

# CAESAR KLEBERG Tracks

— A Publication of the Caesar Kleberg Wildlife Research Institute —



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# CAESAR KLEBERG *Tracks*

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*The Caesar Kleberg Wildlife Research Institute at Texas A&M University-Kingsville is a Master's and Ph.D. Program and is the leading wildlife research organization in Texas and one of the finest in the nation. Established in 1981 by a grant from the Caesar Kleberg Foundation for Wildlife Conservation, its mission is to provide science-based information for enhancing the conservation and management of Texas wildlife.*



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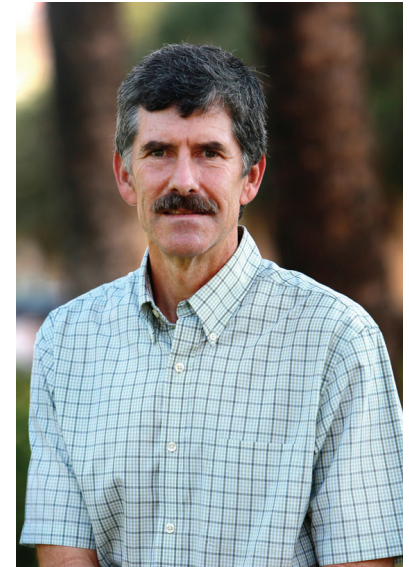


# From the Director

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The overarching mission of the Caesar Kleberg Wildlife Research Institute is to promote wildlife conservation. We do this primarily by conducting research and producing knowledge to benefit wildlife managers and land stewards. We also promote wildlife conservation by training the next generation of wildlife biologists through our graduate education programs.

However, producing knowledge and trained professionals is not enough. The information must be put in the hands of those who can use it for conservation. CKWRI has always worked hard to share its information with those who need it. We have magazines like this one, Caesar Kleberg Tracks, a quarterly newsletter, various eNewsletters, and a full-service website. Our scientists and graduate students give public presentations and delight in answering questions and discussing management challenges when people contact us. These approaches have served CKWRI well but with additional approaches, our information and actions can have a larger impact.



To increase our impact, CKWRI has expanded its outreach portfolio during the past year. We have active Facebook, Instagram, and Twitter accounts. We also have a partnership with West of Texas, a show on the Sportsmans Channel that uses the story-of-the-hunt to promote wildlife conservation. The show is produced by Cold Collaborative and delves into the science behind wildlife management. This season West of Texas has episodes describing Institute research on quail, nilgai, turkey, and feral pigs. And next year there will be more. Don't forget to check it out.

CKWRI consummated another impactful partnership last month with the preview of the video, American Ocelot, a documentary produced by Ben Masters and Katy Baldock on the challenges to ocelot recovery in Texas. By joining forces with story tellers like Fin and Fur Films and Cold Collaborative, CKWRI can not only provide knowledge and training in the service of wildlife conservation, but our work can help inspire conservation. American Ocelot uses CKWRI scientist Mike Tewes' 37-year career to explain what works and what doesn't work for ocelot conservation. The intimate, heart-warming images of ocelots in this video will inspire biologists, land owners, agencies, and the public to push hard for all actions necessary to conserve ocelots on the working lands of South Texas. Look for American Ocelot on the Wild Texas Film Tour and other venues with wildlife documentaries.

Please enjoy this most recent issue of Tracks magazine and, hopefully, it will inspire you to work on behalf of wildlife conservation. And, please, let us know how we can help!

All the best,

A handwritten signature in black ink that reads "David Hewitt". The signature is fluid and cursive, with a prominent loop at the end.

Dr. David Hewitt  
*Leroy G. Denman, Jr. Endowed Director of Wildlife Research*



## ONLINE

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Learn more about the film, American Ocelot, by visiting [www.AmericanOcelot.com](http://www.AmericanOcelot.com)

# Restoration: Just What Do You Mean By That?

by David B. Wester, Forrest S. Smith, Tyler C. Wayland,  
Dustin A. Golembiewski, Brianna M. Slothower, and Emily R. Bishop

**R**estoration - what does it mean? Dictionaries help us with familiar definitions, and professional societies of restoration ecologists include impressive declarations in their mission statements. E.O. Wilson, a luminary in the ecological world, appealed to it in his 1992 prophecy that “The next century will, I believe, be the era of restoration ecology.” Ecologists write papers with titles like “Restoration through reassembly: plant traits and invasion resistance.” With the word reassembly, some think that this endeavor is intended to “fix something,” to “put it back together.” For us, though, the whole idea of restoration is nuanced with distinctions that blur what seems so clear to others.

*Canada wildrye emerged in late autumn from research plots that were seeded in September 2019 at Riverby Ranch, Fannin County, Texas. This photo shows a seedling with its seminal roots still attached to the seed. Photo credit: Brianna Slothower*



Notre Dame de Paris, a cathedral that is the pride of France and a place of worship since the 11th century, burned in April 2019. In just three hours, the roof was all but destroyed and its spire—recognized worldwide—shattered to the floor. Immediately came loud calls to restore Notre Dame...but to what? This glorious structure had been ravaged by fires more than once since its completion, and what burned was not what was completed in 1260, but rather was that medieval structure plus all that had been added to it, modified and extended, over the next 600 years. It's far from clear what "restoring Notre Dame" means. In contrast, restoring a Renaissance painting seems straightforward: when experts look at Michelangelo Merisi da Caravaggio's "The Adoration of the Shepherds," they can see what the artist accomplished with his delicate brush—those clasped hands, those intent faces leaning forward—and all of this can be restored to the original by careful removal of aged varnish.



