

# Texas Riparian & Stream Ecosystem Training Program Update

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Texas Water Resources Institute*

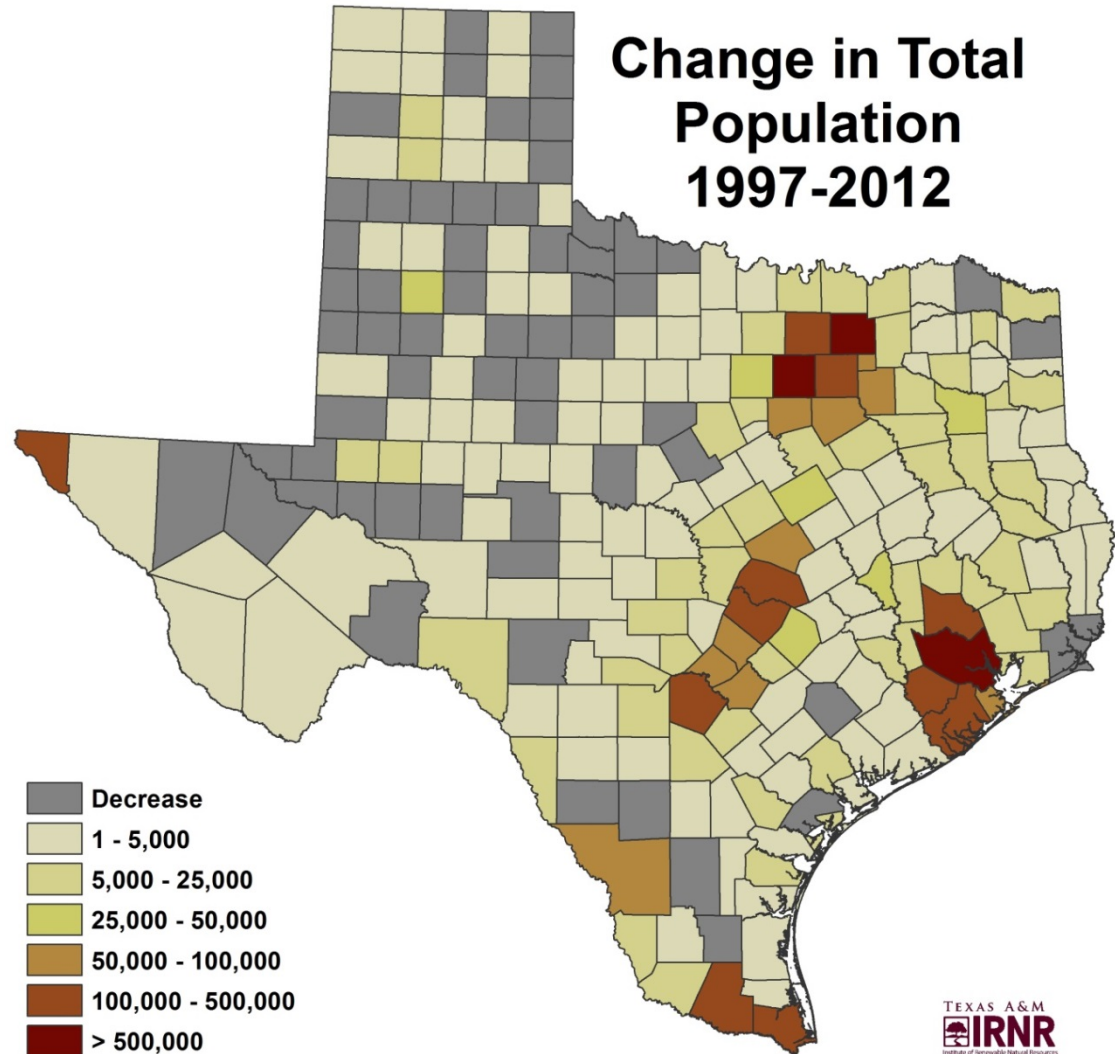


# Threats to Riparian Areas

- ⦿ Riparian degradation is major threats to water quality, in-stream habitat, terrestrial wildlife, aquatic species, and overall stream health.
- ⦿ Proper management, protection, and restoration of riparian areas:
  - ⦿ decrease bacteria, nutrient, and sediment loadings to waterbodies;
  - ⦿ lower in-stream temperatures; improve dissolved oxygen levels;
  - ⦿ improve aquatic habitat;
  - ⦿ improve macrobenthos and fish community

