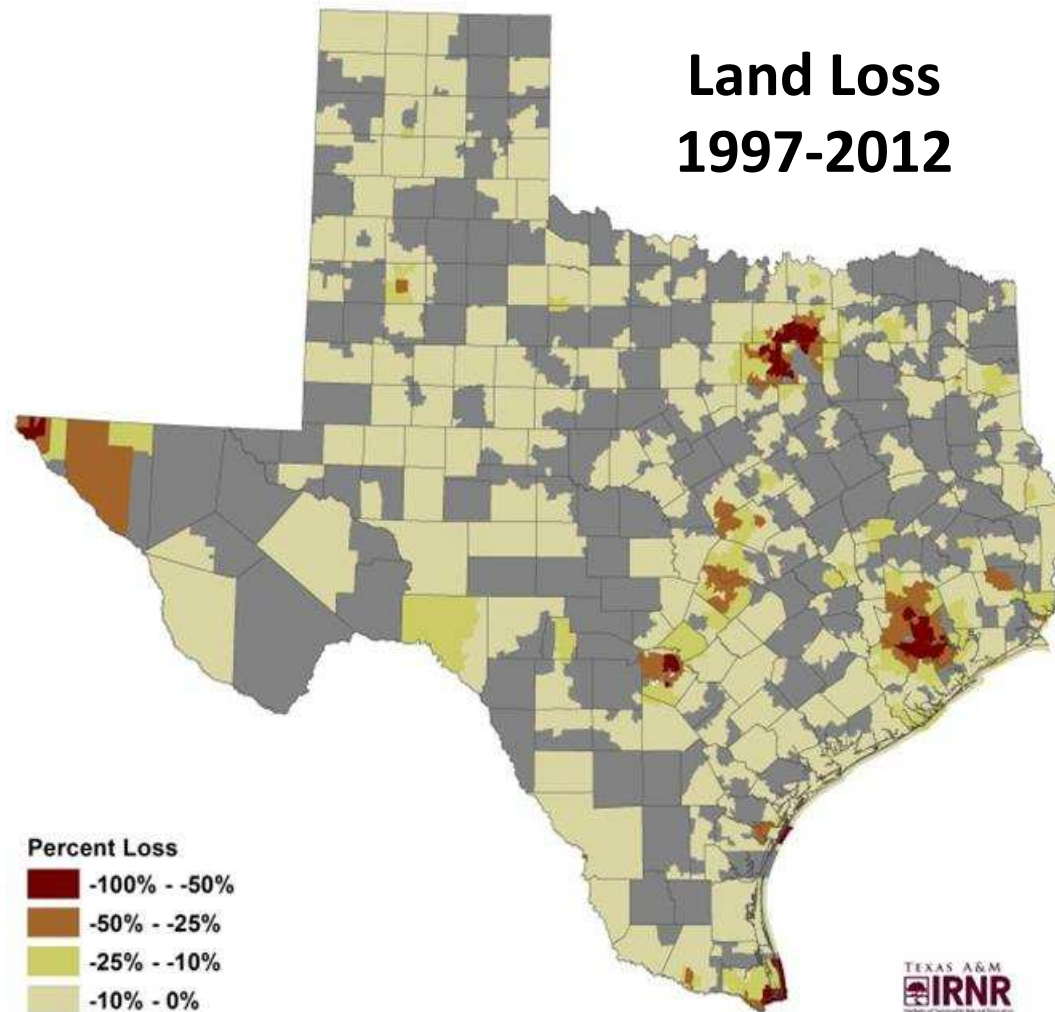
- 1997 – \$501/Acre
- 2012 – \$1,573/Acre
- Gain of \$1,072/Acre







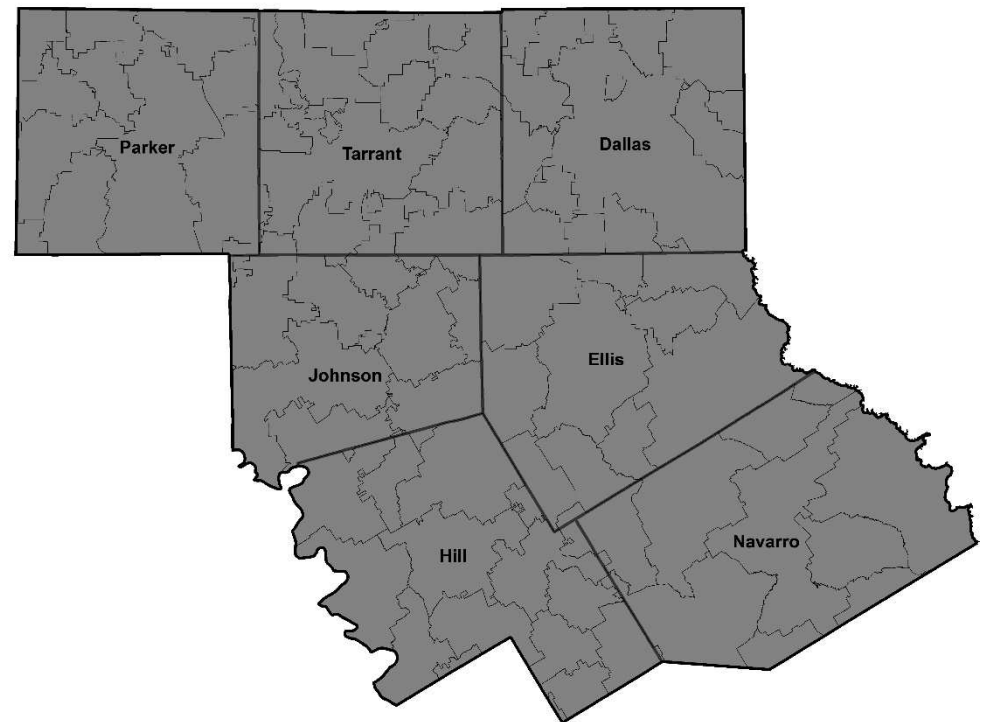
# Working Land Loss



# Dallas/Fort Worth (DFW) Area

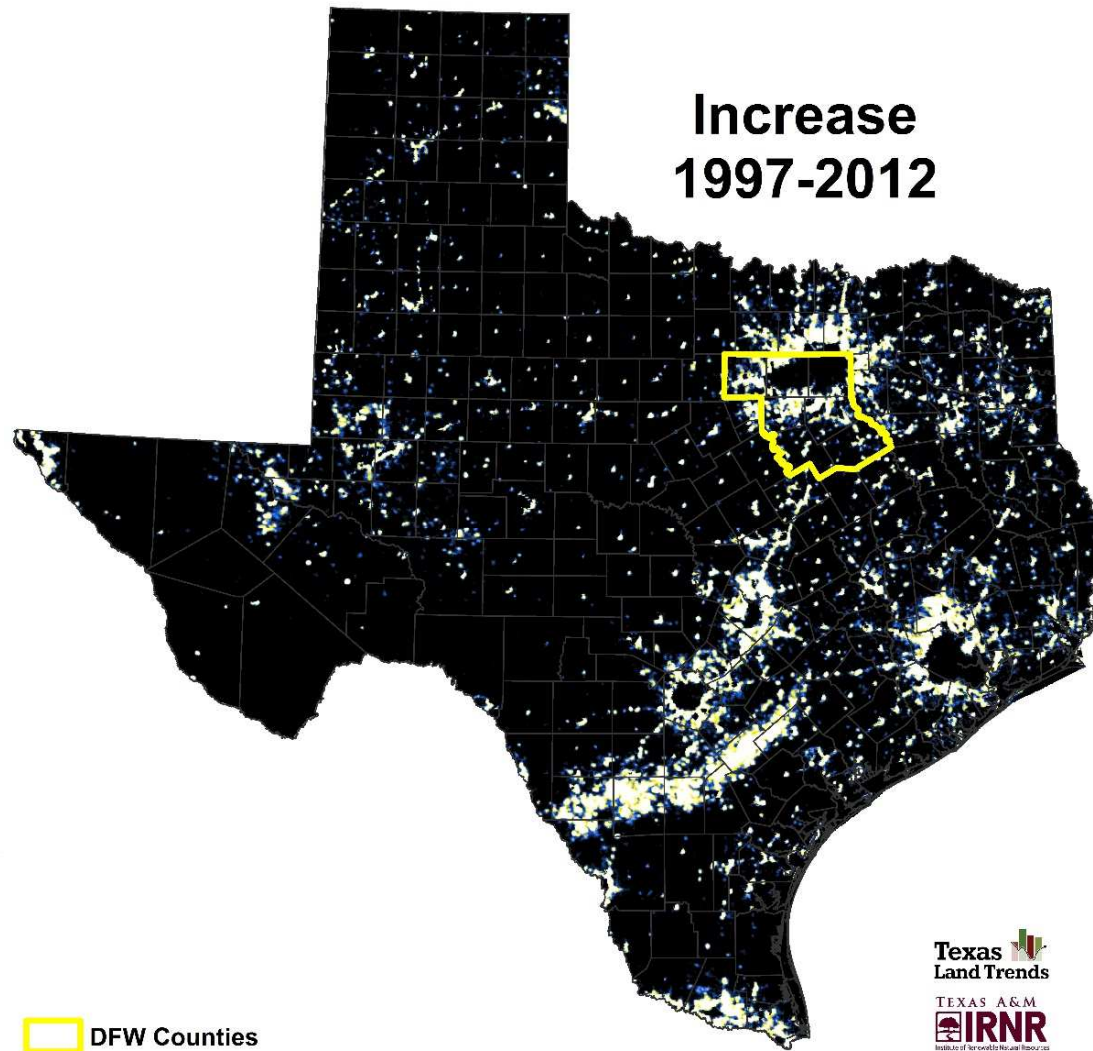
## 7 Counties

- Total- 4.1 Million acres
- Working Lands- 2.4 Million acres
- 59% of the DFW area is working lands



