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Influence of Ecological and Anthropogenic Factors on the Distribution and Habitat Associations of the Western Chicken Turtle (*Deirochelys reticularia miaria*) in Texas

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*WCT=Western Chicken Turtle



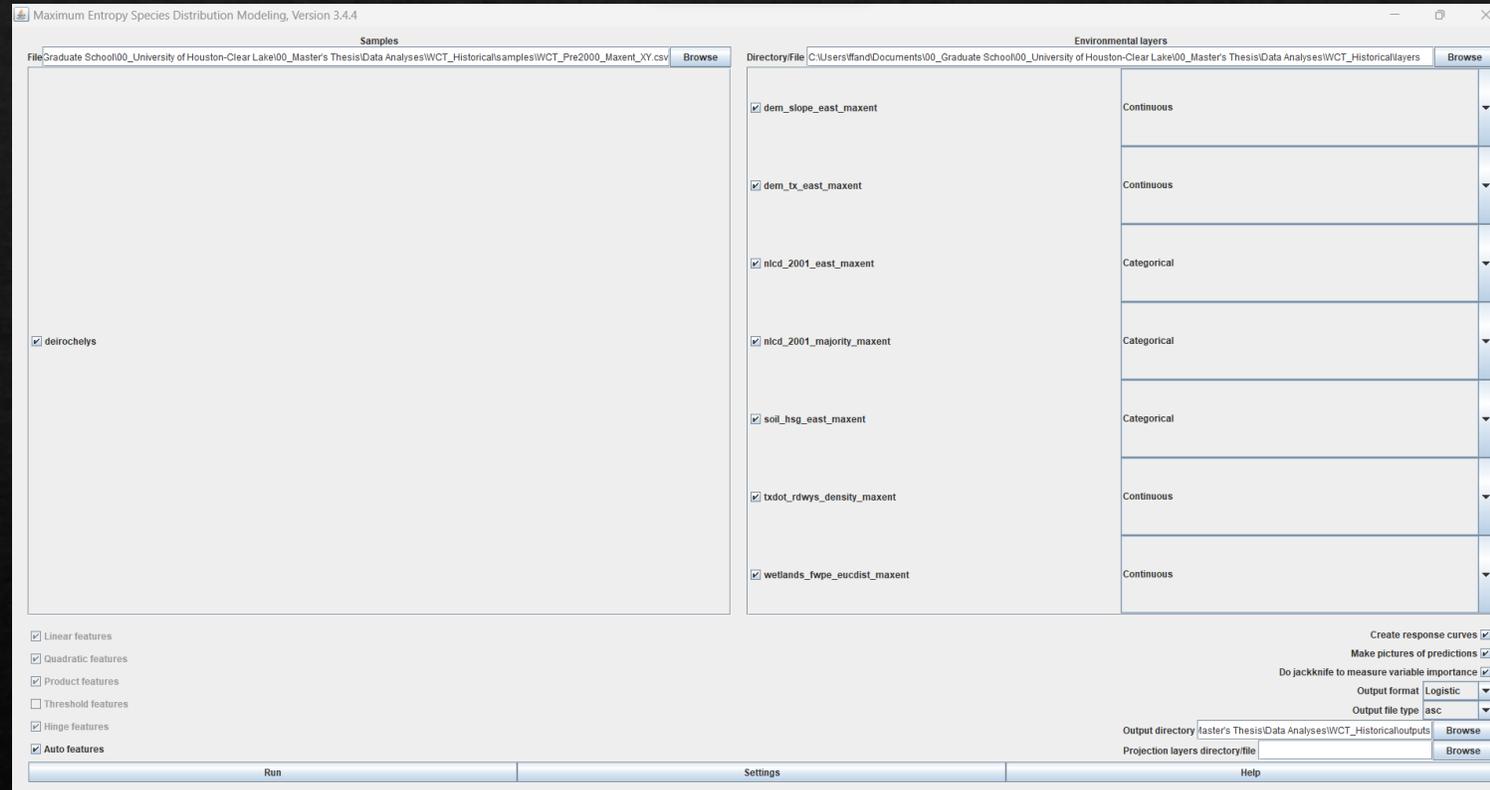
Study Overview & Results

- ◇ **Goal:** Estimate the current distribution of WCT and habitat associations
- ◇ **Field Methods:** Combination of 14 protocols and associated habitat data collection
- ◇ **Data Analysis:** Species distribution modeling
- ◇ **Results:**
 - ◇ Conducted sampling for three years (2020-2022)
 - ◇ 66 sites in 33 counties
 - ◇ Presence confirmed during 50 events
 - ◇ WCT presence confirmed at 12 locations in 10 counties across all methods
 - ◇ 24 counties in TX have historic detections or confirmed/potential detections from this study



Species Distribution Modeling (SDM): An Overview

- ◆ Predict the potential distribution of a species on a geographic scale based on the relationship between occurrence records and environmental co-variates
- ◆ Relies on landscape-scale spatial datasets
- ◆ **MaxEnt**: program that uses algorithms to produce a probability distribution indicative of habitat suitability