# Texas Population

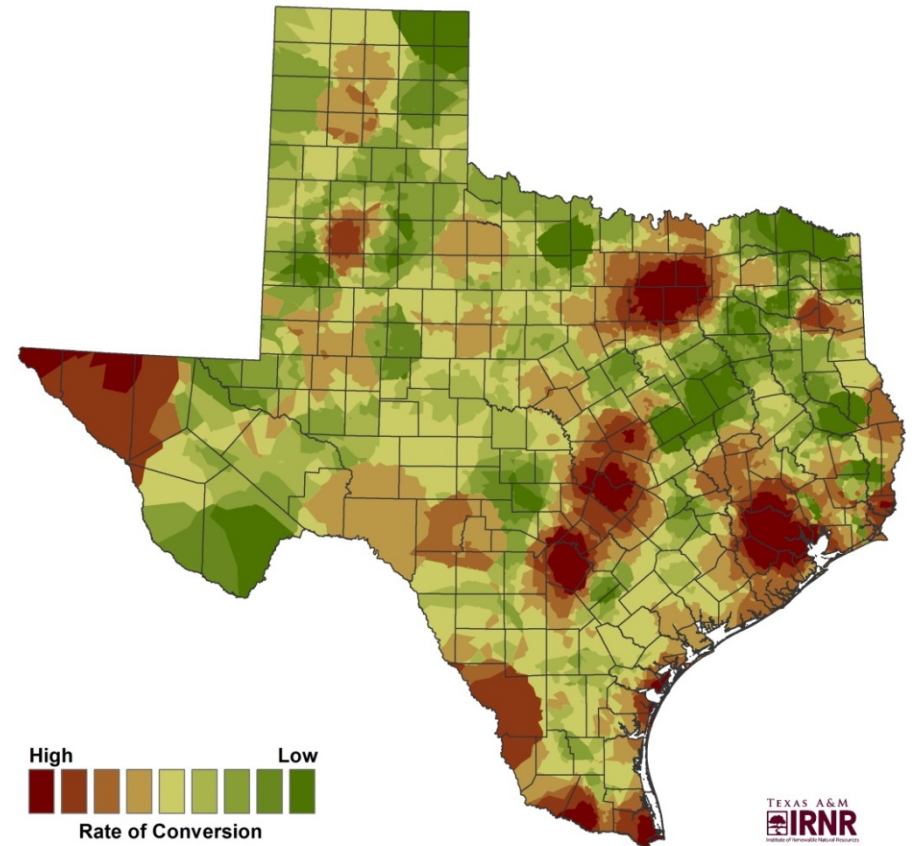
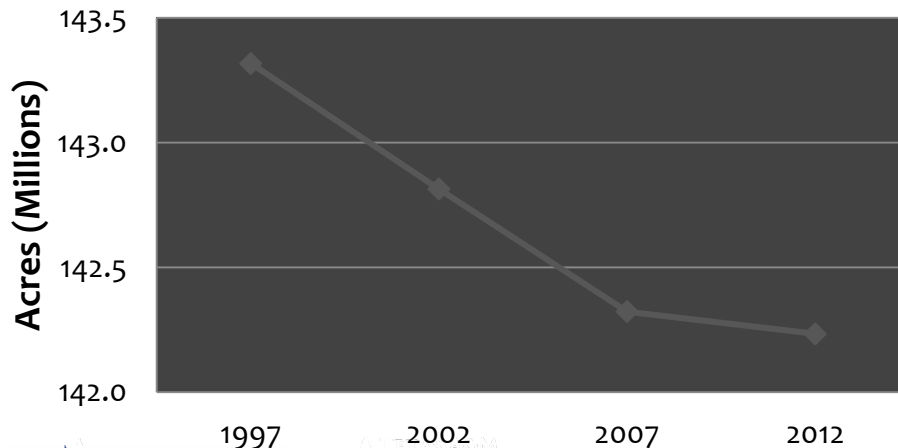
- ⦿ 1997 – 19 Million
- ⦿ 2012 – 26 Million
- ⦿ 36% increase
- ⦿ 500,000/year
- ⦿ 65% of increase occurred within *Top Ten Highest Populated Counties*