*Sideoats grama in full flower at Riverby Ranch, Fannin County, Texas. Photo credit: Emily Bishop*

Fannin County, Texas shares the Red River with our Oklahoma neighbors, and on a farm-ranch operation that extends over hundreds of acres, post-oak savannah is interspersed with wheat and soybean fields that have been cultivated for decades. Today, CKWRI and Texas Native Seeds is engaged in a program of tallgrass prairie restoration here. There's that word again: it seems to mean many things for Notre Dame's spire and timbered roof, perhaps just one thing for Caravaggio's masterpieces. What does restoration mean for Riverby Ranch?



*This photo shows a row of Coastal Plains little bluestem plants in a sampling quadrat at Riverby Ranch, Fannin County, Texas, in August, 2020. Also present in the photo are mare's tail and chickweed. Photo credit: Emily Bishop*

A rich source of information resides in Ecological Site Descriptions that have been developed by the Natural Resources Conservation Service. Detailed descriptions of climate and soil can be found for most locations in the U.S. This database includes accounts of historic vegetation, what are called "reference communities." These are our best attempts to describe plant communities at the time of European immigration and settlement—and they represent a valiant effort by the NRCS to provide us with exactly what the name implies: a reference point, a starting point, for this place here, for this soil, and under this climate—this is what originally grew!

For many of us who read papers about "assembly rules," this might mean that we simply need to reassemble the historic

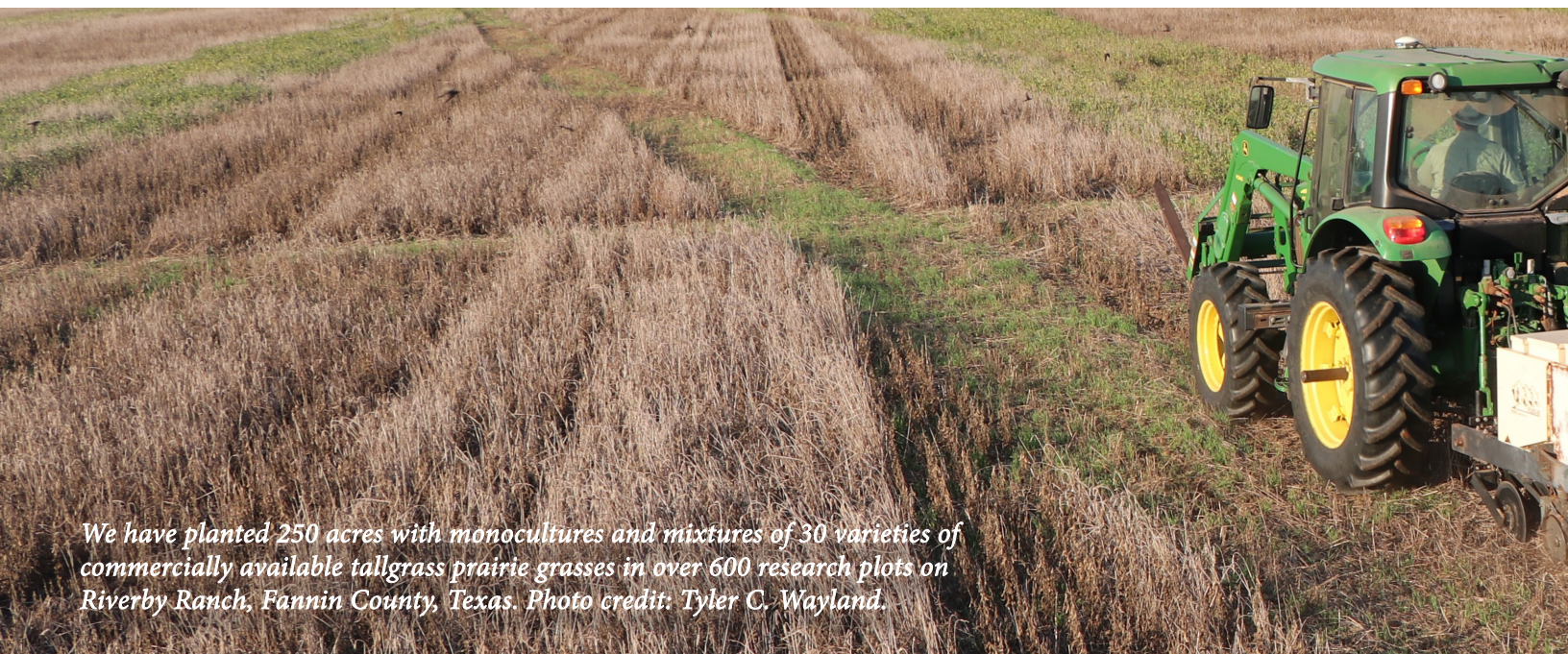


*The Riverby Ranch is on the Red River in Fannin County, Texas. Native vegetation is Post Oak savannah. Wheat and soybean fields are being restored to native tallgrass prairie grasses and forbs. Photo credit: Emily Bishop*

plant community: just put it back together. Regrettably, for our study area, as well as many others in Texas, details are lacking. The reference plant community is painted, ecologically-speaking, with broad strokes. Whereas we know that the “big four”—big bluestem, little bluestem, Indiangrass and switchgrass—dominated the landscape, many other species created a diverse prairie: other grasses like wildrye and gamagrass, and a rich assortment of forbs, both ephemeral and long-lived, clothed these prairies before cultivation. The nearest pristine tallgrass prairie is 20 miles distant, tucked away in pockets as small as 100 acres, where soil lays undisturbed and plant

composition fluctuates in dynamic equilibrium with the prevailing climate. But do these remnants resemble what graced our native landscapes prior to settlement?