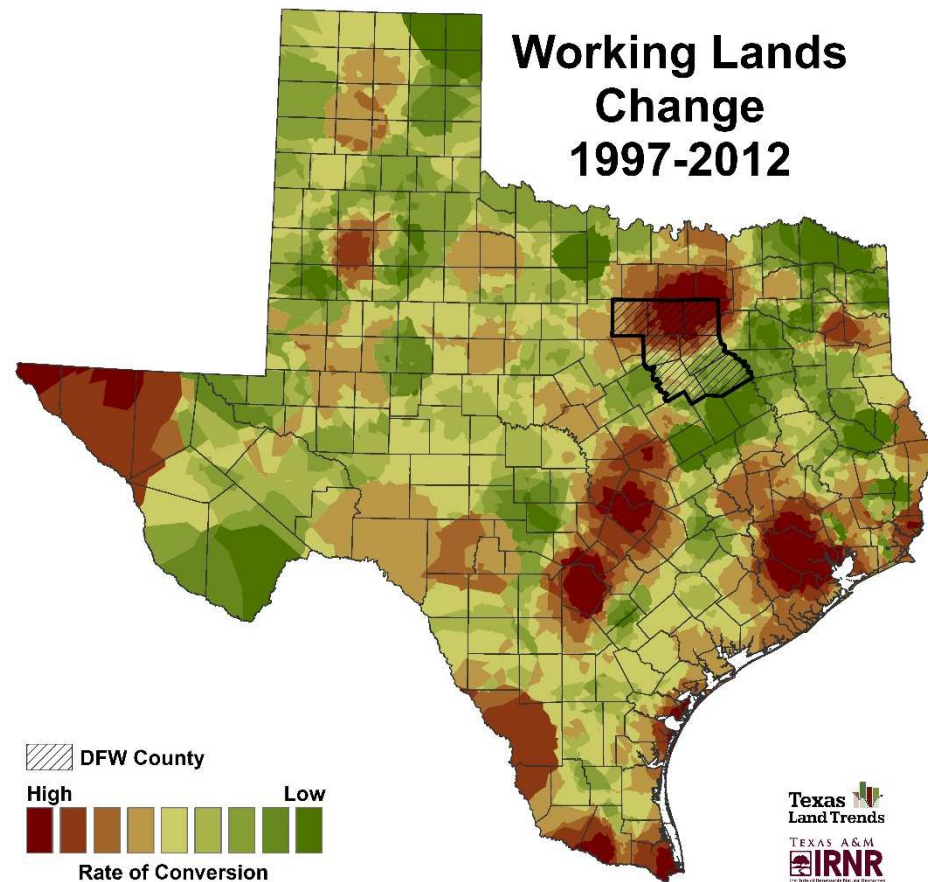
□ School District

# DFW Night Time Illumination

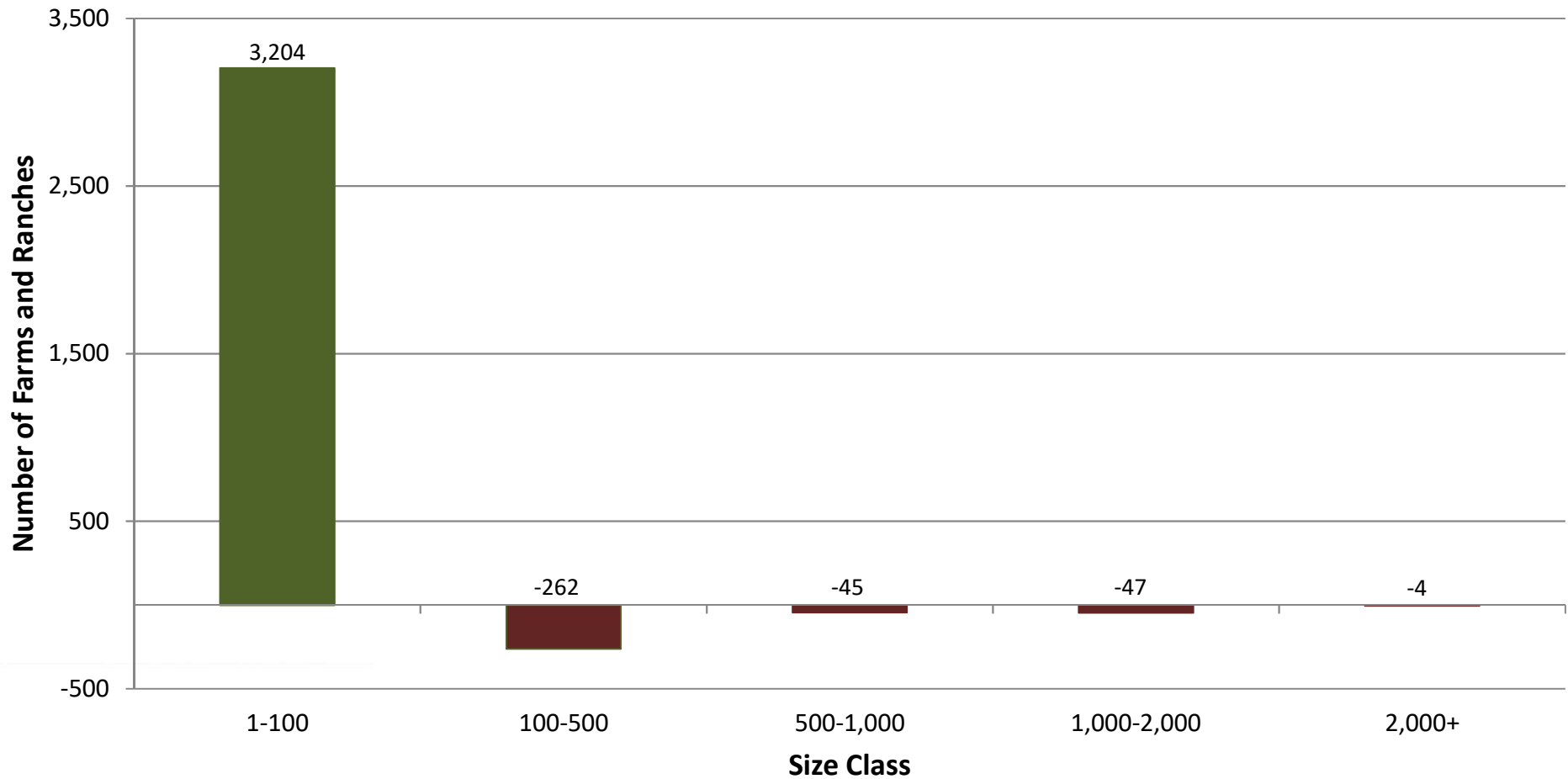


# Loss of Working Lands: DFW

- 1997 – 2.5 Million acres
- 2012 – 2.4 Million acres
- ↓ 98K acres



# Change in Number of Land Ownerships: DFW 1997-2012

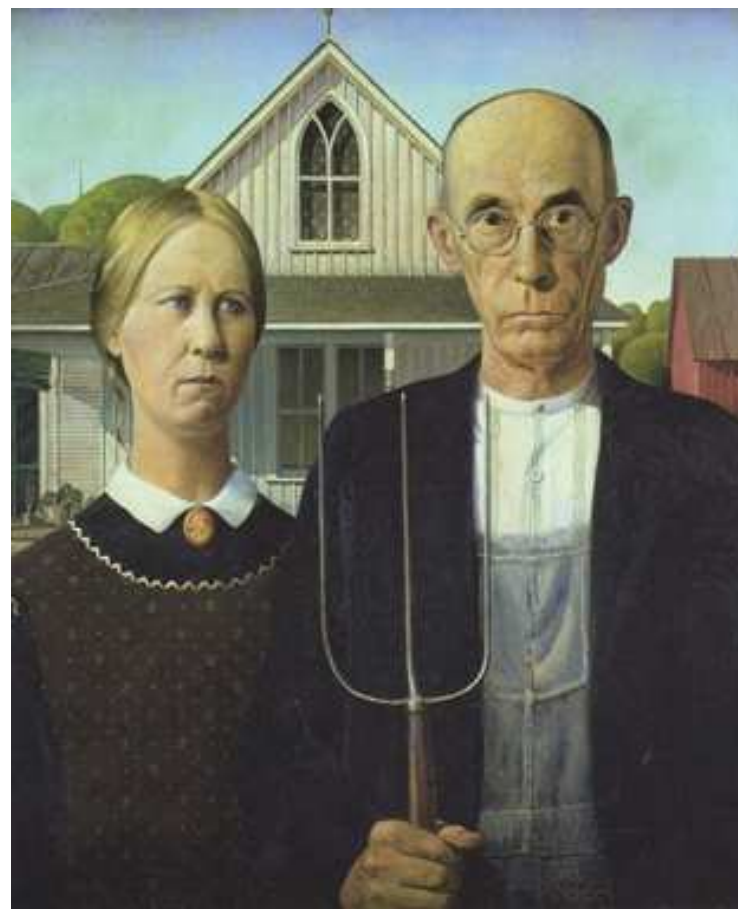


# *Changing landowners....*

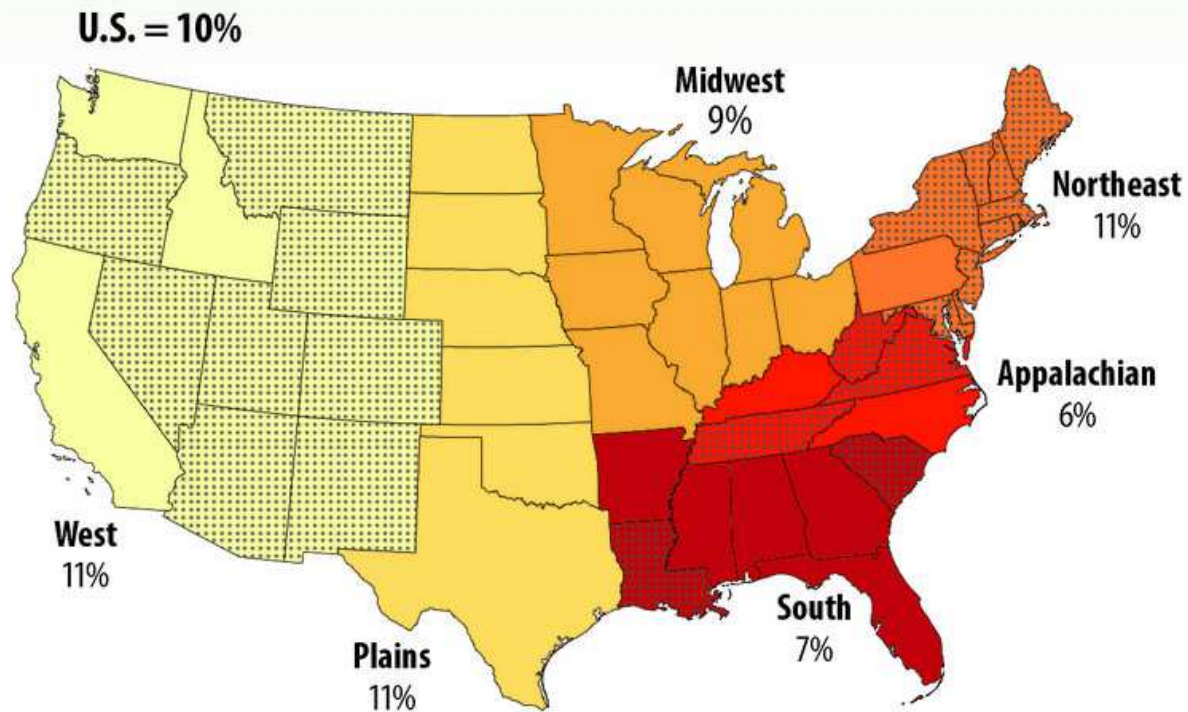


# Landowner Demographics

- Average farmer – 57 years old
- Average forest landowner – 65 years old.
- In the next 20 years, U.S. will see the largest intergenerational transfer of rural lands in its history.



## Percent of Farmland Expected to Transfer in Next Five Years, by Region, 2015



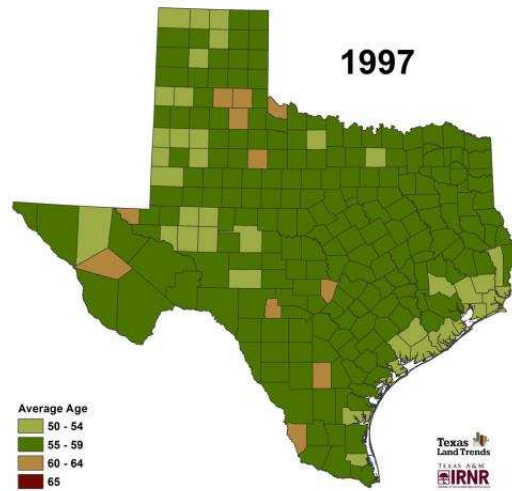
[www.agcensus.usda.gov](http://www.agcensus.usda.gov)

USDA CENSUS OF AGRICULTURE

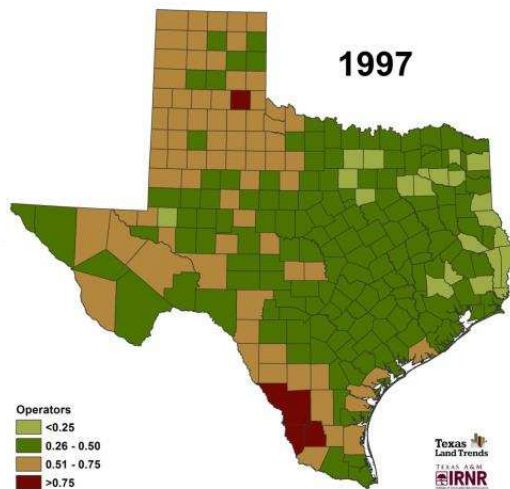
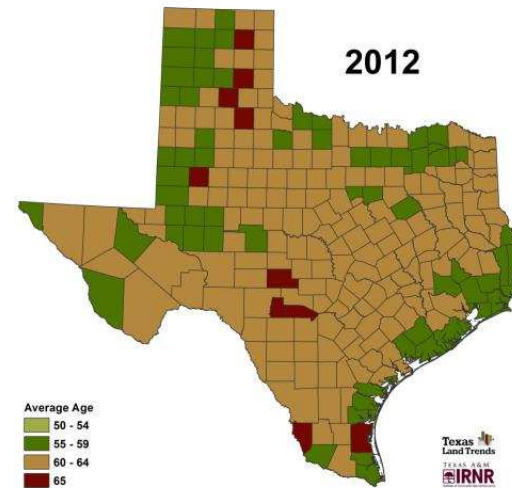
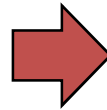
Source: USDA NASS 2014 Tenure, Ownership, and Transition of Agricultural Land Survey



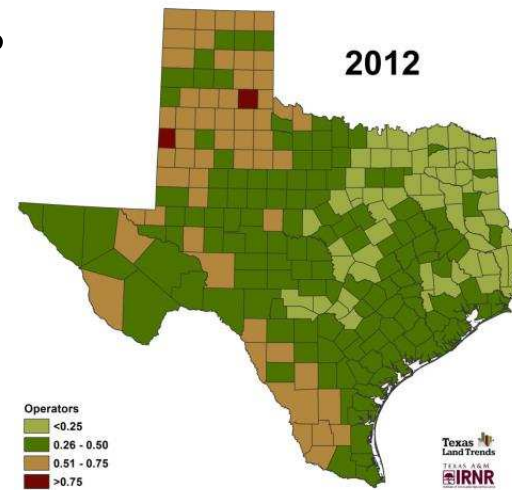
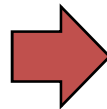
# Landowner Demographics