# Loss of Rural Working Lands

- 1997 – 143.4 Million acres
- 2012 – 142.3 Million acres
- Loss 1.1 Million acres

Total Working Lands



# Targeting Creeks and Riparian Areas with Planning Projects

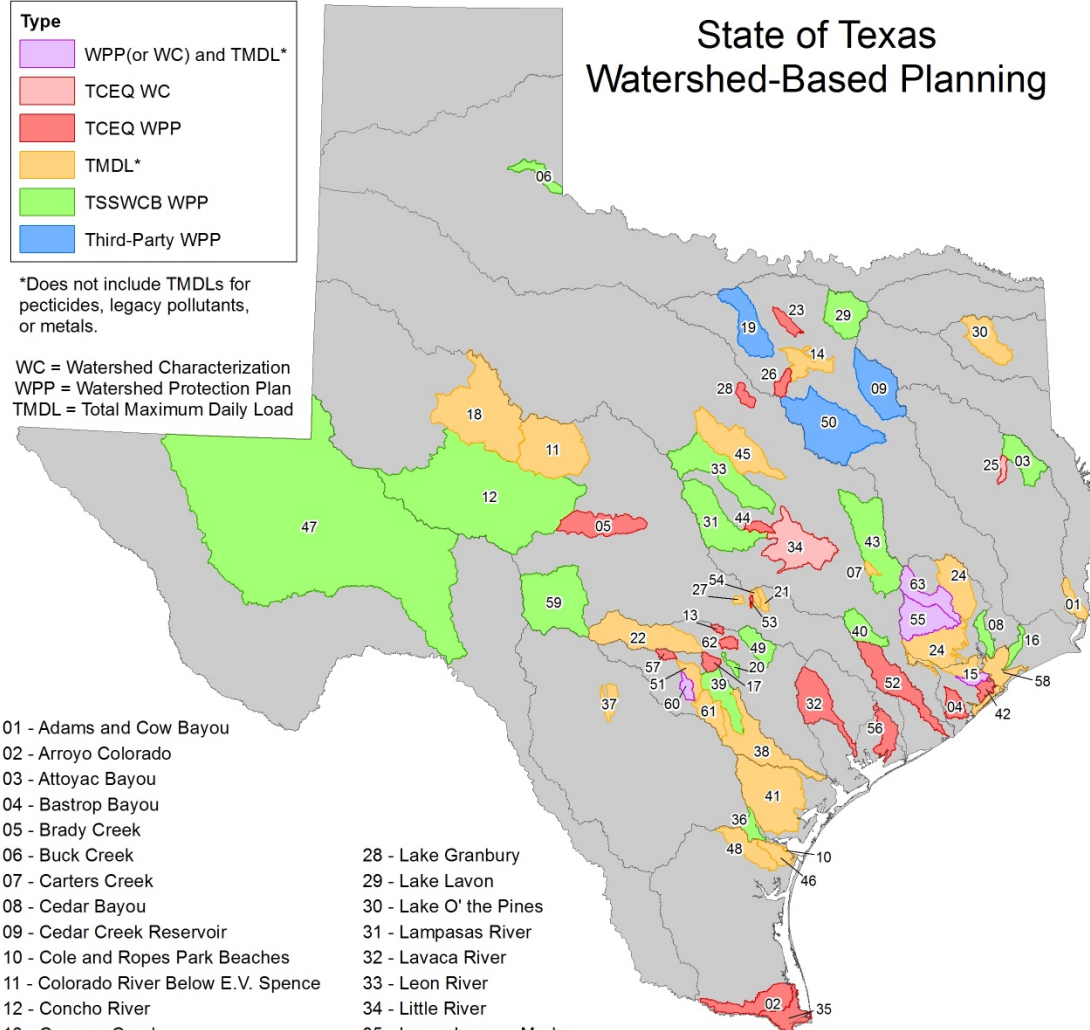
- ⊙ Texas has more than 191,000 miles of rivers and streams with riparian zones and floodplains that comprise corridors of great economic, social, cultural, and environmental value.
- ⊙ The 2014 Texas Integrated report assessed 1,409 water bodies of those 1,065 had sufficient data for evaluations with 7-10 yrs. 2014 303d List has **589** impaired water bodies on it (+21).
- ⊙ Many WPP and TMDL Implementation projects are ongoing across the state to improve WQ in watersheds.
- ⊙ Bacteria is the cause for over 43% of impairments followed by and low dissolved oxygen (nutrients) for 16% and organics in fish tissue at 19%.