How do we go about reassembling this tallgrass prairie? This is not like peering beneath the accumulated varnish on a 400-year old canvas. Nor is it like replacing timbers in a cathedral. The original framework of this plant community, like Notre Dame over the centuries, has changed over time: it has been burned by wildfires, it has suffered prolonged droughts. And what about the list of component species? Big bluestem is...well, it's the name of a plant. But big bluestem is much more than that because of something ecologists call “ecotypic variation.” Research by Calvin McMillan on tallgrass prairie grass ecotypes 50 years ago has been extended by many ecologists since then. Big bluestem, found throughout the Great Plains, is dominant in mesic prairies but also grows in drier grasslands; it can be found in pinyon-juniper woodlands in eastern New Mexico and in coastal south Texas prairies. Ecologists have long recognized that plants exhibit “local adaptation” to prevailing growing conditions: big bluestem in Fannin County is not the same big bluestem in south Texas. Little bluestem, too—all the prairie grasses—display ecotypic



*We have planted 250 acres with monocultures and mixtures of 30 varieties of commercially available tallgrass prairie grasses in over 600 research plots on Riverby Ranch, Fannin County, Texas. Photo credit: Tyler C. Wayland.*

variation in structure, physiology, establishment and growth traits. This yet-to-be-documented variation is just one of the keys to restoration success.

What is desperately needed is a catalogue of plants that will grow well here and in similar areas. Our initial approach to tallgrass prairie restoration, then, is to take a very close look at 30 commercial seed varieties of common tallgrass prairie grasses. We have seeded hundreds of research plots with monocultures of grasses that historically characterized these sites. We are monitoring plant density in over a thousand permanently located quadrats with the hopes that what we learn will become the first few pages of this catalogue.

But there's so much more to a prairie. These plant communities are rich in many senses: rich in species means many different species. And so we are evaluating performance of these varieties in mixtures to assess how they interact with each other. Rich means rich in soil microbial communities that are intimately related to the aboveground plant community. Here, our knowledge is scant. We know from our previous research with tanglehead invasion in the Coastal Sand Sheet that soil microbial communities are different in plant communities dominated by native plants and in communities invaded by

tanglehead. It seems obvious that long-time cultivation in Fannin County has had lasting impacts on soil microbes, and so the question begs to be asked: "How do soil microbial communities change after a field has been taken out of cultivation and seeded with grasses and forbs? How long do these changes take?"

Our fieldwork documenting plant density at Riverby Ranch involved many days on our hands and knees. Texas is home to over 290 species of ants, and our work afforded us the opportunity to get reacquainted (sometimes painfully so) with more than a few of these delicate but ferocious insects. A kaleidoscope of butterflies flanked us as we walked through head-high mare's-tail, clouds of grasshoppers everywhere. Red-winged blackbirds flitted by in the late afternoon; the lament of the cicadas serenaded us as the stars came out. What species of wildlife, what kinds of insects will we find here as these fields progress through successional stages of plant establishment? Only time will tell.

Whether for a farm field, a retired fracking pond, an energy pipeline, or a pasture invaded by invasive grasses, the overall goal of restoration is the same even if individual settings pose unique challenges. And surely, restoration is more than reassembly, because reassembly implies that we know the pieces of the puzzle, that we understand where they go. To claim that we know this for many of our Texas landscapes would be hubris. But to claim that this is our goal is to reaffirm our own mission statement at CKWRI. We ardently believe that our native landscapes can be as durable and majestic as the cathedral of Notre Dame, and as rich and delicate as the brush strokes on Caravaggio's masterpieces. And just as worthy of restoration. 🌱



*CKWRI's and TNS's research at Riverby Ranch is being generously supported by RES and the North Texas Municipal Water District. Riverby Ranch is a 17,000-acre ecological mitigation project associated with the North Texas Municipal Lake Project.*



*The exposed nature of a reddish egret nest within a waterbird colony.  
Photo credit: Bart Ballard*





# The Unique Nature of Colonial-nesting Waterbirds

*by Bart M. Ballard*

**B**ack when I was an undergraduate student assisting with research on breeding waterfowl and other birds throughout the Midwest and Northern Great Plains, I conducted a fair amount of nest searching for ducks and grassland-nesting songbirds. If you have ever been challenged with searching for a blue-winged teal nest among a sea of continuous grasses, or a dickcissel nest within an alfalfa field, you will have considerable respect for the effort many ground-nesting birds put into concealing their nests. If nothing else, I learned to be patient as we typically had to wait until a female returned to the nest area and carefully watch where she entered and left. On some occasions, it took a couple of hours to find a single nest.