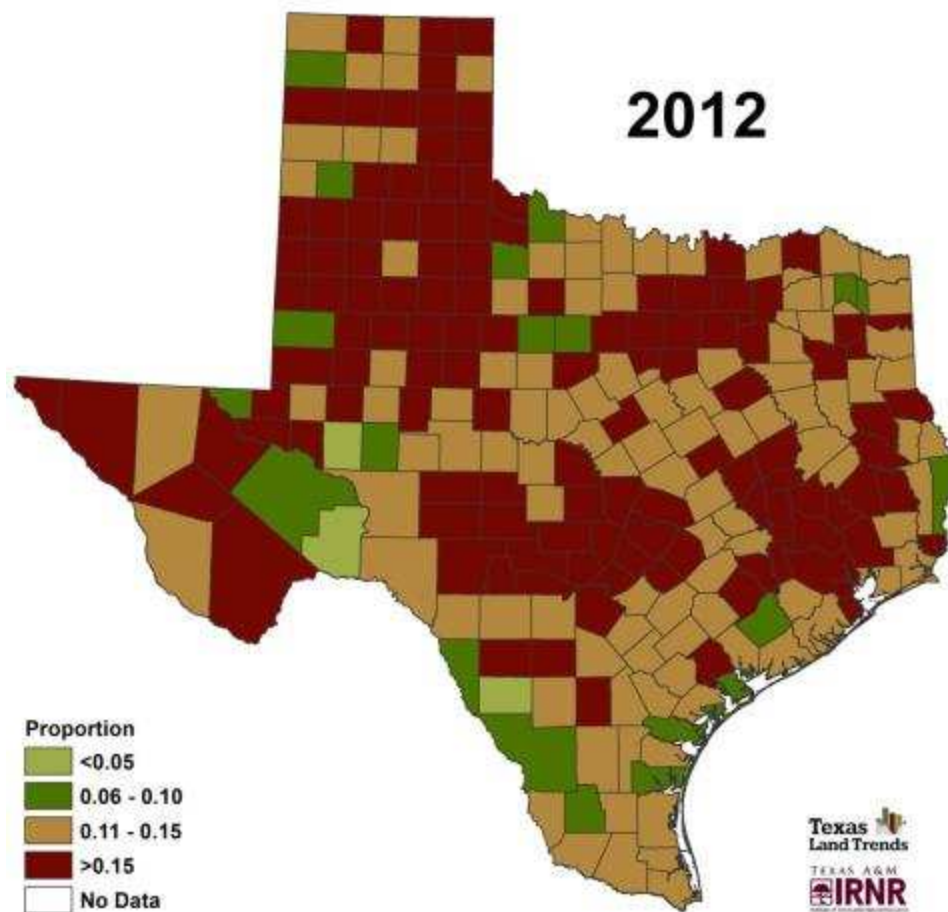
*Age*



*Absentee*

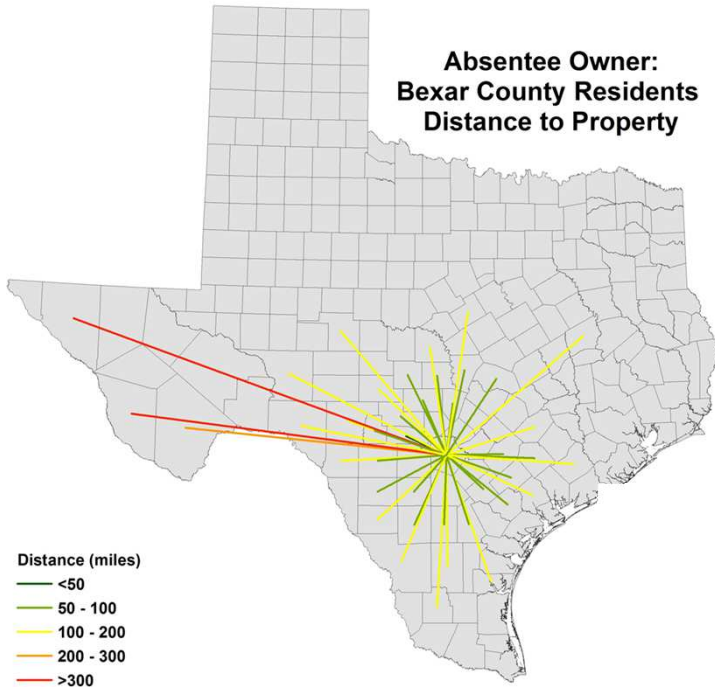


# Female Operators (Ratio)

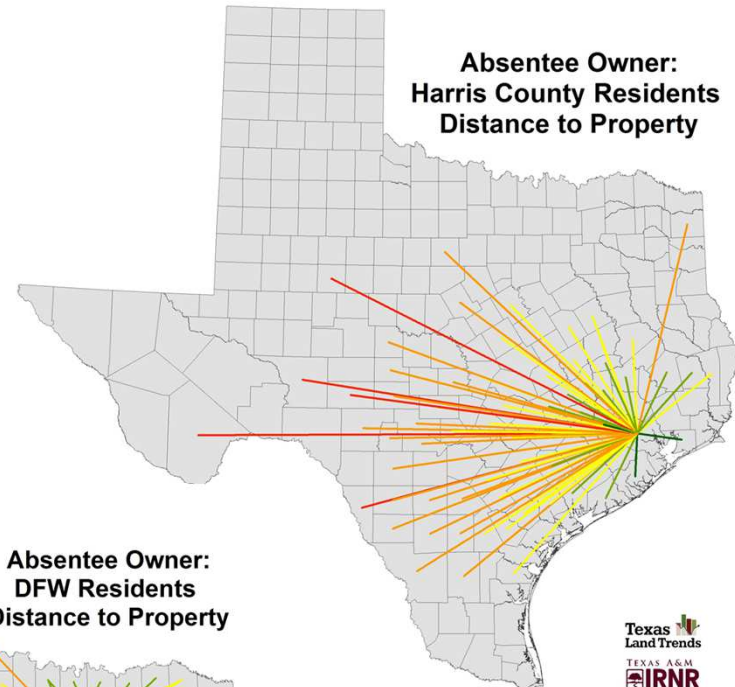


# Absentee Landowners - Average Distance

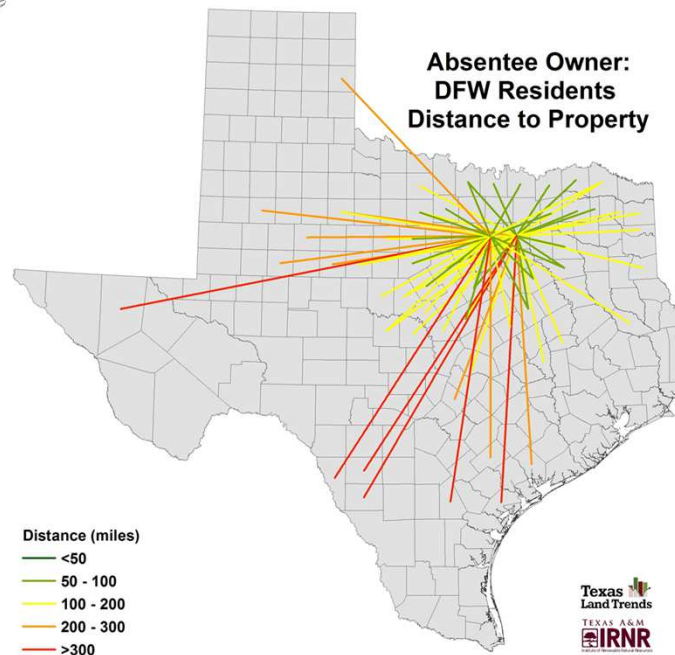
Absentee Owner:  
Bexar County Residents  
Distance to Property