# State of Texas Watershed-Based Planning



\*Does not include TMDLs for pesticides, legacy pollutants, or metals.

WC = Watershed Characterization  
WPP = Watershed Protection Plan  
TMDL = Total Maximum Daily Load



- 01 - Adams and Cow Bayou
- 02 - Arroyo Colorado
- 03 - Attoyac Bayou
- 04 - Bastrop Bayou
- 05 - Brady Creek
- 06 - Buck Creek
- 07 - Carters Creek
- 08 - Cedar Bayou
- 09 - Cedar Creek Reservoir
- 10 - Cole and Ropes Park Beaches
- 11 - Colorado River Below E.V. Spence
- 12 - Concho River
- 13 - Cypress Creek
- 14 - Dallas - Fort Worth Area TMDLs
- 15 - Dickinson Bayou
- 16 - Double Bayou
- 17 - Dry Comal/Comal
- 18 - E.V. Spence Reservoir
- 19 - Eagle Mountain Reservoir
- 20 - Geronimo Creek
- 21 - Gilleland Creek
- 22 - Guadalupe River Above Canyon Lake
- 23 - Hickory Creek
- 24 - Houston Area TMDLs
- 25 - La Nana Bayou
- 26 - Lake Arlington and Village Creek
- 27 - Lake Austin

- 28 - Lake Granbury
- 29 - Lake Lavon
- 30 - Lake O' the Pines
- 31 - Lampasas River
- 32 - Lavaca River
- 33 - Leon River
- 34 - Little River
- 35 - Lower Laguna Madre
- 36 - Lower Nueces River
- 37 - Lower Sabinal River
- 38 - Lower San Antonio River
- 39 - Mid and Lower Cibolo
- 40 - Mill Creek
- 41 - Mission and Aransas
- 42 - Moses-Karankawa Bayous
- 43 - Navasota Below Lake Limestone
- 44 - Nolan Creek
- 45 - North Bosque River
- 46 - Oso Bay and Oso Creek
- 47 - Pecos River
- 48 - Petronila Creek
- 49 - Plum Creek

- 50 - Richland-Chambers
- 51 - Salado Creek
- 52 - San Bernard
- 53 - Shoal Creek
- 54 - Spicewood Springs and Walnut Creek
- 55 - Spring and Cypress Creek
- 56 - Tres Palacios
- 57 - Upper Cibolo Creek
- 58 - Upper Coast Oyster Waters
- 59 - Upper Llano River
- 60 - Upper San Antonio River
- 61 - Upper San Antonio River
- 62 - Upper San Marcos
- 63 - West Fork San Jacinto and Lake Creek

