Quarterly Newsletter of the Caesar Kleberg Wildlife Research Institute
at Texas A&M University-Kingsville

Summer 2022
Volume 26, No. 2

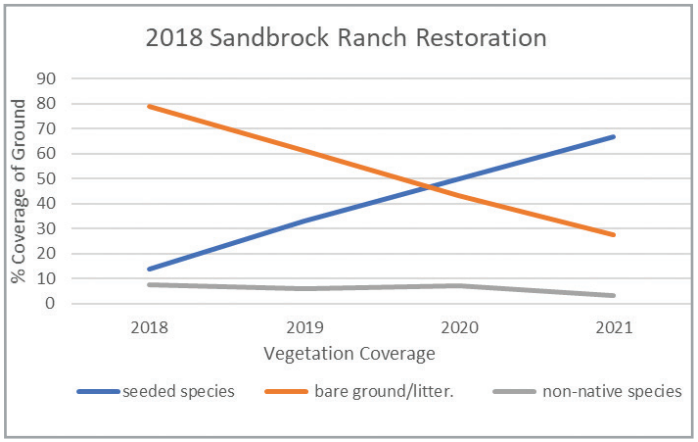
Protecting and Restoring Land to Native Grassland

by J. Randy Bow and Anthony D. Falk

Land use in Texas is changing quickly, with urban growth expanding into many rural areas of the state. Protecting grasslands in and around this rapid population growth is important for grassland-dependent plants and animals. Growth is going to happen; homes are going to be built. So, what can be done to protect areas and provide both wildlife habitat and watershed buffers that transition from urban to rural?

To begin to answer this question Texas Native Seeds (TNS) partnered with the Sandbrock Ranch development to restore large areas of cropland to native grassland. The property is located at the top of a watershed feeding Lake Lewisville, which serves as an important source of drinking water and recreation for the region. Restored native grasslands would not only create valuable habitat but would also help protect this important water source.

The primary goals of this project were to restore native grasslands to areas adjacent to the new housing development while also identifying which currently-available native seed sources are best adapted to the site. A seed mix of 19 native grasses was planted with a no-till drill in April 2018. Data were collected each fall to determine which plants were present and the percent coverage of each. Results from this project mirror other successful TNS plantings throughout the state, with rapidly increasing cover of seeded species during the 3 years of data collection (demonstrated by the blue line in the graph). Overall, 15 of the seeded native grasses were recorded at the site. Many iconic grassland species such as little bluestem, yellow Indiangrass, eastern gammagrass and sideoats grama are increasing in cover every year. Despite these successes, there were still areas of bare ground that can be invaded, indicating a need for additional native plant development in the region. Results gathered from this collaboration allow TNS to provide seed mix recommendations based on science, as well as test future seed releases developed for Central Texas.



Percent ground cover in the fall of each year of 19 native grasses seeded in 2018.

This successful grassland restoration completed a vision of the developer to restore native grassland that will result in both increased wildlife habitat and benefits to society, while also allowing opportunities for recreational use. In addition, establishing grasslands near homes provides the vegetation coverage needed

What Do They Eat?

The Groove-billed Ani has a flexible diet. It includes insects, small animals, fruits, seeds, livestock parasites, and occasionally eggs of other birds. (Groove-billed Ani. The Cornell Lab. allaboutbirds.org)

Mr. Randy Bow is the Assistant Director for Central Texas, and Dr. Tony Falk is the Dan L. Duncan Endowed Director of the Texas Native Seeds program at CKWRI. ~

to help filter water runoff to nearby watersheds. This filtration helps reduce sediment and nutrient loads in the lake making for a healthier watershed.

Texas Native Seeds and Sandbrock Ranch plan to utilize this restoration project for education and outreach efforts to stimulate greater awareness of the importance of restoration and conservation in this area of rapid population growth. Findings of this grassland restoration project will enable more successful restoration efforts by other landowners, agencies, and the public in North Central Texas. ~

Successful establishment of little bluestem, yellow Indiangrass, eastern gammagrass and sideoats grama on the Sandbrock Ranch Development in North Central Texas.

CKWRI News

Award-Winning Book

Congratulations to Drs. Michael Morrison, the Caesar Kleberg Chair for Wildlife Ecology at Texas A&M, CKWRI's Leonard Brennan, Bruce Marcot, William Block, and Kevin McKelvey for their book, "Applications for Advancing Animal Ecology (Wildlife Management and Conservation)." The authors will receive the Outstanding Wildlife Publication Award in the Authored Book Category from The Wildlife Society later this year.

TAMUK President

The CKWRI welcomes Dr. Robert H. Vela, Jr., as the new President at Texas A&M University-Kingsville. Dr. Vela is a Javelina alumnus and most recently served as the President of San Antonio College. We look forward to working with him.