Absentee Owner:  
Harris County Residents  
Distance to Property

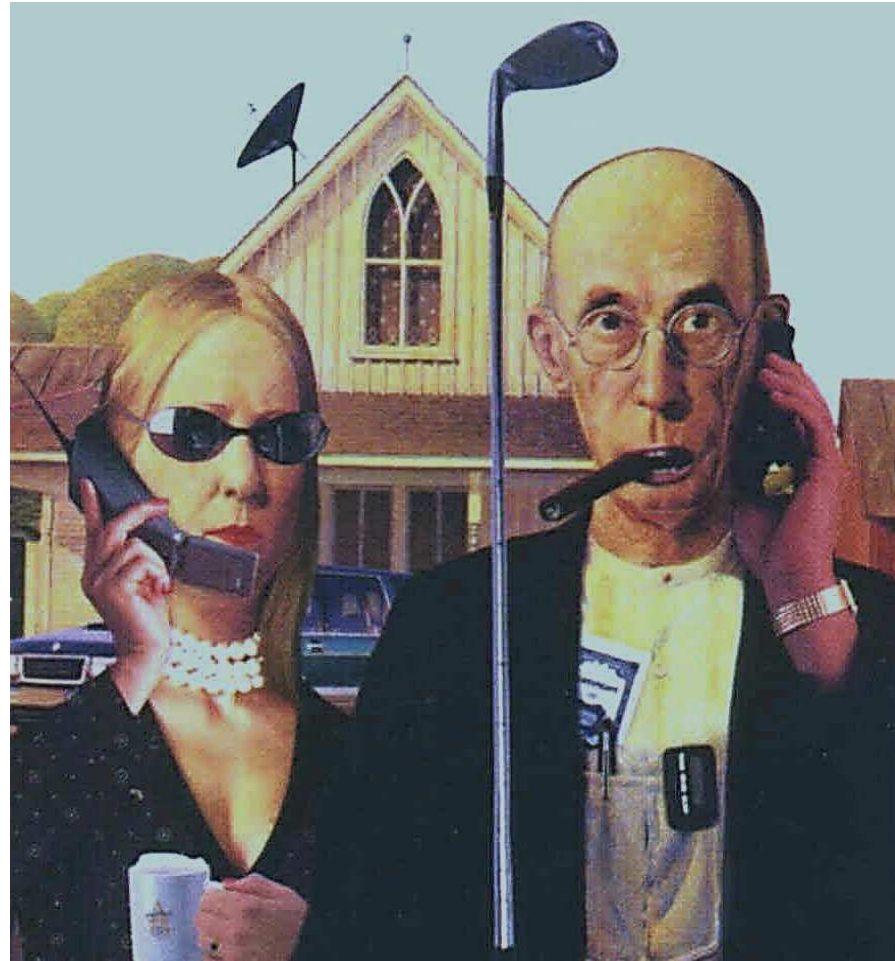


Absentee Owner:  
DFW Residents  
Distance to Property

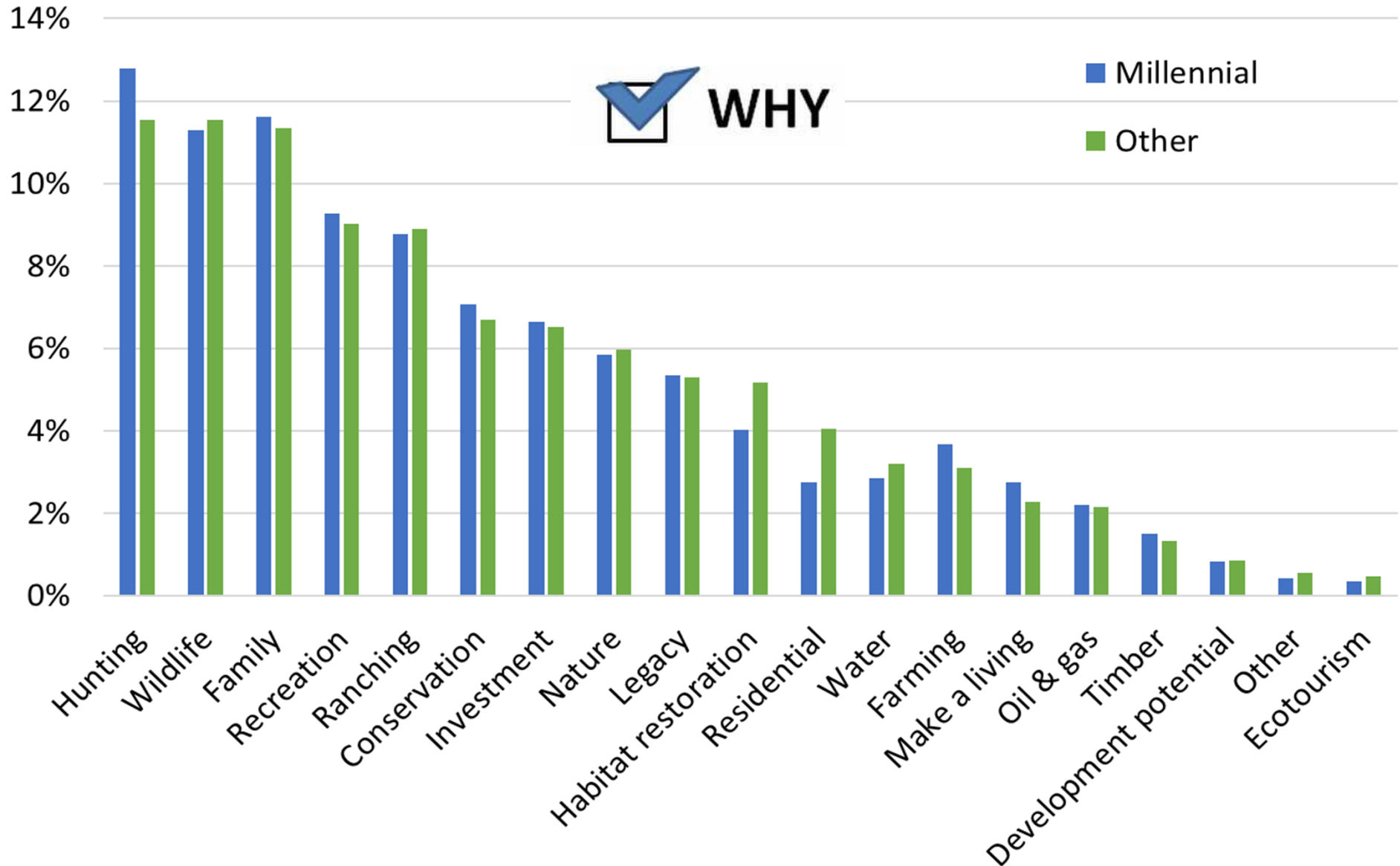


# Future Texas Landowner?

- Younger generation less tied to the land.
- Goals and objectives the same? Concerns?
  - New Ownership (25%). Owned <10 years
  - Absentee Ownership (40%)
  - Millennials (<40 years) comparison (select questions)

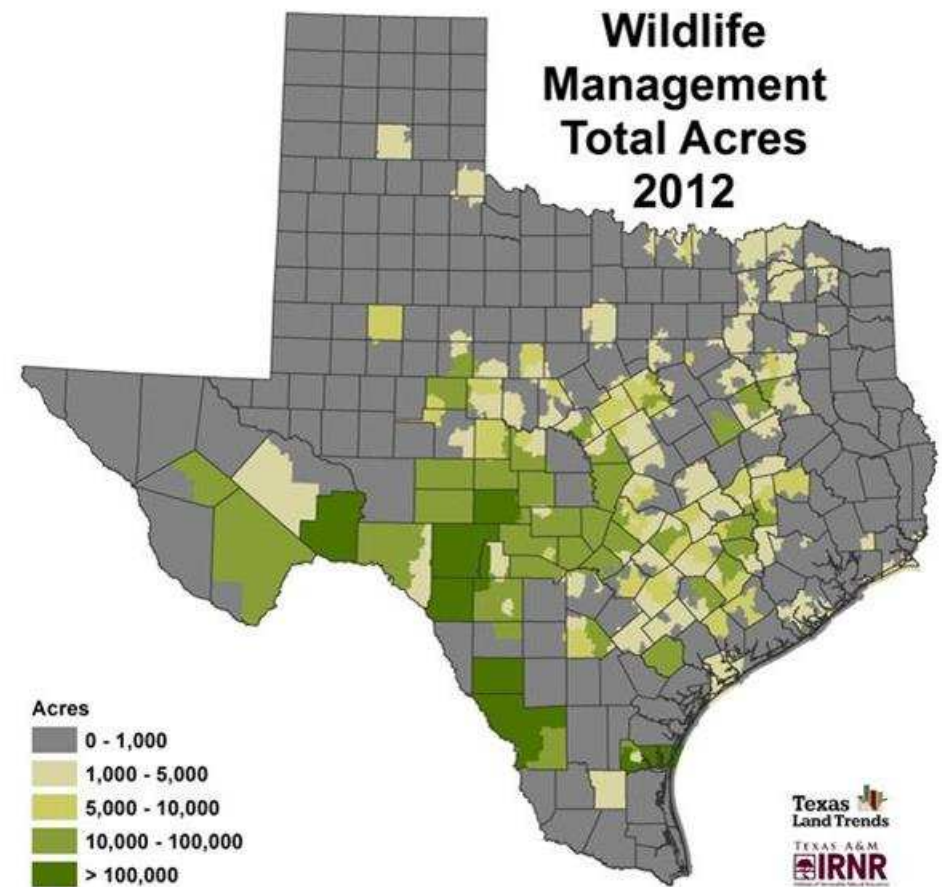
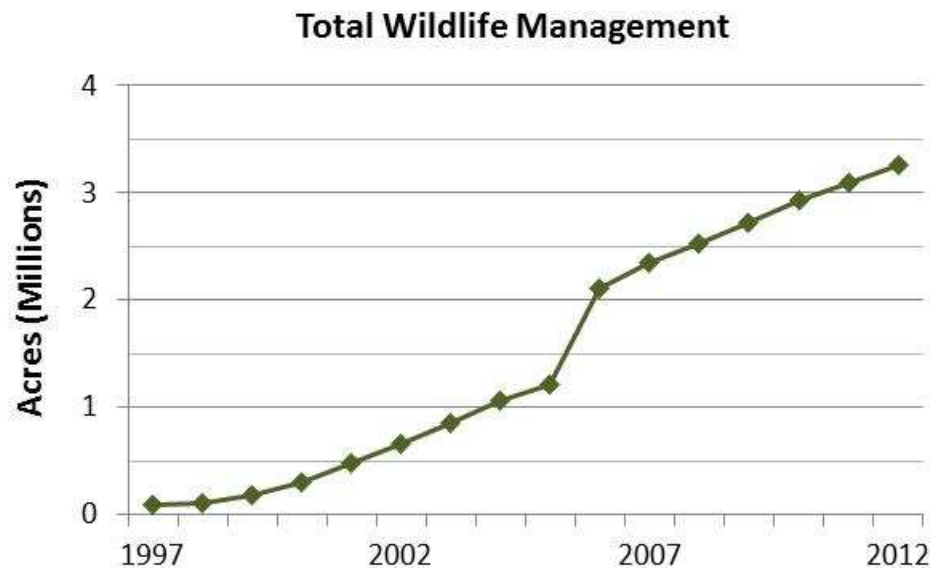


# Reasons for owning land?



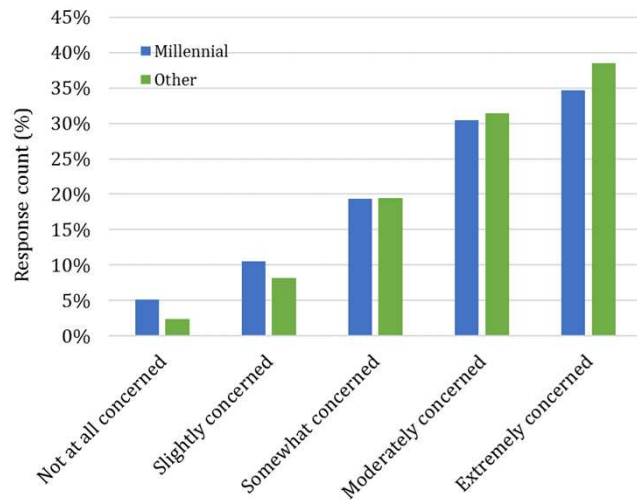
# Wildlife Valuation Trends

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

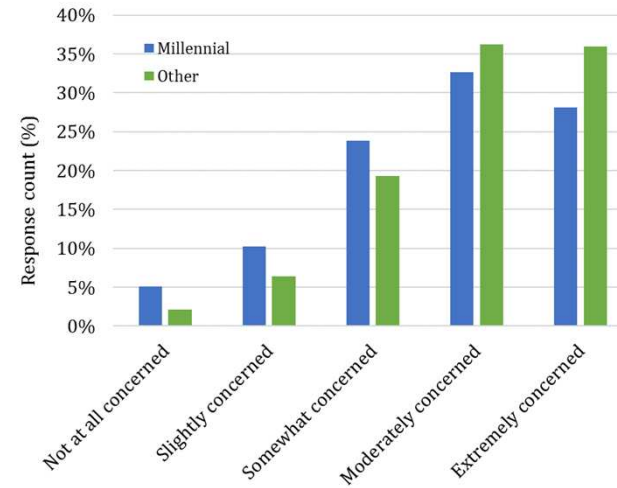


# Level of concern with the following issues...

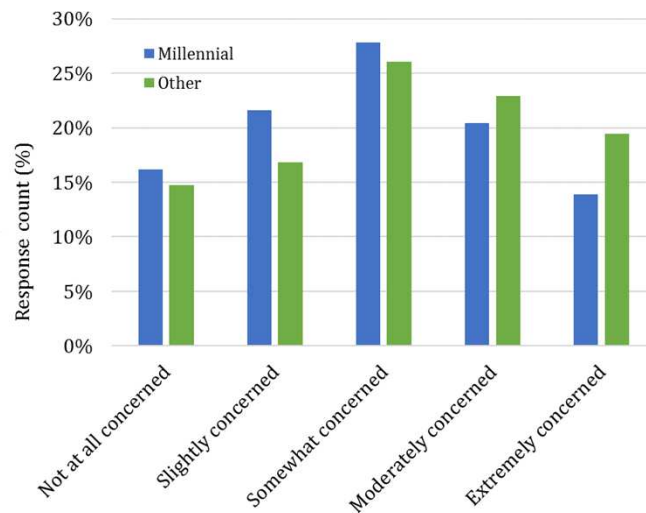
## ...Wildlife/livestock diseases?



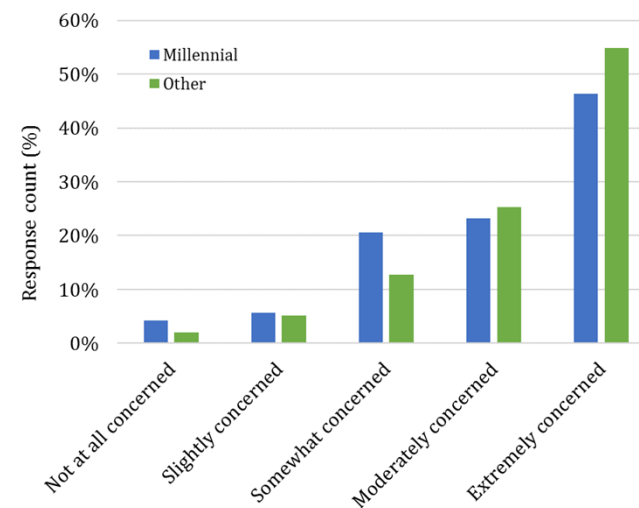
## ...Soil health?



## ...Endangered species?

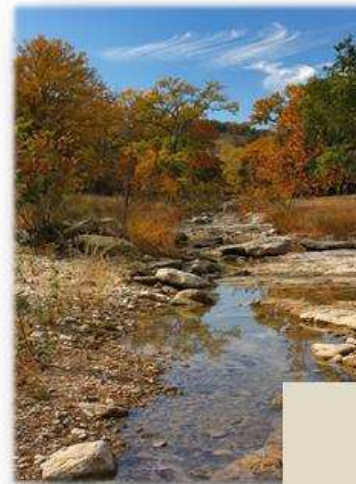


## ...Landowner liability?



# Challenges and Solutions...

- **Changing People** – Increasing human population, shifts in ethnicity and urban residents.
- **Changing Places** – Loss of working lands, fragmentation and conversion.
- **Changing Perspectives** – Aging landowners, different objectives, largest intergenerational transfer.
- Communicate the public benefits of private lands...