Waterbirds along the Texas Coast (i.e., herons, egrets, terns, gulls, etc.) often nest together in protected areas called “colonies”. Colonial-nesting birds have a much different approach to nesting compared to the solitary, hidden nesting strategy of grassland birds. Colonial waterbirds often occupy islands protected from land predators by a large water barrier surrounding the island. The greater the barrier from potential predators, the more likely the island will be occupied. Thus, they often nest together, sometimes in large multi-species colonies of hundreds to sometimes thousands of nests. Some species that occupy waterbird colonies along the Texas Coast include Great Blue Heron, Reddish Egret, Roseate Spoonbill, White Ibis, Royal Tern, Black Skimmer, and Laughing Gull. About 26 species of waterbirds regularly nest in colonies along the Texas Coast. Species that nest colonially often forage on prey that are transient (e.g., waterbird foraging on fish, swallows foraging on insects) and can benefit from the sharing of information from other individuals on where to forage. Also, although the prey is spatially concentrated, it is often abundant. At the colony level, the benefits of sharing information about productive foraging sites outweighs the costs of potentially increasing competition or the costs of searching for productive foraging sites. Thus, one theory about the evolution of coloniality in birds is that the colony serves as an information center where birds can increase their fitness by following successful foragers to profitable feeding sites.



My first experience visiting a waterbird colony was when I volunteered to help the Texas Colonial Waterbird Society conduct its annual colonial waterbird survey back when I was a graduate student. The annual Texas Colonial Waterbird Survey is conducted along the entire Texas coast each year during the peak nesting period for most colonial nesting species. During this survey, we visited several islands, counting them at a distance from a boat. I was amazed at the blatant lack of effort colonial waterbirds put into concealing their nests. I vividly recall standing on the deck of a boat and counting over 50 nests that were identifiable from one location. I thought back to my days of arduously searching for nests in grasslands and alfalfa fields and thought that these waterbird researchers sure have it easy. Another thought that came to my mind was how sensitive the nesting birds must be to nearby disturbances. Because colonies often occur on protected sites (islands surrounded by water), there is no pressure for the birds to hide their nests any further. Thus, as mentioned previously, nests are often highly exposed in these situations. However, because of the exposed nesting behavior, a single predator reaching a colonial island can cause complete colony abandonment. We see this regularly on colonial islands along the coast, where the entire colony is abandoned because a coyote or raccoon has reached the island. However, human disturbance (people getting on islands) is a more frequent cause of colony abandonment than predators in some areas. The time most birds are nesting on islands is from May through June and the breeding period is the only time that disturbance on these islands is a problem.

*A multi-species waterbird colony in the Laguna Madre, just south of Baffin Bay. Note structures in background that are placed on dredge-spoil islands to attract wading birds to nest when trees are not present. Photo by Bart Ballard*

One of the factors thought to be limiting for some species of waterbirds along the Texas Coast is the lack of appropriate nesting sites. This is partly due to many of their historical colonial nesting sites being destroyed by erosion, human development, and other land-use changes. Interestingly, the placement of dredge spoil from creation of the Intracoastal Waterway, as well as continuous maintenance dredging from sedimentation of the channel, has created many dredge-spoil islands along the Texas Coast. After a few years, some of these islands develop vegetation and have become occupied by waterbirds and now support breeding colonies. Thus, we can identify at least one beneficial use to dredging operations that are frequently blamed for their negative impacts on seagrasses and the organisms that live in the sediments of estuaries. In fact, my students and I used a variety of information from our long-term Reddish Egret research and recently published a paper that identifies optimal areas to place dredge material

in the Laguna Madre to best address the needs of colonial nesting species while reducing impacts to seagrasses.

Since that first experience with colonial-nesting waterbirds years ago, I have had the privilege to work for the Caesar Kleberg Wildlife Research Institute on several research projects investigating aspects of their ecology. Waterbirds are important members of the coastal bird community as they serve as affective sentinels for the health of estuaries along the coast. Next time you are fishing or boating along the Texas coast and come across a colony of waterbirds during May or June, enjoy the opportunity to witness the breeding behavior of these charismatic birds, but do it from a distance (> 50 yards) to reduce disturbance to the breeding colony and to protect our incredible natural resources. 🏹



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# TEXAS HORNED LIZARD DETECTIVES

by Javier O. Huerta, Stephen L. Webb, Scott E. Henke, David B. Wester,  
Fidel Hernández, and Randy L. Powell



*Photo by iStock*

**A**S A WILDLIFE RESEARCHER WITH THE CAESAR KLEBERG WILDLIFE RESEARCH INSTITUTE, YOU OFTEN MEET WITH RANCHERS AND LANDOWNERS TO DISCUSS VARIOUS WILDLIFE-RELATED ISSUES. ON ONE SUCH TRIP WHILE WALKING ON A RANCH PROPERTY WITH ITS OWNER, I NOTICED A SCAT FROM A TEXAS HORNED LIZARD. THE RANCHER, WHO WAS AN OLDER GENTLEMAN AND ALSO RECOGNIZED THE SCAT, GOT EXCITED BY THE DISCOVERY BUT ALSO APPEARED SAD AT THE SAME TIME. HE SHOOK HIS HEAD AND SAID THAT HE USED TO SEE TEXAS HORNED LIZARDS ALL THE TIME ON HIS RANCH, BUT NOWADAYS, IT HAS BECOME RARE TO COME ACROSS ONE. I AGREED AND I TOLD HIM I HEAR THE SAME STORY ALL ACROSS TEXAS.

Texas horned lizards were once widespread and abundant throughout their distribution. In fact, they were more prevalent than their name implies. Not only could Texas horned lizards be found throughout much of Texas, but also throughout much of north-eastern Mexico and the south-central United States, including Oklahoma, southern and eastern Kansas and New Mexico, the southwestern and northwestern corners of Arkansas, northwestern Louisiana, and southeastern Colorado and Arizona. Unfortunately today, their range has declined and Texas horned lizards are either absent or rare in Louisiana, Arkansas, Missouri, Colorado, Arizona, and eastern Texas. Their population has dwindled to the point that Texas horned lizards now are listed as a State threatened species in Texas, protected in Oklahoma, Colorado, and Arizona, and a Species of Concern in Missouri.