MaxEnt Application Window

WCT Distribution Modeling

- ◆ **WCT Occurrence Sources**

- ◆ **Environmental Co-variates:**

- ◆ Elevation & Slope

- ◆ Land cover



- ◆ Soil class



- ◆ Distance between freshwater emergent and pond wetland types



- ◆ Road density



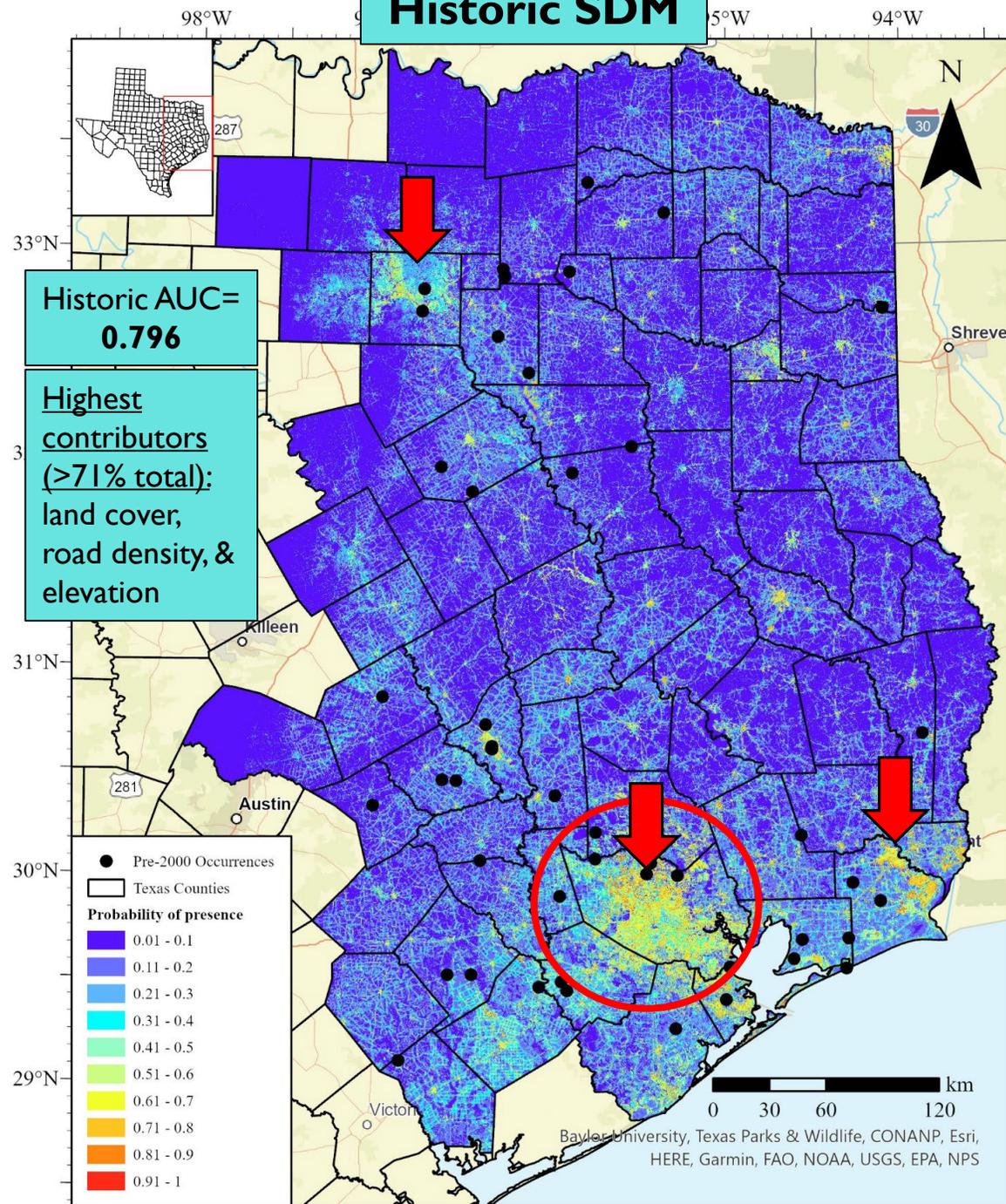
- ◆ **Models produced:**

- ◆ Historic: WCT occurrences prior to 2000 ($n=47$)

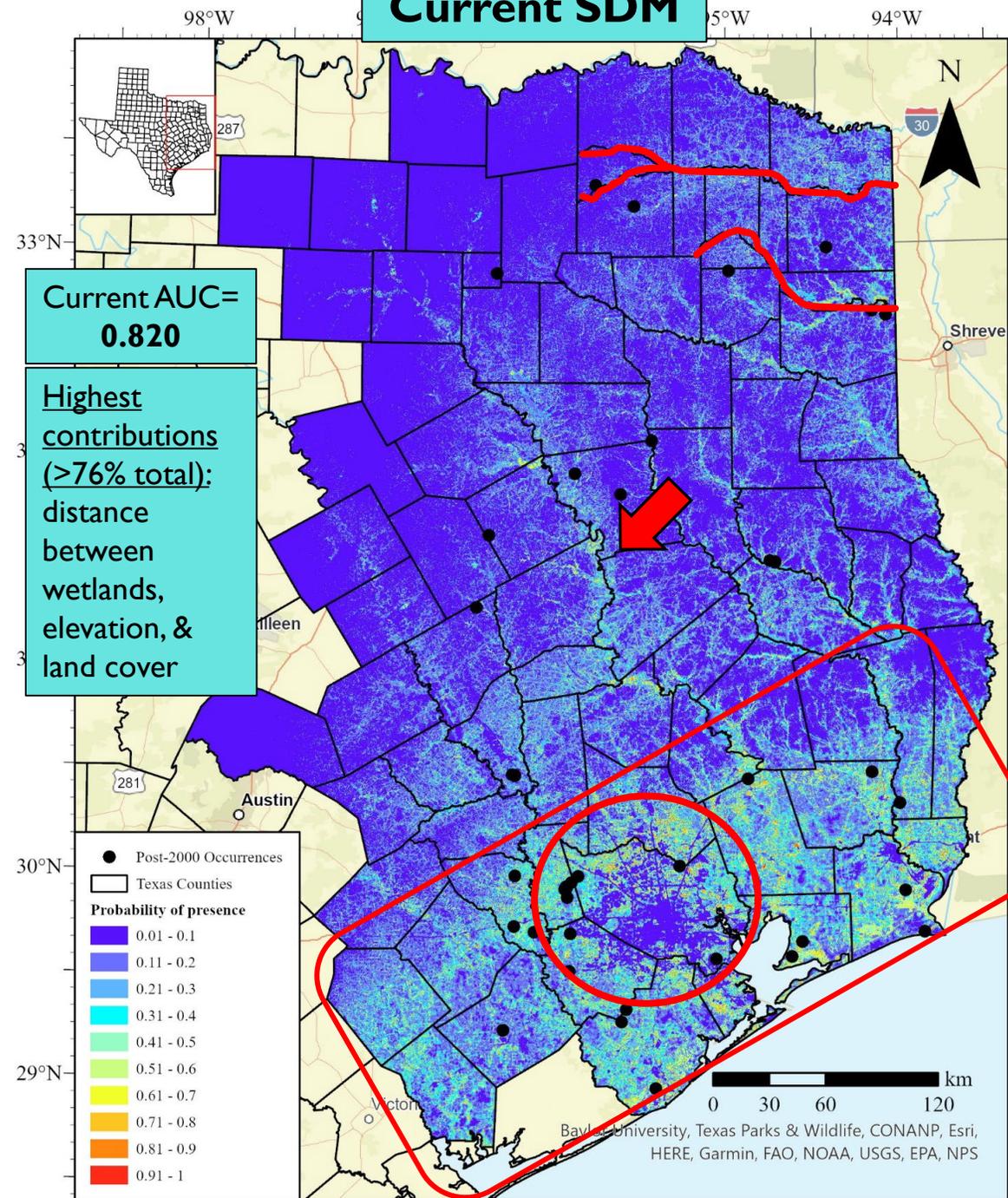
- ◆ Current: WCT occurrences after 2000, including detections from this study ($n=47$)