## ***Final Thoughts***

- Texas rural lands are changing and landowners are generally less economically dependent on the land than they have been in the past.
- Opportunities:
  - Landowners that are connected to the land through family legacy and wildlife
  - Dedicated support network for land stewards

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

<http://nri.tamu.edu/>  
<http://txlandtrends.org/>

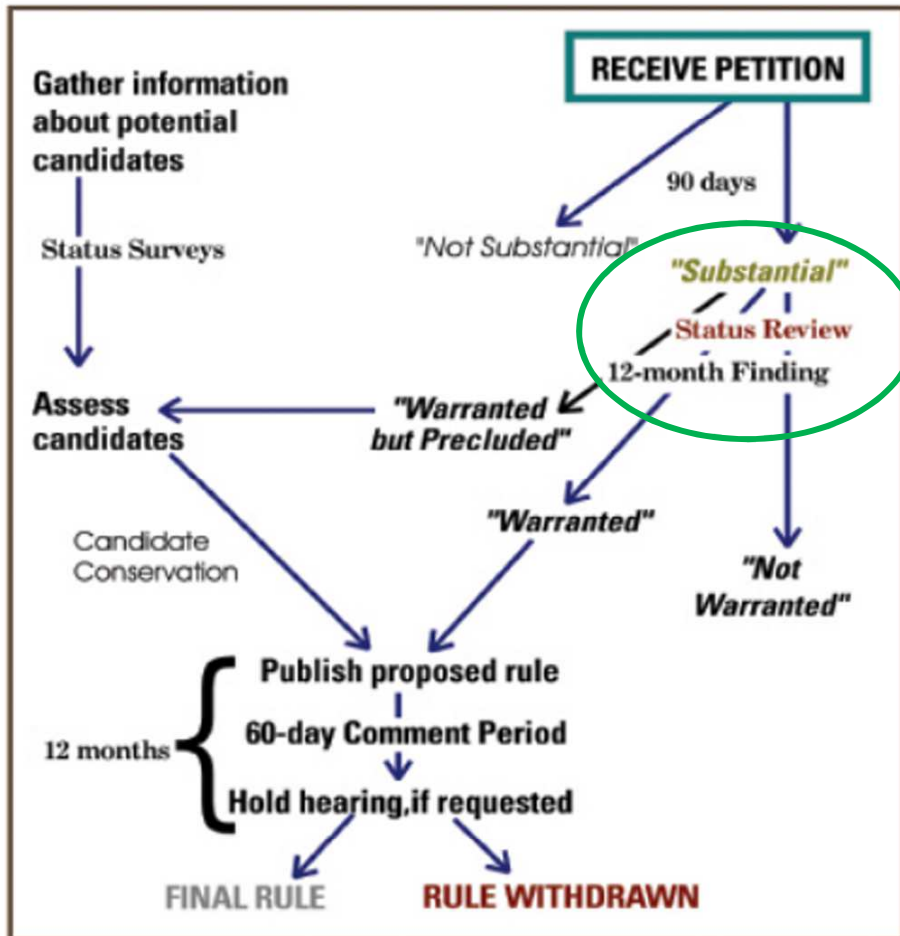
**Mike Marshall**  
Michael\_marshall@fws.gov

# Species Status Assessments

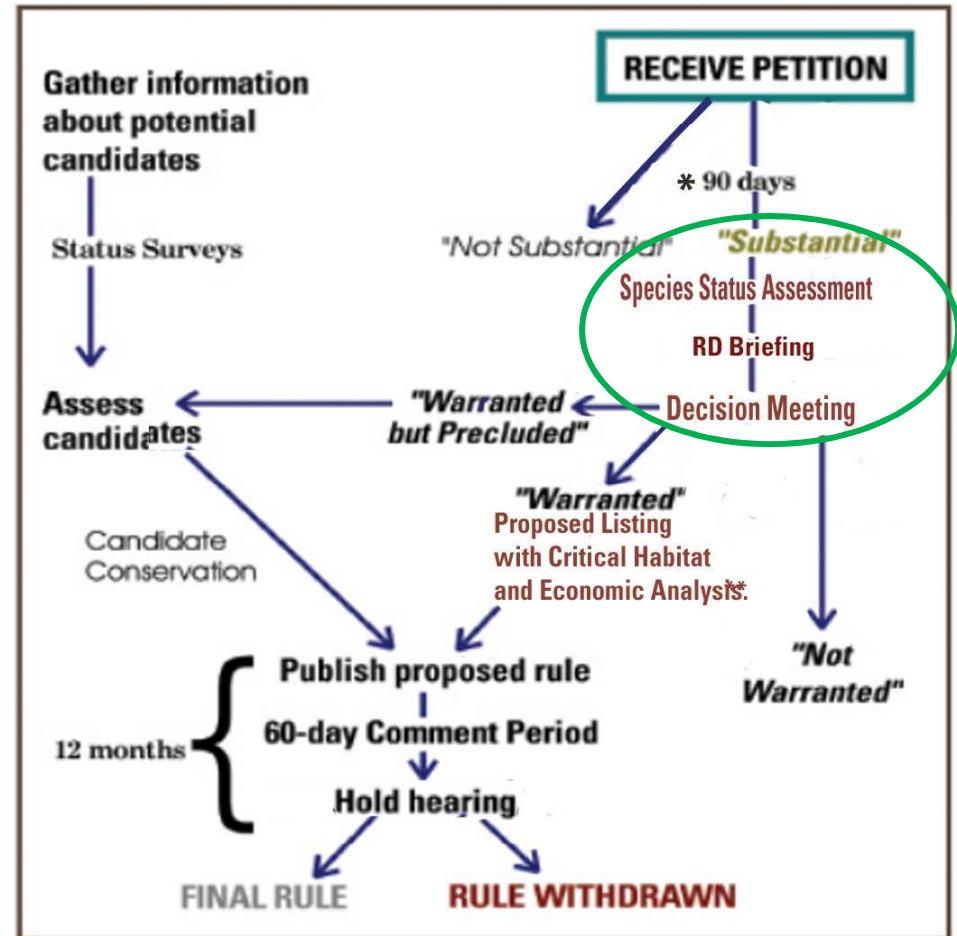


# ESA Listing Process

Until 2016



Starting in 2017



By L. Serrano, FWS, 12-6-2016

- \* Quarterly schedule based on the 7 Yr Work Plan  
FY 17 -15 Species  
FY 18 -13 Species
- \*\* Listing without Critical Habitat would only be considered for cases with clear evidence that poaching is happening.

# Species Status Assessments (SSA)—a new way of conducting business

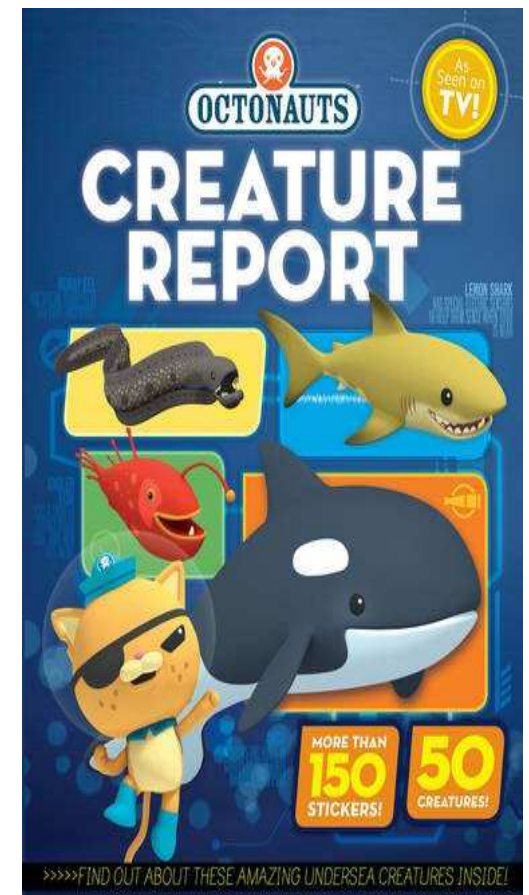
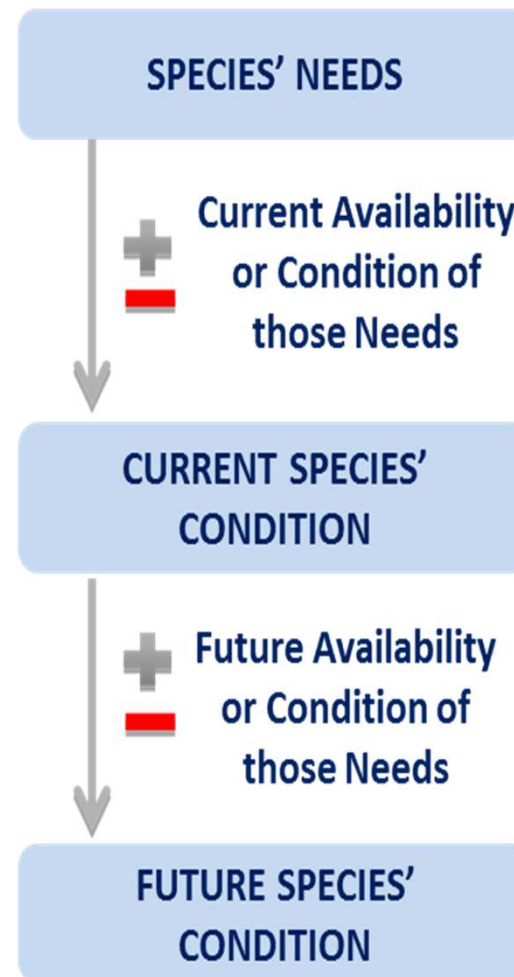
**USFWS**  
*Species Status  
 Assessment  
 Framework*