As we continued our walk, our conversation turned to Texas horned lizards. The rancher was curious about the scat we just found. Did it come from a juvenile or adult horned lizard? A male or female horned lizard? He was curious if finding the scat could mean that horned lizards may be returning to his ranch. He was quite hopeful they would because he had fond memories of Texas horned lizards as a boy growing up in Texas, and watching the demise of the species, for him, was equivalent to saying goodbye to his youth – Forever!

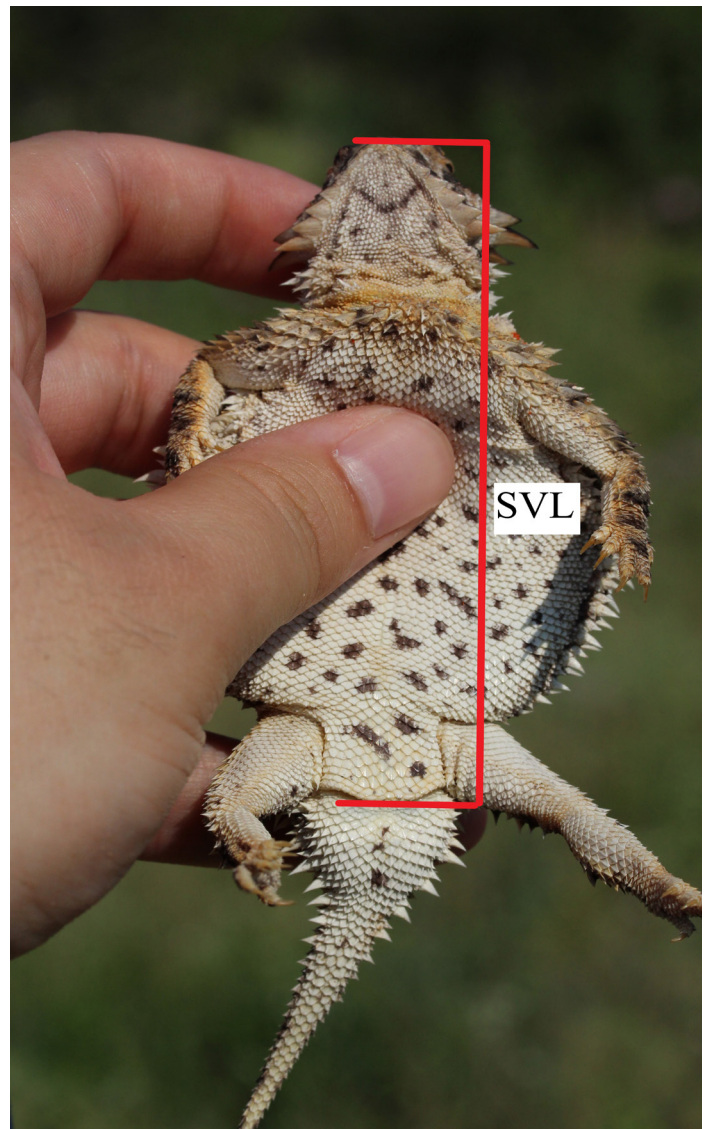
Unfortunately I couldn't answer his questions from a solitary scat. All I could say for sure was that finding a Texas horned lizard scat meant that the species was present on his ranch. However, our conversation did get me thinking. What if I could tell him about the horned lizards on his property from a scat? It would be like being a detective who was given a piece of evidence and then being able to reconstruct a complete scenario. As I left his ranch I was determined to become a horned lizard detective.

The drive home offered time to think about the challenges. We would need to determine if there

was a relationship between the sizes of Texas horned lizards and their respective scats. And if there was a relationship, then we would need to determine the relationship between lizard size and age class based on known year classes of Texas horned lizards. I knew the task at hand would not be solved as quickly as a Scooby Doo mystery, but my fellow researchers and I would be up for the challenge.

Our study was conducted in two phases. Phase I involved the collection of scats to determine the relationship between Texas horned lizard size and scat length. Size of horned lizards is measured from the tip of their snout to their cloaca opening, which is called snout-to-vent length or SVL for shorthand.

*Fig. 1 Two measurements taken within phase I of our study, scat length and SVL (snout-to-vent length).*





Phase II studied the growth rates of known-age Texas horned lizards to relate lizard SVL to age class, namely were they a hatchling within their first year, an immature juvenile, or a breeding adult. Our study site included numerous ranches throughout southern Texas.

During Phase 1, we found that Texas horned lizards typically defecate once per day, and it usually occurs within the first hour of activity after sunrise. We collected 72 scats from known Texas horned lizards and determined that a linear relationship did exist between the size of Texas horned lizards and their respective scats. Therefore, it was possible to predict the size of a Texas horned lizard if you only find a scat.