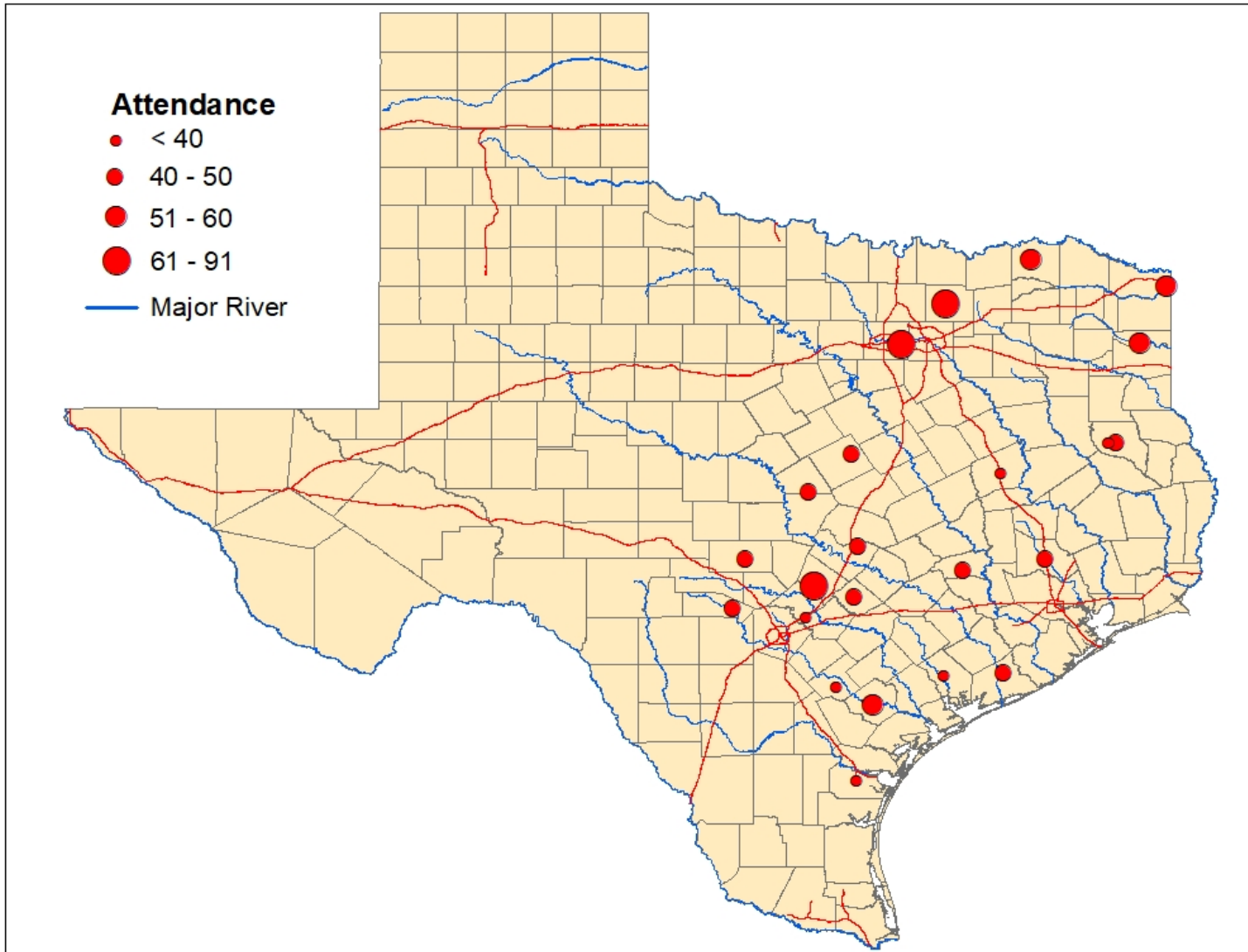


# Texas Riparian & Stream Ecosystem

- ◎ Started in 2013
- ◎ Geared towards landowners
- ◎ Hosted 48 workshops around Texas