October

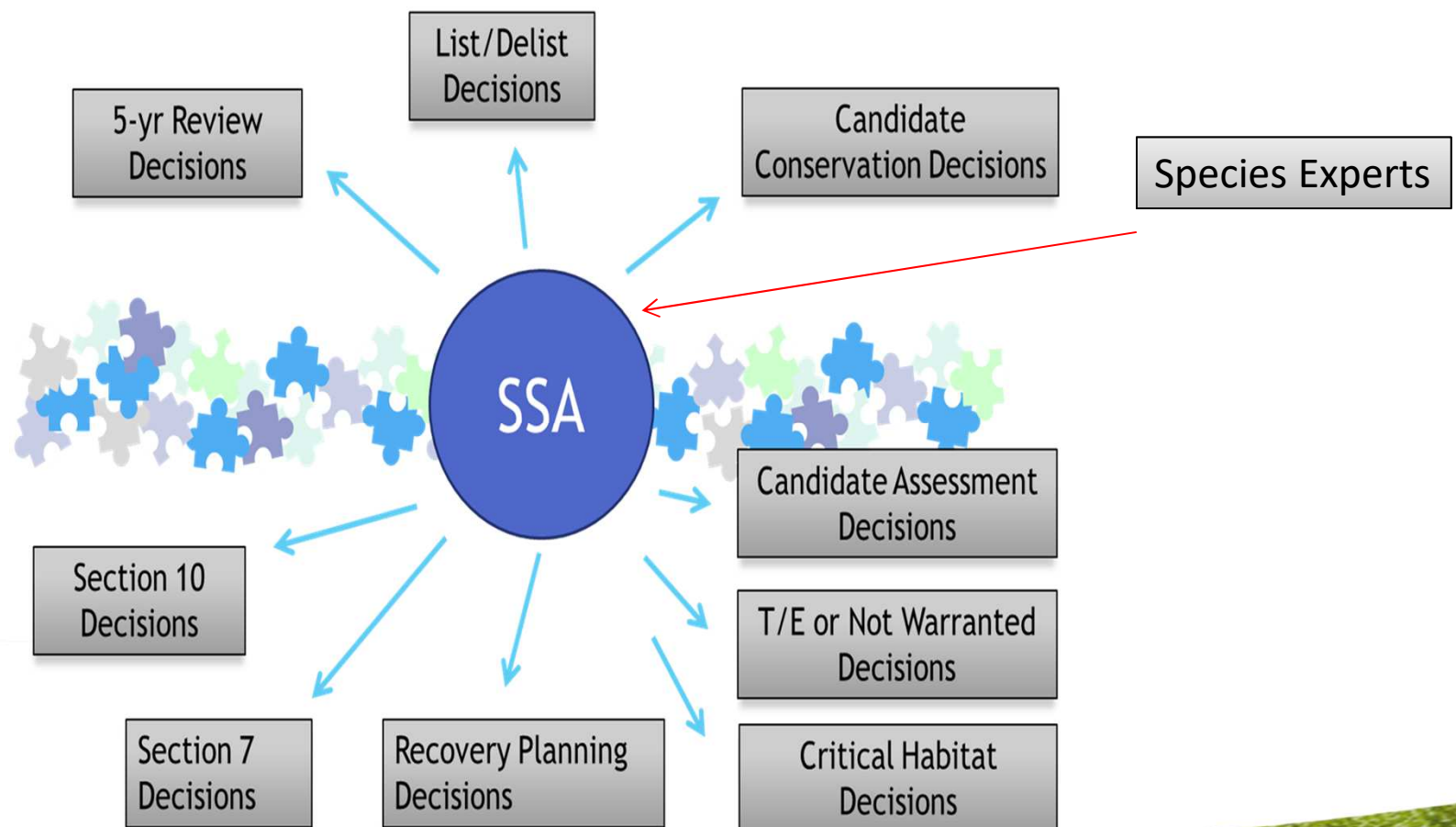
**2015**

Version 3.3

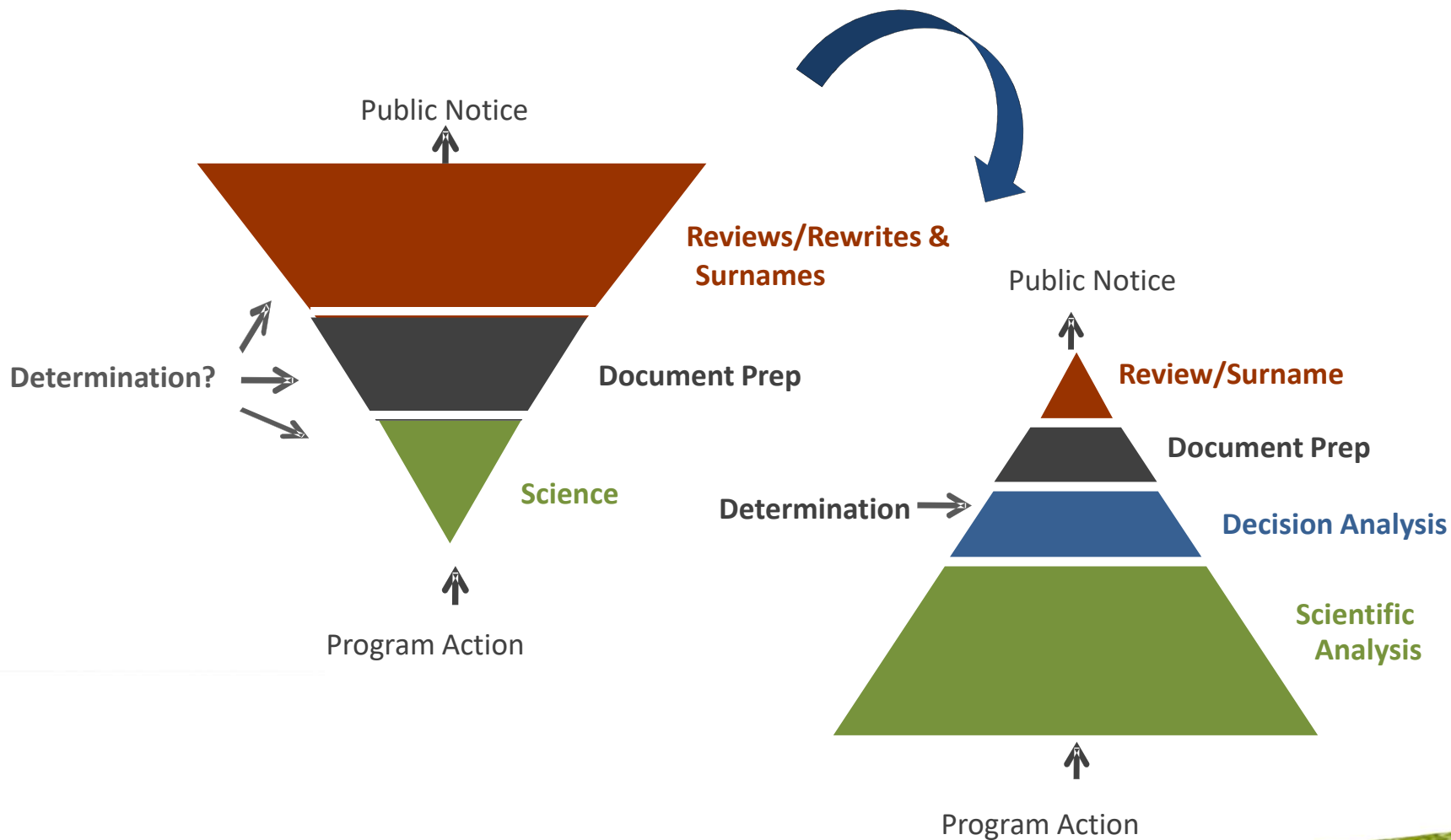
*The US Fish and Wildlife Service is using an integrated and conservation-focused analytical approach, the Species Status Assessment Framework, to assess the species biological status for the purpose of informing decisions and activities under the Endangered Species Act.*



**THE BIG PICTURE:** SSAs will inform all ESA decisions. They form the hub of information to be used across all ESA programs.



# SSA Flips the Pyramid



*It's about assessing species viability*

Stein and Schaffer



**Resiliency**

The ability of **populations** to withstand stochastic events.



**Redundancy**

The ability of **species** to withstand catastrophic events.



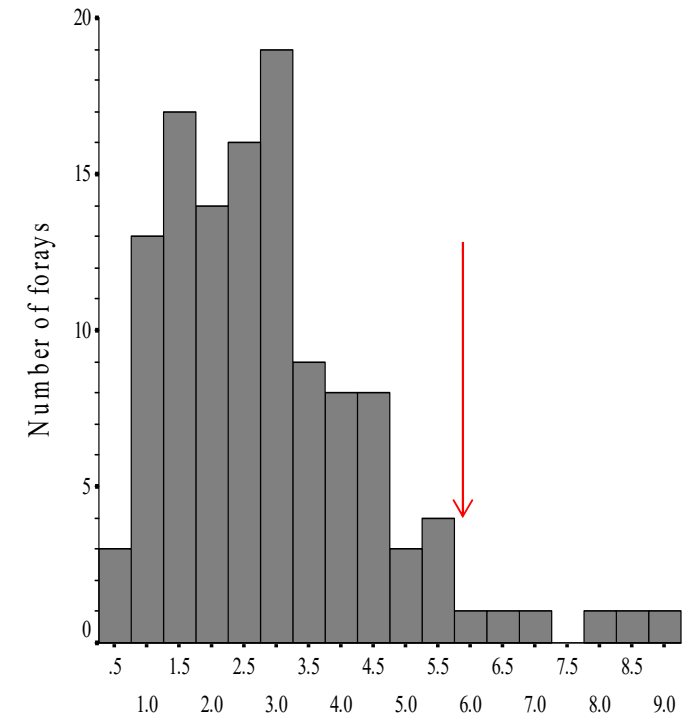
**Representation**

Ability of **species** to adapt to changing environmental conditions.



## Resilience: Delineating Populations

- Often one of the more difficult parts of the process
- Resilience is measured at this level



# *Representation*

“The ability of a species to adapt to changing environmental conditions”

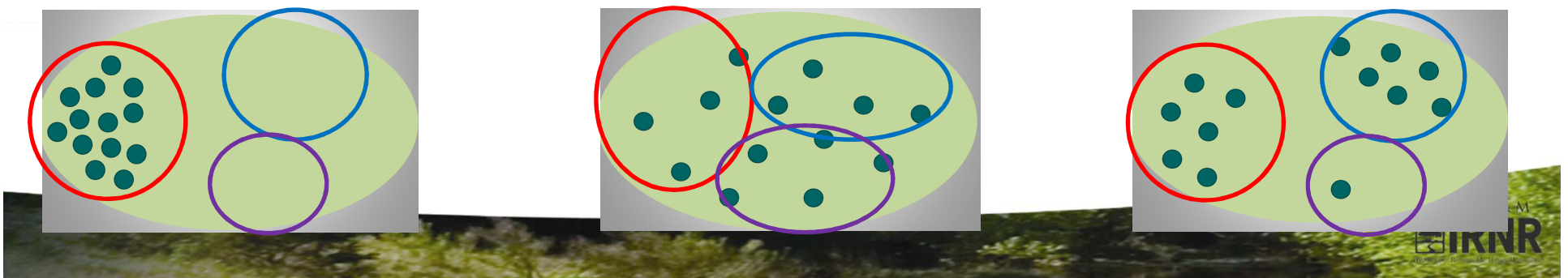


# *Species Redundancy*

- Measured by the number of populations and their distribution
  - Across the range (tally)
  - Within representative units

*For endemic species with a small range there may only be 1 “population”...thus no representative units, and inherently low redundancy.*

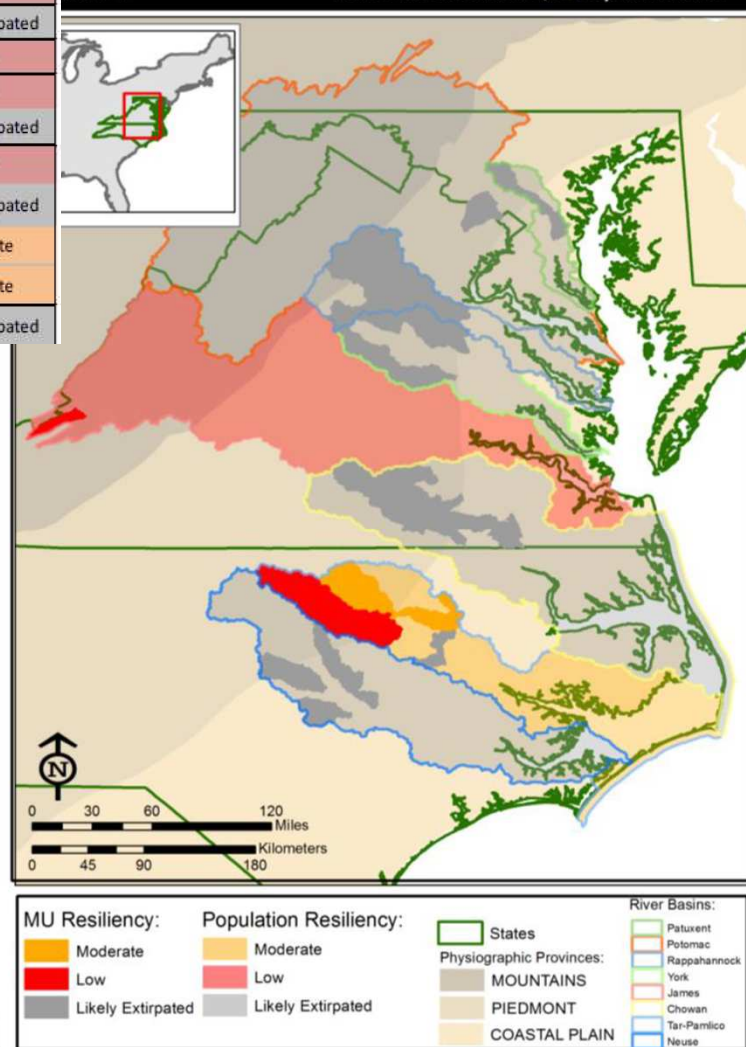
Interplay between Redundancy and Representation



### Future Scenarios of Population Conditions

Populations: Management Units	Current	#1 Status Quo	#2 Pessimistic	#3 Optimistic	#4 Opportunistic
Patuxent	Low	Likely Extirpated	Likely Extirpated	Low	Likely Extirpated
Potomac	Presumed Extirpated	Likely Extirpated	Likely Extirpated	Likely Extirpated	Likely Extirpated
Rappahannock	Low	Likely Extirpated	Likely Extirpated	Moderate	Low
York	Very Low	Likely Extirpated	Likely Extirpated	Low	Likely Extirpated
James: Johns Creek	Low	Low	Low	Low	Low
Chowan: Nottoway	Low	Likely Extirpated	Likely Extirpated	Low	Low
Chowan: Meherrin	Presumed Extirpated	Likely Extirpated	Likely Extirpated	Likely Extirpated	Likely Extirpated
Tar: Upper/Middle Tar	High	Low	Likely Extirpated	Moderate	Low
Tar: Lower Tar	Presumed Extirpated	Likely Extirpated	Likely Extirpated	Likely Extirpated	Likely Extirpated
Tar: Fishing Ck	Moderate	Moderate	Low	High	Moderate
Tar: Sandy-Swift	High	Moderate	Low	High	Moderate
Neuse: Middle Neuse	Low	Likely Extirpated	Likely Extirpated	Low	Likely Extirpated

Figure 5-4 Yellow Lance Status Quo Representation



*Viability is the ability of a species to sustain populations in the wild beyond a biologically meaningful timeframe.*

Which scenario is most likely?