We were pleased with our detective work thus far; however, Phase 2 required more time to solve. For Phase 2, 20 adult female Texas horned lizards were captured and radio-monitored until they nested, of

which 13 females laid eggs. We monitored the nests and were able to capture and mark 178 hatchlings as they emerged from the nest. Of these marked hatchlings, 56, 23, 19, and 6 were recaptured during their hatching year, 2nd, 3rd, and 4th year, respectively. During each recapture event, the lizard was measured for its SVL and its growth from the previous capture event was determined. We determined that growth rates of known-aged Texas horned lizards were not equal among year classes. Growth rates were greatest during their first 2 years, whereas, growth rates were reduced in year 3 lizards, which we surmised may be related to reallocating some nutritional resources to reproduction rather than all resources to growth. Based on our growth rates, on average, Texas horned lizards emerged from hatching at a SVL of 16.6 mm and obtained a SVL up to 31.0 mm, 54.5 mm, 77.5 mm, and 100.5 mm by the end of their 1st, 2nd, 3rd, and 4th year, respectively. From our data we can now predict that a Texas



horned lizard is a hatchling if it is less than 31 mm SVL, a non-reproductive juvenile if it is between 31 – 55 mm SVL, and a breeding adult if it is greater than 55 mm SVL.

To date, our research highlights that scats from Texas horned lizards can provide additional information about the population than being just an indicator of species presence in an area. The length of scat from Texas horned lizards can be used to predict the snout-to-vent length of the lizard, which can then provide information about potential population structure, age ratios, and reproduction within a population. For example, the length of scat can predict the length of the Texas horned lizard, which then can be categorized by age class (i.e., hatchling, juvenile, or adult).

Our next study will focus on determining if hormone levels within scats can accurately predict lizard sex. If so, with an adequate sample size of

known length scats, then an age class pyramid could be constructed. Broad-based pyramids typically are characteristic of increasing populations; whereas narrow-based pyramids are indicative of low reproductive success, hence a declining population. Also, a missing cohort within a pyramid could provide clues as to how environmental factors influenced the population. Therefore, scats could be of great use to gain general knowledge about the population dynamics of Texas horned lizards.

I can't wait for another ranch visit where we can find a Texas horned lizard scat. This time, this Texas horned lizard detective is prepared! 🐾

*This study was funded and supported by the Houston Livestock Show and Rodeo, the Arthur Seeligson Jr. Conservation Fund, Mr. René Barrientos, and the Hixon family.*



*Pictured (L-R): Kley, DK and Mike Reynolds*



# Donor Spotlight

[ *Mike Reynolds* ]

**M**ike Reynolds is a conservationist and an avid outdoorsman. His family owned and operated Reynolds-Penland, an iconic men's clothing store in Dallas, Austin, Tyler, Longview and San Antonio. After graduating from the University of Texas, Reynolds served as president of the company until the family made the decision to sell after 62 years. For a time, Reynolds was also in the restaurant business in Austin, but sold his last restaurant in March just before the Coronavirus took hold.

Though a city kid born and raised in Austin, Reynolds has always had a passion for the outdoors and for hunting. In all his growing-up phases of life - friends, girls, sports, college - his interest in the outdoors never varied. "I always say if you can't understand Mother Nature you can't understand the world," says Reynolds.

His parents, Dick and Alice Kleberg Reynolds, were avid outdoors people even though their backgrounds and their raising in their own early lives was quite different. His dad, a city kid, used to take his BB gun and ride the bus line as far out north of Dallas as he could possibly get and hunt whatever he could find. Then he'd take the bus back home. "By the time my dad was 15, he'd shot and eaten every songbird there is in the state of Texas," Reynolds quips. "Nothing in his background could be traced to that love of the land other than just being born with it." His mother, daughter of Congressman Richard M. Kleberg, had ready access to the famed King Ranch for her enjoyment. "Back then everybody

used to tease each other about getting out of the hunting car too slow," says Reynolds. "They'd pull up to the dogs and everyone would keep talking because they knew there were going to be birds (quail) and if some got left there would just be more of them."

Like his father, young Reynolds loved to hunt everything. Back in the day, he and his friends would hunt deer in the morning, break to hunt quail mid-morning till lunch, then back out to hunt more quail and then deer the last two hours of daylight. For a long time now, quail hunting has been his favorite. "Hunting quail is a lot more instinct shooting," says Reynolds. "I like shooting a shotgun more than anything else." What he really enjoys the most, though, is the camaraderie. "It's more of a social hunt. Everybody gets to play, and quail are really good to eat. Nature's nacho is what one of my friends calls them."

Reynolds says that one of his "greatest hunts of all times" was one of his son-father hunts with their good friends Ford Smith Sr. and Jr. and John and Walter Cardwell. A rare South Texas cold front blew in. It began to rain and then quickly turned to ice. "The temperature dropped so fast that the rain frozen mesquite trees sounded like windchimes," he recalls. The quail were all over the roads, "a covey every hundred yards or so" eating as fast as they could trying to survive. "Every time we'd raise our guns to shoot, the sheets of ice would break off our slickers." Within two hours, they'd all shot their limit. "I've never experienced anything like it ever again."



*Pictured: DK and Mike Reynolds*

Reynolds' wife, DK, is just as avid an outdoors person as he, and just as good a shot, as is their son, Kley. Reynolds says these days the hunt itself is a whole lot more meaningful than what he ends up with. He figures it comes with getting older.

"My dad always told me that I would never appreciate what I had because I got to do it all the time," says Reynolds. "I never understood that as a kid because I very much did not think I got to do it all the time." He understands that a bit better now. It's gotten so expensive, and it can be hard for parents to find places to take their children hunting. In a lot of other ways, too, the culture of hunting has changed since Reynolds was a kid.