# Participation (2016-Present)





# Texas Riparian & Stream Ecosystem Training

## ◎ Project Goals:

- ◎ Facilitate the promotion of healthy watersheds and improve water quality through the delivery of riparian and stream ecosystem education programs with a focus on priority watersheds.
- ◎ Increase citizen awareness, understanding and knowledge about the nature and function of riparian zones, their benefits, and BMPs to protect them and minimize NPS pollution.
- ◎ Connect landowners with local technical and financial resources to improve management and promote healthy watershed and riparian areas on their land.

*Funding is provided by the U.S. Environmental Protection Agency  
through the Texas State Soil and Water Conservation Board.*

# Collaborators

- ⊙ Texas Water Resources Institute
- ⊙ Texas State Soil and Water Conservation Board
- ⊙ Texas Riparian Association
- ⊙ Texas A&M Forest Service
- ⊙ Texas Parks and Wildlife Department
- ⊙ USDA Natural Resources Conservation Service
- ⊙ Nueces River Authority
- ⊙ Texas A&M AgriLife Research, Ecosystem Science and Management Department
- ⊙ Texas Tech University Llano River Field Station
- ⊙ Tarrant Regional Water District
- ⊙ Upper Trinity Regional Water District
- ⊙ Baylor University
- ⊙ Texas State University, Meadows Center

# Texas Riparian & Stream Ecosystem Training

## ⦿ Program Tasks:

- ⦿ Deliver 24 Riparian Education programs to participants in prioritized watersheds (48 Total over 6 years)
- ⦿ Coordinate 2 statewide conferences
- ⦿ Increase knowledge and understanding of riparian function and implementation of BMPs by individuals participating in the program, as measured by pre-/post-tests and post follow up evaluations.

# Marketing



texasriparian.org



## Texas Riparian & Stream Ecosystem Workshop

Mission, Aransas and Lower San Antonio Rivers

April 25, 2018 | 8:00 a.m. - 4:00 p.m.

The Fire Pit

144 N Courthouse Square  
Goliad, Texas 77963

Online RSVP and Agenda: <http://texasriparian.org/upcoming-training-locations/>

For more information and to register please contact Clare Entwistle at 210-277-0292 ext 205 or [clare.entwistle@ag.tamu.edu](mailto:clare.entwistle@ag.tamu.edu).

Continuing Education Units available: Texas Department of Agriculture Pesticide Applicators License – 3 CEUs; Texas Water Resources Institute – 1 CEU; Certified Crop Advisor – 7 CEUs; Texas Nutrient Management Planning Specialists – 6 hours; Texas Floodplain Management Association – 7 CEUs; Texas Forestry Association – 6 hours; Society of American Foresters – 6 hours; Texas Board of Professional Land Surveying – 7 hours; Texas Board of Architectural Examiners "Acceptable for HSW credit"; and may also be used for CEUs for Professional Engineers.

The free workshop will include both indoor classroom and outdoor presentations by multiple natural resource agency experts and an outdoor field portion on a creek to discover how it functions and the role of riparian vegetation in properly functioning systems. RSVPs by April 20, 2018 at the link above or by contacting Entwistle. The San Antonio River Authority is sponsoring a lunch of a brisket plate, beans and potato salad.