Historic SDM



Current SDM

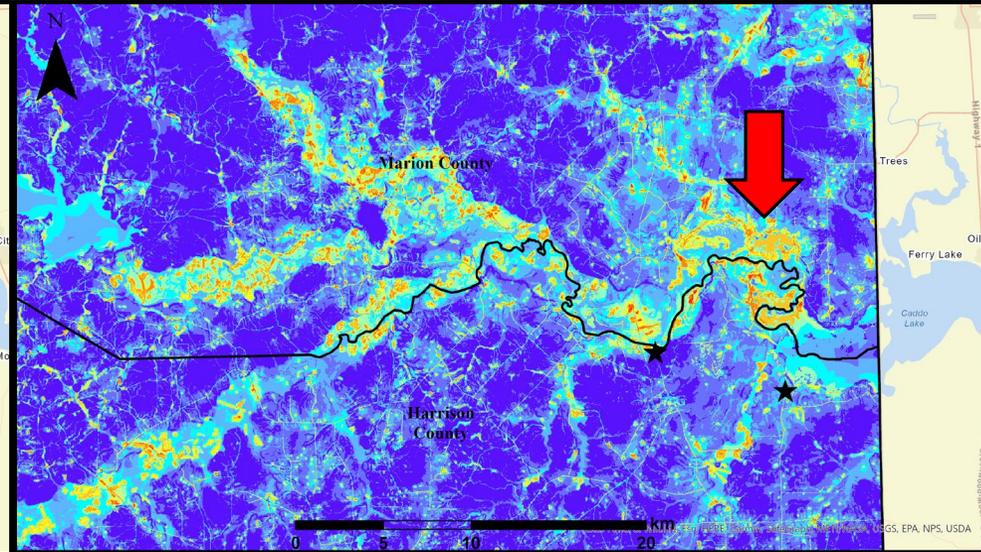
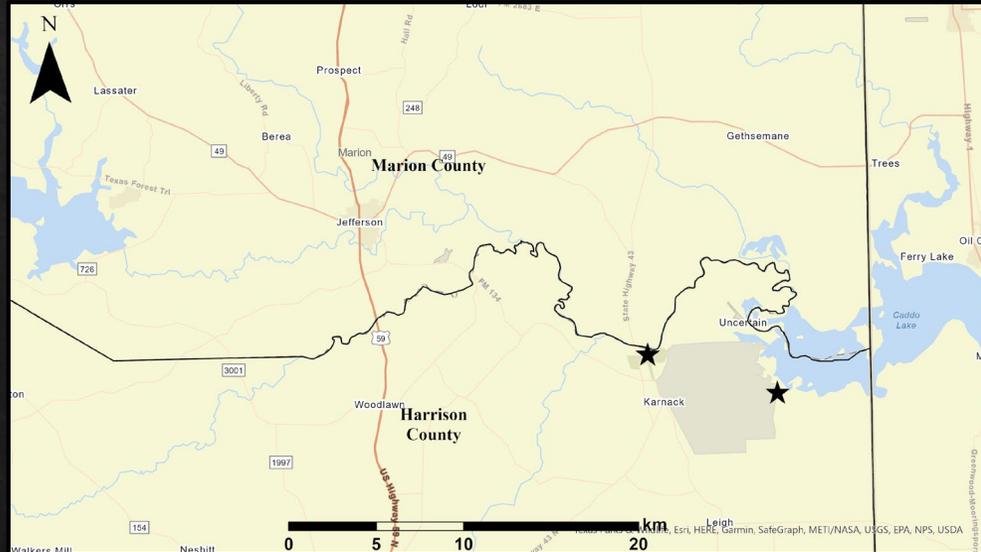