What does resiliency, redundancy, and representation look like under this scenario?



## *SSAs inform listing and de/down listing decisions*

- Texas Hornshell
- Black-capped vireo



## ***Why does all of this matter to you?***

- Your data can help inform SSAs
- Aquatic species are the majority of upcoming listing decisions
- Managing for aquatic or riparian species is managing for water quality
- Stakeholder interest in all of the potential regulatory possibilities
- SSAs are the “one-stop-shop” science document for all permitting and reporting

# Many At-risk Species Are Aquatic

- <https://comptroller.texas.gov/programs/species-economy/watch.php>

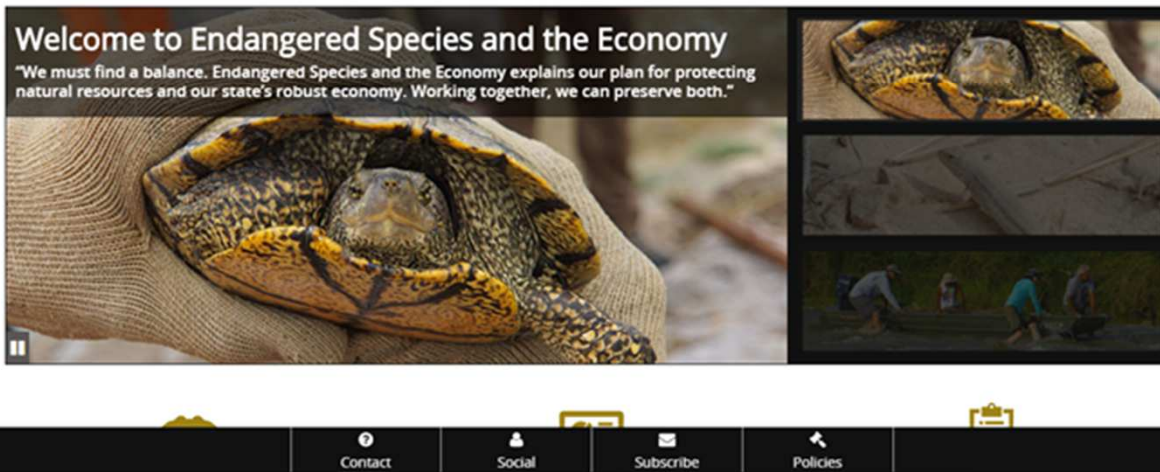
## Programs

### ENDANGERED SPECIES AND THE ECONOMY

Keep up-to-date on the work your state is doing to safeguard the economy by ensuring efficient and cost-effective compliance with the Endangered Species Act.

With the expertise of state agencies, universities and local communities, we can find solutions that protect the state's economic health and natural heritage for future generations.

Read a [message from Comptroller Glenn Hegar](#)

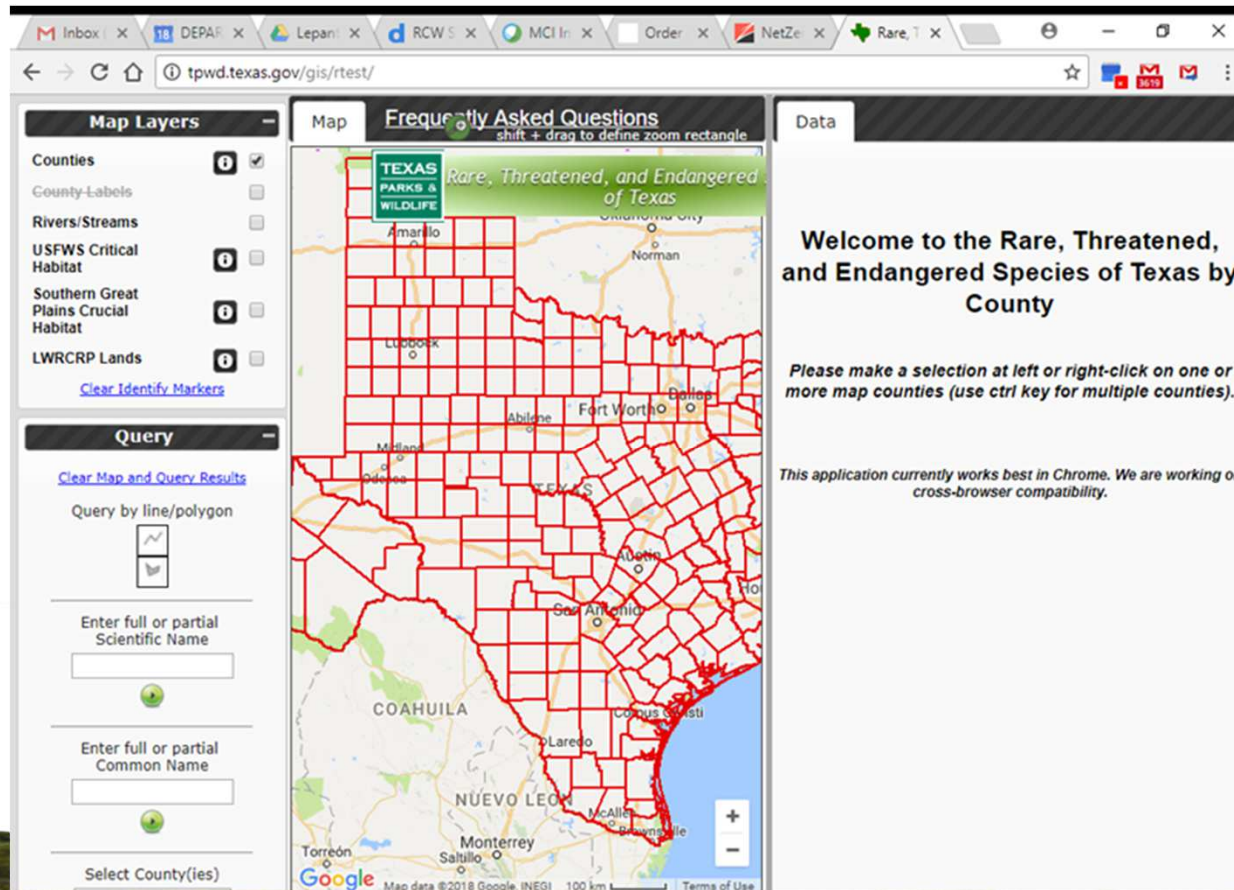


**Welcome to Endangered Species and the Economy**  
"We must find a balance. Endangered Species and the Economy explains our plan for protecting natural resources and our state's robust economy. Working together, we can preserve both."

The video player interface includes a main video frame showing a turtle being held in a gloved hand, and a smaller inset video frame showing construction workers. Below the video player is a navigation bar with icons for Contact, Social, Subscribe, and Policies.

# Species by County

- <http://tpwd.texas.gov/gis/rtest/>



**Map Layers**

- Counties
- County-Labels
- Rivers/Streams
- USFWS Critical Habitat
- Southern Great Plains Crucial Habitat
- LWRCRP Lands

[Clear Identify Markers](#)

**Query**

[Clear Map and Query Results](#)

Query by line/polygon

Enter full or partial Scientific Name

Enter full or partial Common Name

Select County(ies)

**Map** Frequently Asked Questions

shift + drag to define zoom rectangle

**TEXAS PARKS & WILDLIFE** Rare, Threatened, and Endangered of Texas

**Data**

**Welcome to the Rare, Threatened, and Endangered Species of Texas by County**

Please make a selection at left or right-click on one or more map counties (use ctrl key for multiple counties).

This application currently works best in Chrome. We are working on cross-browser compatibility.

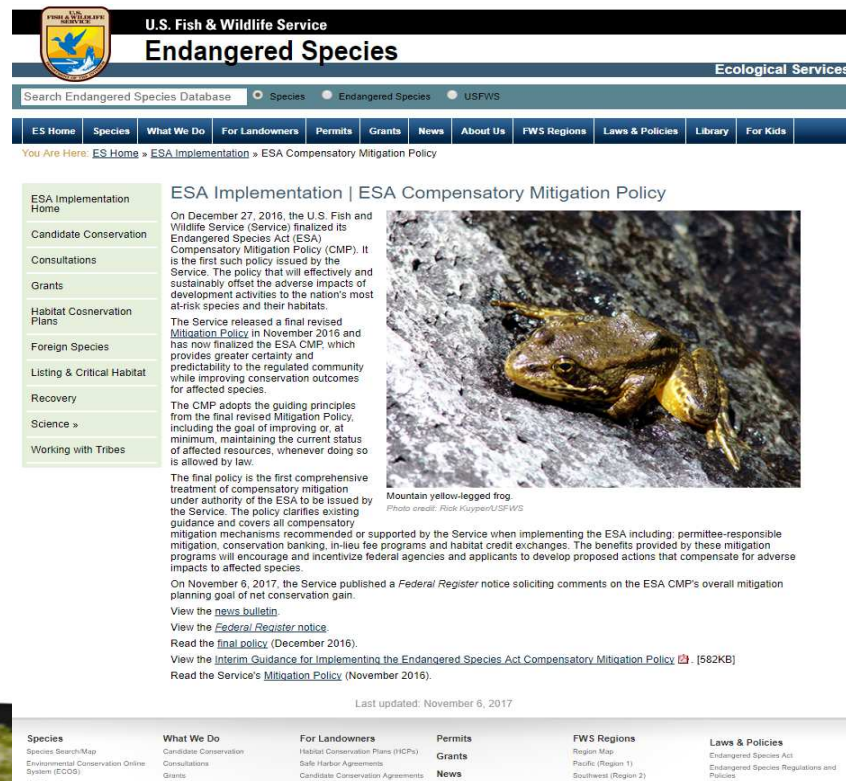


# ***National Workplan***

- Listing Workplan:  
<https://www.fws.gov/endangered/esa-library/pdf/Listing%207-Year%20Workplan%20Sept%202016.pdf>
- Downlisting and delisting Workplan:  
<https://www.fws.gov/endangered/what-we-do/downlisting-delisting-workplan.html>

# Compensatory Mitigation Policy

- Finalized end of 2016
- [https://www.fws.gov/endangered/improving\\_esa/cmp.html](https://www.fws.gov/endangered/improving_esa/cmp.html)



The screenshot shows the U.S. Fish & Wildlife Service website. The main heading is "Endangered Species" with a sub-heading "ESA Implementation | ESA Compensatory Mitigation Policy". The page features a navigation menu with options like "Species", "Endangered Species", and "USFWS". A search bar is present for the "Endangered Species Database". The main content area includes a sidebar with a table of contents and a main text area with an image of a mountain yellow-legged frog. The text discusses the finalization of the ESA Compensatory Mitigation Policy (CMP) on December 27, 2016, and its implementation on November 6, 2017. It highlights the policy's goal to improve conservation outcomes for affected species by providing greater certainty and predictability to the regulated community.

ESA Implementation Home	ESA Implementation   ESA Compensatory Mitigation Policy
Candidate Conservation	On December 27, 2016, the U.S. Fish and Wildlife Service (Service) finalized its Endangered Species Act (ESA) Compensatory Mitigation Policy (CMP). It is the first such policy issued by the Service. The policy that will effectively and sustainably offset the adverse impacts of development activities to the nation's most at-risk species and their habitats.
Consultations	The Service released a final revised Mitigation Policy in November 2016 and has now finalized the ESA CMP, which provides greater certainty and predictability to the regulated community while improving conservation outcomes for affected species.
Grants	The CMP adopts the guiding principles from the final revised Mitigation Policy, including the goal of improving or, at minimum, maintaining the current status of affected resources, whenever doing so is allowed by law.
Habitat Conservation Plans	The final policy is the first comprehensive treatment of compensatory mitigation under authority of the ESA to be issued by the Service. The policy clarifies existing guidance and covers all compensatory mitigation mechanisms recommended or supported by the Service when implementing the ESA including: permittee-responsible mitigation, conservation banking, in-lieu fee programs and habitat credit exchanges. The benefits provided by these mitigation programs will encourage and incentivize federal agencies and applicants to develop proposed actions that compensate for adverse impacts to affected species.
Foreign Species	On November 6, 2017, the Service published a <i>Federal Register</i> notice soliciting comments on the ESA CMP's overall mitigation planning goal of net conservation gain.
Listing & Critical Habitat	View the <a href="#">news bulletin</a> .
Recovery	View the <a href="#">Federal Register notice</a> .
Science »	Read the <a href="#">final policy</a> (December 2016).
Working with Tribes	View the <a href="#">Interim Guidance for Implementing the Endangered Species Act Compensatory Mitigation Policy</a> (1/15/2017). Read the Service's <a href="#">Mitigation Policy</a> (November 2016).