First name: \_\_\_\_\_ Last name: \_\_\_\_\_

Email address: \_\_\_\_\_ Phone: \_\_\_\_\_

Org./Employer: \_\_\_\_\_ Lunch Options:  I will have the catered lunch  
 I will bring my own



Life's better outside.  
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Funding provided through a Clean Water Act Nonpoint Source Grant from the Texas State Soil and Water Conservation Board and U.S. Environmental Protection Agency



- News Releases through AgriLife Today and local papers
- Listserv - [TEXASRIPARIAN@LISTSERV.TAMU.EDU](mailto:TEXASRIPARIAN@LISTSERV.TAMU.EDU)
- Website - <http://texasriparian.org>
- Facebook - <http://www.facebook.com/TexasRiparianAssociation>
- Online Registration – <http://naturalresourcestraining.tamu.edu/schedule/>

# Texas Riparian & Stream Ecosystem Training



## Mission, Aransas, & Lower San Antonio Rivers ~ Agenda April 25, 2018

- 8:00 Meeting Registration
- 8:15 Welcome & Introductions
- Brian Yanta, Goliad County AgriLife Extension Agent
- 8:30 Program Overview, Watershed Management and Water Quality
- Clare Entwistle, Texas Water Resources Institute (TWRI)
- 9:15 How Creeks Function & Bear Creek Example
- Melissa Parker, Texas Parks and Wildlife Department (TPWD)
- 10:00 Break
- 10:15 Riparian Vegetation
- Stephen Deiss, USDA Natural Resources Conservation Service (NRCS)
- 11:00 Management Practices, Local Resources and Photo Monitoring of Streams
- Clare Entwistle, TWRI
- 11:45 Lunch
- 12:15 Lunch time Presentation: Watershed Protection Plan Updates and Stream Restoration in San Antonio River Basin
- Michael Schramm, TWRI
  - Aarin Teague, San Antonio River Authority
- 12:30 Role of Forests and Trees in Watershed Protection
- Jeff McFall, Texas A&M Forest Service
- 1:00 Trip to the Creek (Lead by TPWD, TFS, and NRCS)
- Creek Walk & Lane's Balance Demonstration Activity
  - Agricultural Nonpoint Source Program: Kyle Wright, NRCS
  - Feral Hog Education: Jaime Killian, TPWD
- 4:00 Wrap up and Head for Home!

<http://texasriparian.org/> and <https://www.facebook.com/TexasRiparianAssociation>



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Goliad County  
Soil and Water Conservation District





[↑ Return to Riparian Program](#)

## Riparian Online Modules

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The Riparian and Stream Ecosystem Education Workshop will include the following presentations for the indoor portion of the training:

### You Tube Videos – Voice over PowerPoint Presentations

1. Riparian and Watershed Management: Steve Nelle, Retired USDA Natural Resources Conservation Service
2. Stream Processes and Hydrology: Ryan McGillicuddy, Texas Parks and Wildlife Department
3. Riparian Vegetation and hindrances to Healthy Riparian Areas: Steve Nelle, USDA NRCS
4. Management Practices and Local Resources: Nikki Dictson, Texas Water Resources Institute
5. Riparian Considerations for Land Operators: Lori Hazel, Texas A&M Forest Service

### Riparian Mini-Modules



- Lesson 1: Debunking the Myths  
Nueces River Authority
- Lesson 2: Defining Riparian  
Nueces River Authority
- Lesson 3: Function Produces Values  
Nueces River Authority
- Lesson 4: How A River Works  
Nueces River Authority
- Lesson 5: The Impacts of Channel Degradation  
Nueces River Authority
- Lesson 6: The Importance of Riparian Vegetation  
Nueces River Authority
- Lesson 7: What Hinders Function and Recovery  
Nueces River Authority
- Lesson 8: Riparian Degradation and Recovery

Nueces River Authority

Understanding Lane's Balance for streams – A You Tube video with Steve Nelle explaining Lane's Balance.

Understanding Your Remarkable Riparian Area – A webinar on You Tube featuring Sky Jones-Lewey of the Nueces River Authority that was sponsored by Texas Wildlife Association and AgriLife Extension Service in 2012.