Because there are no quail to speak of on their Lockhart ranch, Reynolds hosts "put and take" hunts for families whose kids have nowhere else to hunt. They also lease out their deer hunting because they need help controlling the doe population. It's still family oriented with a focus on teaching kids about the outdoors and about the role that hunting plays in the management of wildlife. He wants the kids that come to the ranch to hunt with their parents to understand that white-tailed deer aren't an endangered spe-

cies. He likes to use concepts introduced to him by Charlie McTee, to teach kids that in no more than seven years a property, no matter the size, will be overpopulated with whitetails if no management is done. They also help kids understand how the venison can be used to help others in need.

He says that far too many don't understand Mother Nature and how violent or how beautiful she can be because they have not had the opportunity to observe a calf being born or a fawn being pulled down by a coyote.

"Too many people think they can control everything, but out here, in this world, Mother Nature is in control. Too many also don't understand that for those who make a living from the land that to conserve their assets they have to care about and manage the natural resources, the habitat and the environment as a whole." Reynolds calls it big picture thinking. It's no longer just about the best grasses for grazing livestock but also what the wildlife need. Institutions like the Caesar Kleberg Wildlife Research Institute help garner and spread that knowledge. They deal with facts not opinions, he says. "Research is an intricate part of the science of ranching," Reynolds insists. "CKWRI's role, it's value, in South Texas and beyond is huge."

**“YOU CAN’T LIVE FOREVER,  
BUT YOU CAN TRY TO MAKE  
SOMETHING THAT WILL.”**

His dad put their Lockhart ranch together starting in 1968, and it had "great" quail hunting up through about the mid-1970s. Reynolds attributes the demise of quail in this part of the state to several things one being fire ants.

Over the years, the ranch has served as a research classroom of sorts. In the 1990s Texas Parks and Wildlife was interested in learning more about the impacts of urban sprawl on quail populations. They tried capturing wild quail and translocating them to the ranch, a difficult task in and of itself. In fact, they were not very successful at that at all. The main thing that Reynolds took from that study was that quail disperse long distances. “We had birds seven miles away within a week and a half, and two months into it they tracked birds over 30 miles away.”

Reynolds has taken his mother’s advice on giving back. He’s trying to practice that saying, “you can’t live forever, but you can try to make something that will.” As a way to honor her legacy, his family was one of the first to establish an endowment at the Caesar Kleberg Wildlife Research Institute.

“She loved her heritage,” Reynolds says of his mother. “Our family was full of some incredible matriarchs.” He describes her as “one of those forces of nature women” in that she excelled at everything. She was the first female to graduate with a geology degree from the University of Texas graduating Phi Beta Kappa. She ran the San Antonio Museum, the Witte and was president of Laguna Gloria for a number of years.

Reynold’s latest philanthropic cause is the Great Americans Shoot, which he, his wife and son, started. It’s hosted by the Special Forces Charitable Trust and benefits nonprofits serving the Special Operations military community with a special focus on the family unit. Six years in, the nonprofit has netted over \$10 million.

“I feel a real responsibility for all that I’ve been given,” says Reynolds. “The Great Americans Shoot is really the first time in my life that I feel

like I’m doing something that when I’m gone somebody will have been better off because I was here.”

In October, Reynolds was made an honorary Green Beret. Only 13 in the history of the Special Operations forces have received this prestigious award.



*Pictured: Mike Reynolds*

These days Reynolds spends as much of his free time as possible at his Lockhart Ranch, now his “escape” from the quarantine. He knows of a lot of others who normally would be traveling great distances for their vacation who instead have found a peaceful respite by just being in the country. It may be the one positive that comes from the Coronavirus pandemic, he says.

Being out in the country means different things to different people, but he contends that the human body needs nature. “The psyche needs it. I haven’t ever introduced anyone to the outdoors that they didn’t love it,” he concludes. 🌿

# Fawn Survival and Recruitment in South Texas

by Michael J. Cherry

In large mammals, population dynamics are often characterized by stable adult survival, and more variable litter size and neonate survival. This is certainly the case for white-tailed deer. Adult survival is typically high and stable, in the absence of large predators, and is typically governed by hunter harvest. Conversely, fawn recruitment can be influenced by many factors including resource availability, weather, disease, and predation. In some parts of the white-tailed deer's range, fawn survival can be exceptionally variable and has been linked to variation in acorn abundance, flooding, and in South Texas, precipitation patterns.

The importance of fawn survival is a common question for deer managers and may be related to population abundance relative to carrying capacity. Carrying capacity is the maximum population size that can be sustained in an area, given the food, water, cover, and other required resources. If a population is operating at or near carrying capacity, changes in environmental conditions will have strong effects on animal populations. However, if managers maintain a population well below carrying capacity, the population will not be as affected by environmental changes because the per capita resource availability is not limited. Therefore, maintaining populations



well below carrying capacity can buffer the population, and highly dynamic population vital rates, such as fawn recruitment, from environmental change.

In South Texas, the carrying capacity for deer can vary from year to year depending on range conditions. This creates a dynamic environment where the same range can sustain many time more deer in a wet year than a dry year. Managers face the challenge of maintaining deer densities that can be too high in bad years resulting in low fawn recruitment and adult deer in poor nutritional condition, or densities that are too low in good years to maximize the potential for the land to support deer. To reduce the influence of dynamic fluctuations in environmental conditions, managers often provide supplemental feed to maintain more stable per capita resource availability. Feed is not a replacement for rain, but it reduces the importance of rainfall in defining resource availability for deer and ultimately the area's carrying capacity. This can have a stabilizing effect on recruitment in highly dynamic environments.

