Land Trend Demography & Endangered Species Information and Updates

Mike Marshall
ESA Program Specialist
Dallas, Texas
Texas A&M NRI/USFWS Region 4
mmarshall@ag.tamu.edu
Michael_marshall@fws.gov
512-461-6217
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
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.
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...

26 Million People
171 Million Acres
95% Privately-owned
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

Regional Differences?

Spatial Demographics for Texas Landowners

Annual income (%) from farm/ranch

- None
- Less than 25%
- 25-34%
- 35-44%
- 45-54%
- 55-64%
- 65-74%
- 75% or more

Preferred method for information

Absentee Owner: Harris County Residents Distance to Property

Distance (miles):
- <50
- 50 - 100
- 100 - 200
- 200 - 300
- >300
More people....
Changing Texas

171 Million Acres...

Population: 26 Million...

...142 Million Acres
*Private Working Lands*

5% PUBLIC vs 95% PRIVATE

17% DEVELOPED vs 83% RURAL

= 250,000

= Rural (10%)

= Landowners (<1%)
Texas Population

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

Change in Total Population 1997-2012
DFW Population

- 1997 – 3.7M
- 2012 – 4.9M
- Increase - 1.2M
- 34% increase
- 84,070/year
Population Percent Change – Top 25 Counties

Population % Decrease 1997-2012

-32% - -15%
-14% - -10%
-9% - -5%
-4% - 0%
Increase
Texas Projections (2010-2050)

Source: State Demographer
Texas Rural and Urban Populations

- Urban Population
- Rural Population

1950: Urban 60%, Rural 40%
1980: Urban 80%, Rural 20%
2015: Urban 90%, Rural 10%
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

Land Loss 1997-2012

Percent Loss
-100% - -50%
-50% - -25%
-25% - -10%
-10% - 0%
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
DFW Night Time Illumination

Increase 1997-2012

DFW Counties
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

![Bar chart showing the change in number of farms and ranches by size class. The chart indicates a significant decrease in the 1-100 size class, with smaller decreases in other size classes.]
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

- U.S. = 10%
- Midwest = 9%
- Northeast = 11%
- Appalachian = 6%
- West = 11%
- Plains = 11%
- South = 7%

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

www.agcensus.usda.gov | USDA CENSUS OF AGRICULTURE
Landowner Demographics

**Age**

1997 → 2012

**Absentee**

1997 → 2012
Female Operators (Ratio)
Absentee Landowners - Average Distance

Absentee Owner: Bexar County Residents Distance to Property

Distance (miles)
- <50
- 50 - 100
- 100 - 200
- 200 - 300
- >300

Absentee Owner: Harris County Residents Distance to Property

Absentee Owner: DFW Residents Distance to Property

Distance (miles)
- <50
- 50 - 100
- 100 - 200
- 200 - 300
- >300
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

Gather information about potential candidates
Status Surveys
Assess candidates
Candidate Conservation

"Substantial"
Status Review
12-month Finding

"Warranted but Precluded"
"Not Warranted"

Publish proposed rule
60-day Comment Period
Hold hearing, if requested

FINAL RULE
RULE WITHDRAWN

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 considered for cases with clear evidence that poaching is happening.

Starting in 2017

Gather information about potential candidates
Status Surveys
Assess candidates
Candidate Conservation

"Substantial"
Species Status Assessment
RD Briefing
Decision Meeting

"Warranted"
Proposed Listing with Critical Habitat and Economic Analysis

"Warranted but Precluded"
"Not Warranted"

Publish proposed rule
60-day Comment Period
Hold hearing

FINAL RULE
RULE WITHDRAWN
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

- Public Notice
- Reviews/Rewrites & Surnames
- Document Prep
- Science
- Determination
- Program Action

- Review/Surname
- Decision Analysis
- Scientific Analysis
- Program Action
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.*
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

Species by County

- http://tpwd.texas.gov/gis/rtest/
National Workplan


Compensatory Mitigation Policy

- Finalized end of 2016
- https://www.fws.gov/endangered/improving_esa/cmp.html
“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

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.

Recommended Items

Search by State/Territory

Neighboring LCC Conservation Planning Atlases
Planning Atlas: Resources

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

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

Sort by: Reference  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)

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 oceans...
Conservation Biology Institute (Last modified: May 12, 2011)

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 Snyder (Last modified: July 29, 2016)

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 2/18/2011. 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)

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 10, 2011)

Tennessee Wetlands (NWI V2)
These data were developed in conjunction with the publication Cowardin, L.M., V. Carter, P.G. Goetz, and B.T. LaRoe: 1979: USFWS Ecological Services Wetland Typ.
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 Snyder (Last modified: January 30, 2017)

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?

Mike Marshall
mmmarshall@ag.tamu.edu
512-461-6217