WCT SDM Implications for NETX

◆ Occupied Counties Based on Occurrence Records

◆ Current (post-2000): Anderson, Cass, Delta, Freestone, Harrison, **Hopkins**, **Nacogdoches**, Rockwall, **Upshur**

Area of Focus

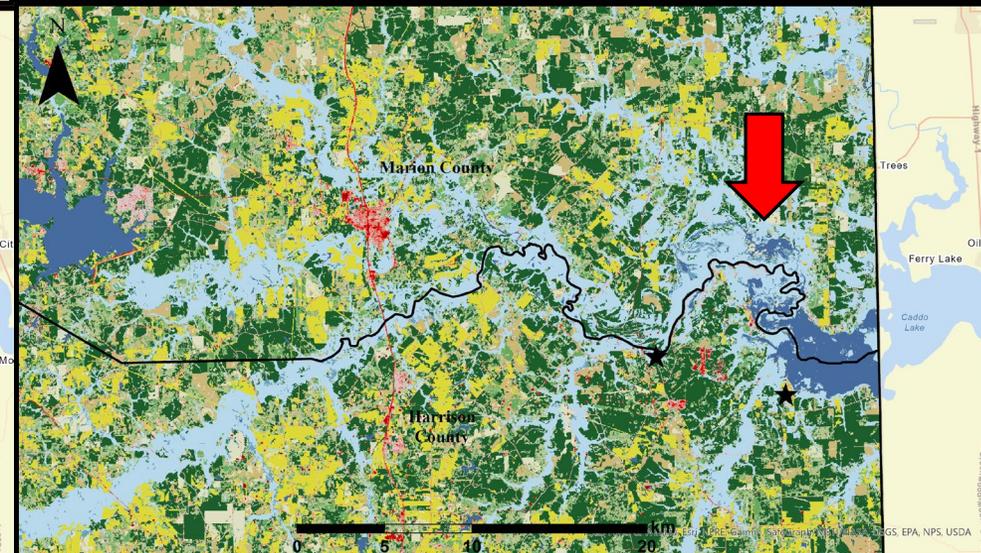
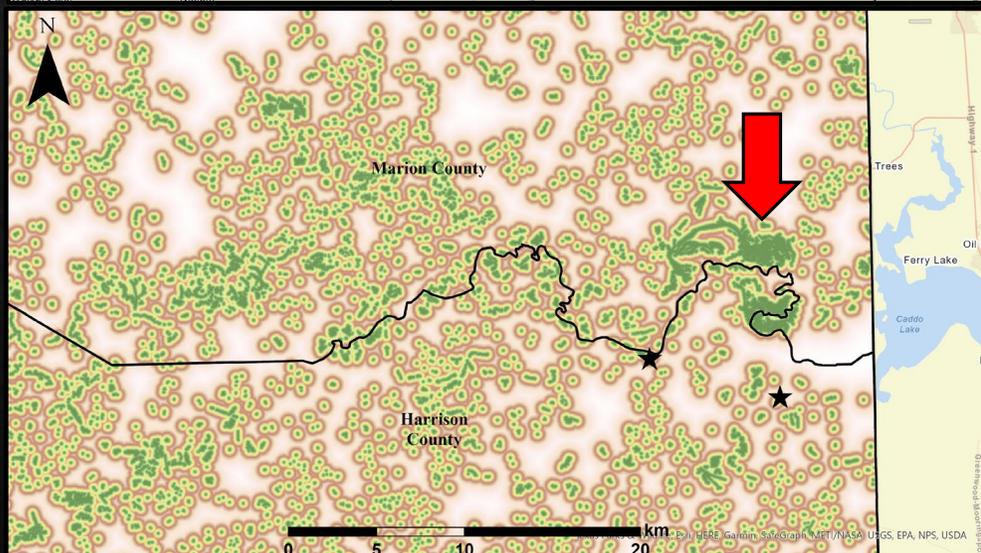