Fawn recruitment is a key determinant in harvest potential. In a recent paper we published in the *Journal of Wildlife Management*, we modeled the effect of reduced fawn survival following the restoration of Louisiana black bears, and variable harvest rates on population growth in the alluvial floodplains of Mississippi River (1). We demonstrated reduced fawn survival resulted in reduction of antlerless harvest potential. In addition to influencing harvest potential, there is also emerging evidence that conditions experienced during early life may be important in determining the lifetime growth potential for deer. Therefore, a bad year may not only reduce the number of fawns recruited, but the quality of surviving individuals in terms of body and



antler size for their entire life. This is similar to reduced adult height in humans exposed as young children (i.e., <2 years old) to the Dutch Famine during World War II (2). In spite of returning to a highly nutritious diet following the famine, people were not able to overcome the effects of poor nutrition during early life and were shorter in adulthood than other cohorts. In wildlife, this phenomenon is referred to as a cohort effect, and in deer this effect has been shown to transcend generations, as a fawn that survives an exceptionally bad first winter had smaller adult body size, and smaller adult body size of their offspring. Ultimately, if managers seek to improve the quality and quantity of deer they need to pay close attention to fawn and doe nutrition.

Like many aspects of land management in South Texas, deer management is challenged by the environmental variability. It is unknown how vegetation structure and grazing management interact with depredation to influence the resiliency of white-tailed deer populations to environmental variation.

The CKWRI is partnering with the East Foundation to evaluate environmental drivers of white-tailed deer population dynamics on working rangelands in the highly variable South Texas Plains. The San Antonio Viejo Ranch provides a unique opportunity to examine drivers of deer population performance on a working landscape without confounding effects of supplemental feed and harvest. Our research approach will examine connections between environmental conditions (i.e., grazing management, weather) and deer population performance with a focus on the most variable population parameter, fawn recruitment. Understanding these linkages will provide valuable information regarding multiple aspects of land management. For example, a better understanding of the interactive effects of cattle grazing and weather conditions on concealment cover and fawn predation may inform decisions about predator control and stocking densities under variable environmental conditions. Additionally, understanding the effects of long linear features, such as roads and utilities rights-of-way on fawn predation may influence decisions regarding brush control patterns. This work will contribute to better stewardship of wildlife resources on the highly variable rangelands of the South Texas Plains. 🐾



1) Peters, R.M., Cherry, M.J., Kilgo, J.C., Chamberlain, M.J. and Miller, K.V., 2020. White-Tailed deer population dynamic following Louisiana black bear recovery. *The Journal of Wildlife Management*, 104(48), pp.1-10.

2) Portrait, F.R.M., van Wingerden, T.F. and Deeg, D.J.H., 2017. Early life undernutrition and adult height: the Dutch famine of 1944–45. *Economics & Human Biology*, 27, pp.339-348.

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# ALUMNI

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## Spotlight

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*J. Dale*  
**JAMES**

CKWRI Class of 2000 & 2006,  
Director of Conservation  
Science & Planning,  
Ducks Unlimited, Inc.,  
Ridgeland, MS

### *What is your background with the Institute?*

During my time at CKWRI, I earned both my M.S. and Ph.D. degrees. In 2000, I graduated with my master's degree after researching the *Effects of Habitat and Spatial Characteristics on the Incidence of Conspecific Brood Parasitism and Nest Site Selection in Breeding Black-Bellied Whistling Ducks* under the guidance of Dr. Jonathan Thompson. In 2006, after studying the *Utilization of Shoalgrass Resources and Nutritional Ecology of Wintering Redheads in the Laguna Madre of Texas*, I graduated with my Ph.D. under the advisement of Dr. Bart Ballard.

### *What are you doing now?*

As Director of Science and Planning, I am responsible for the development of information to evaluate, refine, and inform decision making around habitat delivery programs and policy efforts throughout Ducks Unlimited's Southern Region. As such, I engage in the development and stewardship of research partnerships to strengthen the science underlying DU's conservation efforts. This aspect of the job is truly rewarding because I get to interact with various groups such as the Migratory Bird Joint Ventures, as well as other federal and state partners and many great academic institutions and their faculty and graduate students such as TAMUK and CKWRI. In addition, I work with a talented geospatial science staff here in Mississippi to manage and analyze our conservation project data and develop data products and tools such as maps, spatial models and habitat classifications that make DU and our conservation partners efforts more efficient and effective.



### *How does your time at CKWRI continue to effect you today?*

Without question, the Institute has been instrumental to my success. After spending a year working for the US Fish and Wildlife Service in Montana, I knew that waterfowl ecology was my passion, but I wasn't quite sure what the journey would be to make a career of it. While exploring prospective graduate programs, I visited Kingsville and CKWRI, and on that visit was introduced to a newly hired waterfowl researcher by the name of Jonathan Thompson. Just so happened that Dr. Thompson's research associate at the time would later become my doctoral advisor. Dr. Bart Ballard was and continues to be a great mentor, friend and now collaborator in waterfowl and wetland research. While the hands-on research programs and quality education components were definitely instrumental to my professional development, the dedication and commitment of staff to develop students for the real world, and the relationships formed within the Institute and with fellow graduate students are truly the key to not only my success but others as well. This is what makes the Caesar Kleberg Wildlife Research Institute so unique and why I am proud to say I am a product of CKWRI.



*Dr. Dale James with his 2020 award  
for Excellence in Conservation  
from Ducks Unlimited.*

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To learn more about CKWRI, visit us at  
[www.ckwri.tamuk.edu](http://www.ckwri.tamuk.edu) or call 361-593-3922.



*Photo by Brian Loflin*