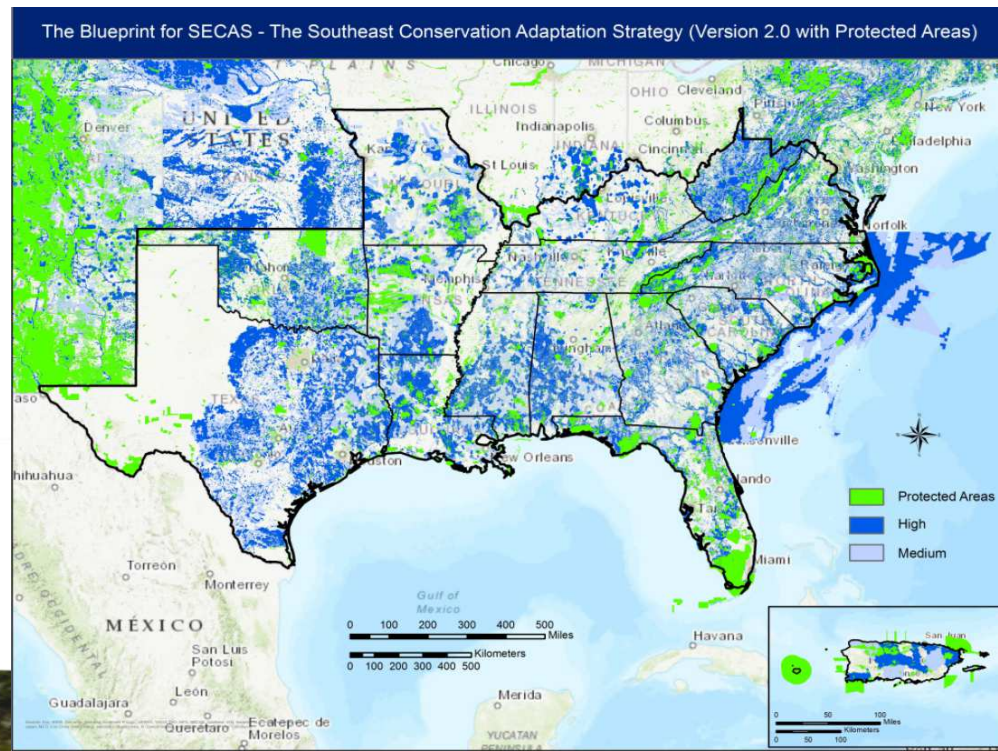
Photo credit: Rick Kuyper/USFWS

Mountain yellow-legged frog.

Last updated: November 6, 2017

# ***SECAS: Conservation Blueprint***

- “The Blueprint combines multiple datasets, tools, and resources into one cohesive map that can be shared by regional planners, highway departments, developers, businesses, and conservation professionals alike. By providing regional context for local decisions, it will help organizations with different goals find common ground — opportunities to align their efforts to protect fish and wildlife habitat, improve quality of life for people, safeguard life and property, and develop strong economies.”



## *Using the Blueprint*

- What are the most crucial areas to conserve today for species of greatest conservation need, proactively reducing the need for future protection?
- Where are the best places for smart urban growth that minimize negative impacts to fish and wildlife, conserve clean and plentiful drinking water, and provide greater access to open space?
- How does public and private land conservation contribute to a connected network of lands and waters across the region?
- Where would stream restoration provide the most benefits to fish, human health, and outdoor recreation?
- Where should we focus conservation efforts now to improve the resilience of ecosystems and communities in advance of major disasters like hurricanes and oil spills?
- Where will economic incentives achieve the most conservation benefits on working lands?

# ***SECAS: Planning Atlas***

- A Conservation Planning Atlas (CPA) is a science-based mapping platform where conservation managers and LCC members can go to view, retrieve, and perform analyses on spatial information with specific conservation goals in mind. Additionally, you can upload your own data to your account to be used in conjunction with these datasets.



# Planning Atlas: Resources

Get Started Browse Create My Workspace

**What is the SE Region Conservation Planning Atlas (CPA)?**

What can I do?

What is SECAS?

SECAS in Action

The place to find and organize information, datasets, maps, and galleries for southeastern geographies. Explore data from a wide variety of sources that encompass all or parts of the southeastern 15 states, Puerto Rico, and the US Virgin Islands.

[Learn more](#)



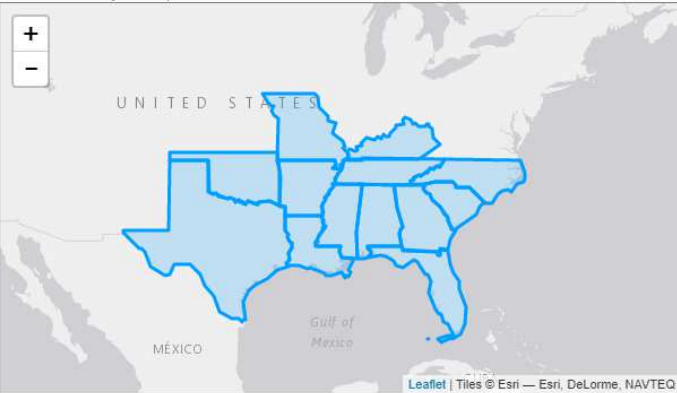
Get started quickly with the Southeast Region CPA [Take a Tour](#)

**Recommended Items**

 Dataset SECAS Blueprint v2.0	 Gallery SECAS State-Level Datasets
 Dataset SLEUTH Projected Urban Growth	 Gallery Southeast Aquatic Resources Partnership

**Search by State/Territory**

Click on a state/territory in the map below to search the CPA for data in that area.



Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ

Neighboring LCC Conservation Planning Atlases

# Planning Atlas: Resources

Showing 1 - 18 of 214 Items; Page 1 of 12

FILTER: Datasets (205) Maps (9) Galleries (0) Guides & Case Studies (0) Other (0)

Sort by: Relevance

Display:



## USFWS Riparian habitats

US Fish and Wildlife Service

The goal of the National Wetlands Inventory is to provide the citizens of the United States and its Trust Territories with current geospatially referenced information on the status, extent, characteristics and functions of wetland, riparian, deepwater and related aquatic habitats in priority areas...

Conservation Biology Institute (Last modified October 20, 2010)

Dataset



## World Vector Shoreline of the Gulf of Mexico and Caribbean Sea region

National Imagery and Mapping Agency (formerly U.S. Defense Mapping Agency)

The World Vector Shoreline (WVS) dataset was developed by the National Imagery and Mapping Agency (formerly the U.S. Defense Mapping Agency - DMA) as a digital data file, at a nominal scale of 1:250,000 and referenced to the World Geodetic System (WGS-84) datum. The WVS is divided into ten ocean...

Conservation Biology Institute (Last modified May 12, 2011)

Dataset



## Kentucky HUC 8,10, and 12

USGS

The National Hydrography Dataset (NHD) is the surface-water component of The National Map. The NHD is a comprehensive set of digital spatial data that represents the surface water of the United States using common features such as lakes, ponds, streams, rivers, canals, streamgages, and dams.

Matt Snider (Last modified July 29, 2016)

Dataset



## National Land Cover Database 2006 (U.S.) - zone 2

U.S. Geological Survey

Zone 2 (covering parts of Texas and Louisiana) of the contiguous U.S. land cover dataset, NLCD 2006, released 2/16/2011. The full dataset is divided into 25 zones, which can all be found in the NLCD 2006 gallery.

The National Land Cover Database products are created through a cooperative project...

Conservation Biology Institute (Last modified February 21, 2011)

Dataset



## National Land Cover Database 2006 (U.S.) - percent developed imperviousness, zone 13

U.S. Geological Survey

Zone 13 (covering parts of Oregon, Nevada, Utah, Idaho, Wyoming, Montana, and Colorado) of the contiguous U.S. percent developed imperviousness dataset from NLCD 2006, released 2/16/2011. The full dataset is divided into 25 zones, which can all be found in the NLCD 2006 gallery.

The National Land...

Conservation Biology Institute (Last modified July 18, 2011)

Dataset



## Tennessee Wetlands (NWI V2)

These data were developed in conjunction with the publication Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. USFWS Ecological Services Wetland Team.

The NWI Version 2 dataset is more comprehensive than the original version in characterizing all surface water features on the landscape. It stems from the need to represent all surface waters and wetlands as polygons in a single geospatial dataset, which facilitates accurate area calculations and...

Matt Snider (Last modified January 30, 2017)

Dataset



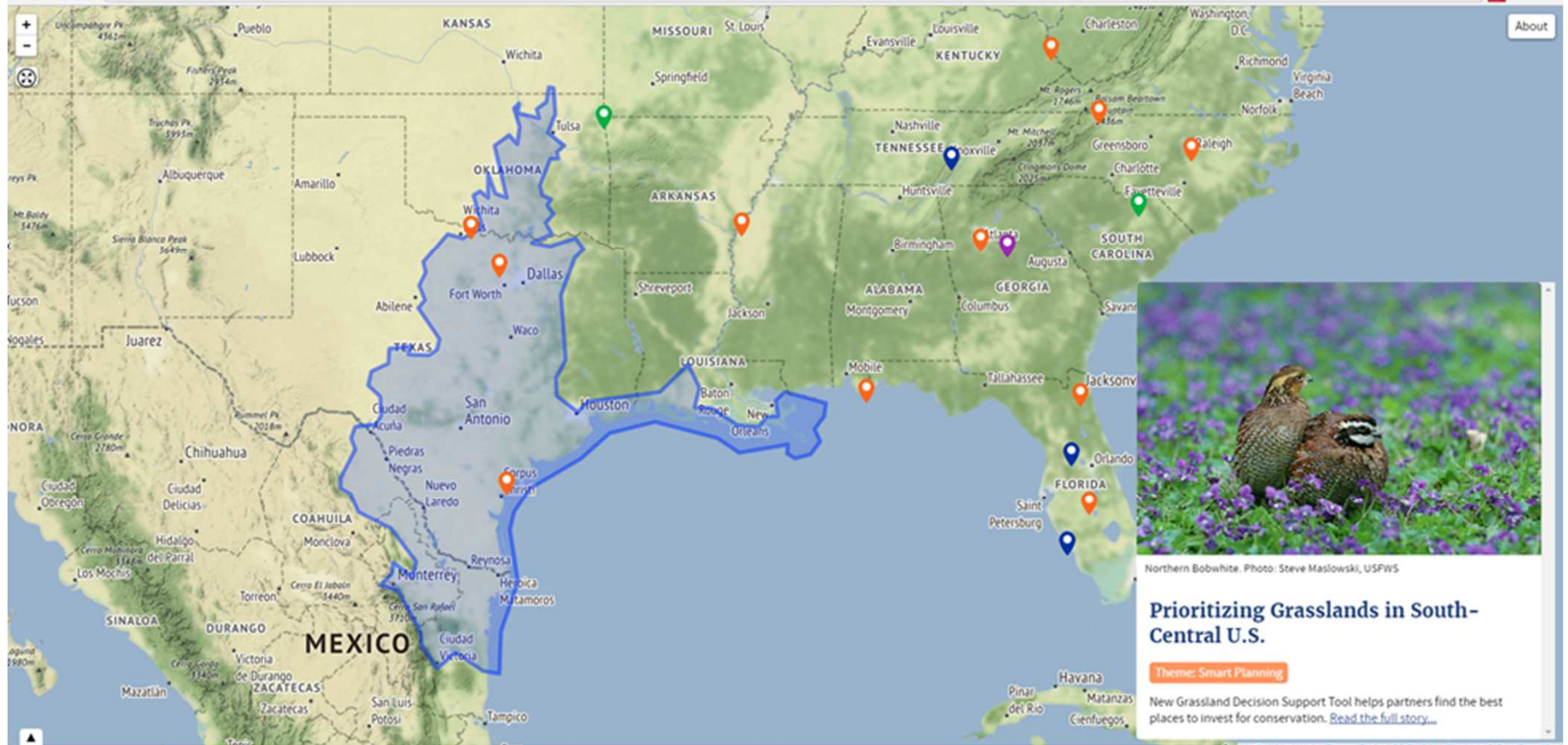
## Texas Plant Hardiness Zones 2012

USDA, PRISM Climate Group, Oregon State University

A complex algorithm was used for this edition of the USDA Plant Hardiness Zone Map (PHZM) to enable more accurate interpolation between



# SECAS: Story Maps





***Thank You!!!!***

***Questions?***

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