Current SDM

*Warm colors = More suitable habitat

Distance Between Wetlands

*Green = closer together



2019 Landcover

*Blues = Aquatic & wetland classes

Future Recommendations for Landscape-Scale Analyses

- ◆ Climate change projections (eco-forecasting)
- ◆ Accounting for sample bias using targeted group sampling
- ◆ Habitat fragmentation modeling
- ◆ Habitat heterogeneity within the estimated WCT home range



Acknowledgements

- ◆ Research Funded By: Texas Comptroller of Public Accounts & Sabine River Authority
- ◆ EIH Faculty, Staff, Students, & Technicians: Dr. George Guillen, Mandi Gordon, Dr. Jenny Oakley, Bryan Alleman, Aurora Alvarez, David Bontrager, Sarah Bullard, Jacqueline Carlson, Danielle Davidson, Grey Dennis, Kelly Garcia, Nick Hughes, Trey Hughes, Isabel Johnson, Jaimie Kittle, Story Leshar, Isabel Marzullo, Taylor McKenzie, Victoria Ontiveros, Adriana Puzon, Sarah Schrock, Cecilia Silva, Brandi Stevenson, Taylor Thomisee, Cecilia Thompson, Mathew VanBemmel, Tori Yourganas, Haley Welshoff, Emily Yargeau, and Jimmy Welch
- ◆ Research and Funding Partners: Lauren Borland, Brandon Bowers, Paul Crump, Toby Hibbitts, Jake Jackson, Bill Kirby, Colin McDonald, Wade Ryberg, Laura Speight, Danielle Walkup
- ◆ Individual Partners: Bill Adams, Conor Adams, Ben Anderson, Ben Atkins, Trey Barron, Ryan Boone, Kyle Brunson, David Butler, Terry Corbett, Howard Crenshaw, Johanna Delgado-Acevedo, John Dickson, Donald Deitz, Connor England, Bethany Foshee, Kristin Fritz-Grammond, Wes Griggs, Doug Head, Ron Holley, Mikayla House, Rob Hughes, Frank Hyatt, Cindy Jones, John Maguera, Christopher Maldonado, Tiffany Malzhan, Jeremy Mayhew, Trey McClinton, Brandon Melton, Ken Miniard, Mike Morrow, Bill Muncrief, Vanessa Neace, Wes Newman, Robert Nocito, George Russell, Dan Saenz, Monty Shank, Kenny Shaw, Matt Singer, Pauline Singleton, Tina Solomon, Robert Speight, Kirk Tareilo, Nelda Taylor, Jim Warren, Jason Watson, John Whittle, Jim Willis, Ashley, John, and 29 private landowners
- ◆ State & Federal Permitting, Institutional Protocols, and Access Permissions: Texas Parks and Wildlife Department Scientific Permit for Research SPR-0504-383; UHCL Institutional Animal Care & Usage Committee protocol 0320.001.R1; Texas Parks and Wildlife Department Aerial Wildlife Monitoring permit M-2885; special use and land access permits issued by Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, U.S. Department of Agriculture Forest Service, River Authorities
- ◆ WCT Online Reporting Tool participants

Funded by:



Thank You! Questions?



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WCT Study Final Report:

<https://www.uhcl.edu/environmental-institute/research/publications/documents/23-001-distribution-habitat-association-western-chicken-turtle-final-report.pdf>