New Fellowship

We are proud to announce the new Juliana Hawn Fellowship for Habitat Restoration. This generous gift will support habitat restoration research and education at the CKWRI.

Meredith Long Intern

The CKWRI is proud to have Sarah Goodman serving as this summer's Meredith Long Intern. The internship provides an aspiring undergraduate student in Texas the opportunity to participate in one of our research programs and learn from our great faculty and graduate students. Sarah is participating in the Deer Research Program.

Brandon Roniss (OK State University, field technician), Sarah Goodman (CKWRI Meredith Long Intern), and Miranda Hopper (CKWRI graduate student) conducting field research.

From Trash to Treasure: City Park Benefits Texas Tortoises

by Evan P. Tanner, Autumn R. Coronado, and Ashley M. Tanner

Urban development of natural areas is a continued threat to wildlife globally. As human populations grow, the threat of "urban sprawl" (i.e., human development of wildlife habitat) will be a major source of conservation concern. In the recent United States census, human population growth was estimated at almost 21% in Texas over a 10-year period, and in 2015 it was determined that 5 of the U.S.'s fastest growing cities were in Texas. These trends highlight the obligation to understand impactful conservation practices that balance the needs of wildlife populations with those of humans.

Urban sprawl will continue to be a constant pressure for wildlife populations in the future. However, habitat restoration offers an opportunity to offset urban development by promoting wildlife habitat requirements within the larger, growing urban environment. Such efforts offer promise for many wildlife species, yet may be even more impactful for longer-lived, less mobile species such as the Texas tortoise. This species is a state-listed species of concern that is estimated to live up to ~60 years with typically low reproductive rates and home ranges as small as an acre. Among other causes, removal of native habitat (thornscrub/grassland communities) is a large contributor to population declines of this species over recent decades.

Yet, this species shows signs of adaptive responses to human activity. It is not uncommon to see a Texas tortoise moving across someone's backyard to get to a fresh garden, or at a local city park navigating trails as it searches for food and other resources. In fact, city parks may offer important avenues towards habitat restoration for this species within urban areas.

We tested this idea by focusing research on Texas tortoises at a city park in Harlingen, Texas. Located within Cameron County (population >420,000 people), this area historically existed as native habitat for the Texas tortoise before urban development. Hence, efforts have been made to help offset urban pressures to wildlife by many non-profits and the city government. For instance, the Hugh Ramsey Nature Park is a ~55-acre city park in Harlingen that up until the 1960's was a landfill. By the mid 90's, efforts began to remove non-native invasive plant species, plant native species, and try to restore the historic vegetation community. Restoration efforts continue today, and the park houses a small population of Texas tortoises. Given that there were no official tortoise releases on this site, it is likely that these tortoises moved in on their own after restoration.

In 2021, we attached radio-transmitters on Texas tortoises at the park to assess how individuals were responding to ongoing restoration treatments. We captured five tortoises who were monitored from May-October. We collected information on their activities and movements, and we documented plant

Dr. Evan Tanner is the Meadows Professor in Semiarid Land Ecology, and Research Scientist and Assistant Professor at CKWRI. Ms. Autumn Coronado is a recent graduate of the Range and Wildlife Department at TAMUK. Dr. Ashley Tanner is an Assistant Professor of Research at CKWRI. ~

Texas tortoise with a radio-transmitter attached to its carapace to allow undergraduate researchers to monitor its movement.

Did You Know?

Grasshopper mice are predatory with a predominantly carnivorous diet, and they howl like wolves to proclaim their territory. (Predatory Grasshopper Mice. 2015. Rowe, A. and M. Rowe. Current Biology 25)

By The Numbers

150 Snow monkeys were brought from Japan and released in Dilley, Texas, in 1972. (The Really Wild Monkeys of South Texas. Clayton. 2022. TPR)

species that they used. We also related their space use to vegetation height, distance from park trails, and distance from restoration treatments.

Overall, restoration treatments were the most important determinants of space use. Tortoises chose areas closest to these restoration treatments compared to other areas. Moreover, tortoises were more often associated with native plant species as opposed to non-native invasive plant species like Guinea grass, which was very common along the Arroyo Colorado.

This research suggests that city parks can function as important sources of habitat for this long-lived species, even when located within areas of high urban density. Additionally, we saw that restoration efforts and promotion of native plant species were effective strategies for maintaining habitat for tortoises. As cities continue to grow in the Rio Grande Valley, ensuring that parks maintain spatial connections with each other (through possible greenways) will be important for maintaining habitat for this threatened reptile. ~

Aerial view of Hugh Ramsey Nature Park in Harlingen, Texas. Green stars indicate active restoration sites.

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Wildlife Research is printed on recycled paper.