### PowerPoint Presentations

[Understanding Creek and Riparian Areas \(powerpoint presentation\)](#)

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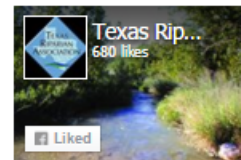
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# Online Modules, Videos, and Resources

# Value of the Program

- ⦿ We developed evaluation tools with a pre/post-test component to try to evaluate knowledge gained during the program.
- ⦿ The evaluation asks them demographic data on the pre-course evaluation.
- ⦿ They are asked program satisfaction and willingness to adopt conservation practices on the post-course.

# Riparian Evaluation of Program

1. Asked demographic data, program satisfaction, and willingness to adopt conservation practices.
2. We had a 72.1% response rate (1612/2235).
3. The total combined acreage for all workshop participants is more than 824,176 acres.
4. 80% had a bachelor's degree or higher
5. 14% increase between pre and post- test scores and knowledge gained overall (scores 78, 91)

# Riparian Evaluation of Program

- ◎ 99.1% of respondents mostly or completely satisfied with the program
- ◎ 98.8% were mostly or completely satisfied with the course materials
- ◎ 99.1% were mostly or completely satisfied with the ease of understanding
- ◎ Almost all respondents (99.5%) would recommend this course to others
- ◎ 47.5%, believed they would benefit economically from this course in the future

## Table showing Percent of Participants that plan to adopt each of the Conservation Practices

	<b>% Plan to Adopt</b>	<b>% Undecided</b>	<b>% Will not Adopt</b>
<b>Riparian Herbaceous Buffers</b>	84%	14%	2%
<b>Riparian Forest Buffers</b>	78%	19%	3%
<b>Prescribed Grazing</b>	69%	21%	10%
<b>Rotational Grazing</b>	74%	17%	9%
<b>Manage Feral Hogs</b>	80%	16%	4%
<b>Rangeland Planting of Vegetative Cover</b>	73%	22%	5%
<b>Manage to Reduce Bare Ground</b>	91%	8%	1%
<b>Monitor Stream Sites through Photos</b>	72%	23%	5%



# Post workshop online evaluations

- ⦿ 452 respondents out of the 1,654 or 27% rate of the total emails.
- ⦿ 30% of respondents benefited economically as a result of what they learned at the workshop:
  - ⦿ 34% estimated they have benefited over \$1,000-\$10,000+
  - ⦿ 25% estimated between \$100-\$500 of economic benefits
  - ⦿ 13% noted other benefits
- ⦿ An additional 42% of attendees have participated in a conservation program since the riparian training

Question	I have adopted in the last six months	I plan on adopting in the future	I will not adopt the practice	I am undecided
Riparian Herbaceous Buffers	24%	53%	2%	21%
Riparian Forest Buffers	23%	58%	3%	16%
Prescribed Grazing	14%	49%	14%	23%
Rotational Grazing	21%	54%	10%	15%
Mange Feral Hogs	24%	56%	5%	15%
Rangeland Planting of vegetative cover	27%	56%	3%	14%
Manage to reduce bare ground	51%	43%	0%	6%
Monitor stream sites through photos	12%	61%	4%	23%

# Upcoming Workshops

- ◎ Texas Riparian & Stream Ecosystem – Richland Chambers Reservoir Watershed
  - ◎ September 19, 2018
  - ◎ Corsicana, TX
  - ◎ Co-hosted by the Tarrant Regional Water District

# Interested in participating/hosting workshops?

- ⦿ We are starting to schedule for next spring/fall
- ⦿ <http://texasriparian.org/>
- ⦿ Join our listserv!

# Questions?

Clare Entwistle

Texas Water Resources Institute

210-277-0292 ext 205

[clare.entwistle@ag.tamu.edu](mailto:clare.entwistle@ag.tamu.edu)