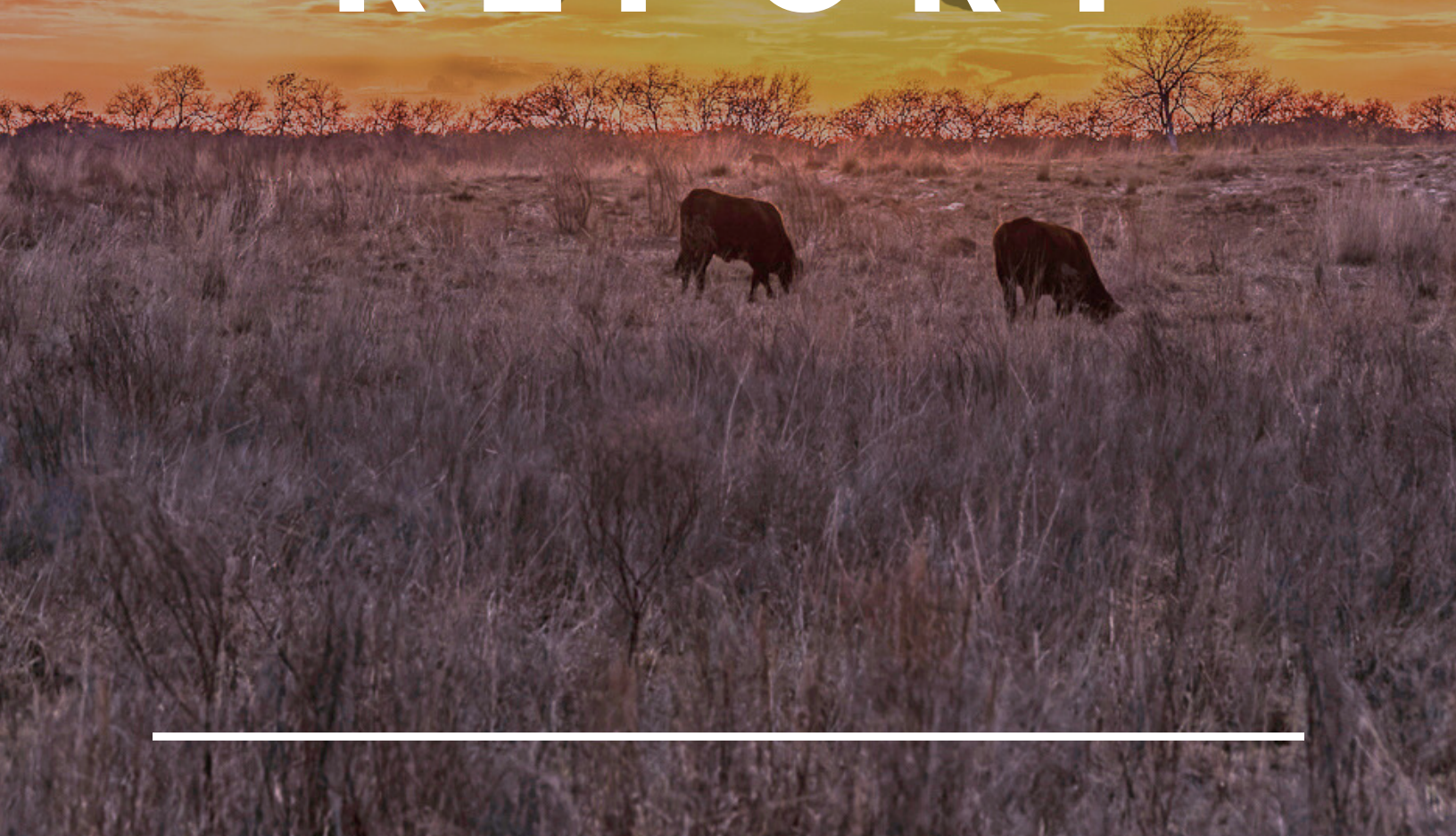


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ROB AND BESSIE WELDER WILDLIFE FOUNDATION

**2023**  
**ANNUAL**  
**REPORT**





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# MISSION

To cultivate a sustainable future for wildlife and their habitats and an appreciation of natural resources through research and education programs in environmental stewardship and wildlife conservation and management.

# VISION

A world with effective conservation leaders, stewards of the land, and protectors of our natural resources. This vision honors the legacy of Robert H. Welder through excellence in land stewardship, education, and the discovery of knowledge needed to manage, restore, and protect wildlife populations and their habitats while sustaining the ranching heritage. All toward improving the quality of life for wildlife and people alike.

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## FROM THE CEO

*It is my desire and my purpose to further the education of the people of Texas and elsewhere in wildlife conservation...for the benefit of future generations of our people who may not have the opportunity to know and appreciate our wildlife.”*

*-Robert H. Welder*



### Keeping the Legacy Alive

New Year's Day 1954 was both a time of grief and one of celebration. Robert Hughes Welder had passed away the day before; however, this single life event set in motion the establishment of the Rob and Bessie Welder Wildlife Foundation and laid the path to fulfilling Rob's vision and legacy of ensuring future generations would have the opportunity to learn about and experience our natural world. The Foundation was the first of its kind in the United States at the time, which created a unique private land niche for conservation education and research. Today many others have replicated the model of the Welder Wildlife Foundation which is a great testament to the impact that one South Texas rancher has had on the conservation of natural resources across our great land and one that is

welcomed, as our collective efforts prosper to make our world and lives better. Mr. Robb's decision to set aside nearly 7,800 acres of his "prime hunting land" is a legacy that continues to thrive today, 70 years later.

Dr. Clarence Cottom, as the first leader of this Foundation, was instrumental in building the framework of the Foundation and doing so in a manner that fulfilled the vision and perpetuated the legacy of Mr. Welder. Much of what was built in those early years continues today except for maybe new delivery approaches and funding streams for our conservation programs. I often think of the challenges Dr. Cottom faced leading the Foundation over his nearly 20 years (1955-1974) and especially those early years, as he, the board of trustees, and staff began to develop and implement a plan to make the Welder Wildlife Foundation a premier education and research station. Today, I feel as if we are facing some similar issues as we begin to develop our modern-day plan to grow our research and education programs and address aging infrastructure, land management, and programmatic funding issues. All while seeking to remain relevant in a changing world where many people no longer grow up in rural environments or have strong bonds to our natural wonders. But places like the Welder Wildlife Foundation are indeed truly relevant and are even more critical today than ever, as these are the "places" where children, adults, researchers, and wildlife enthusiasts come to explore, learn, and grow into tomorrow's leaders and supporters of wildlife conservation.



In 2023, the Foundation aimed to become more visible within our local communities, our region, our great state of Texas, and beyond. As you will see in our education report, we had an outstanding year in reaching children and others across the region and providing access to the outdoor world through various activities that included many outreach events, first-of-its-kind summer camps, and other onsite programs. Our education and outreach programs are key to our success as a Foundation and ensuring the future of wildlife conservation.

The research program welcomed several visiting researchers and initiated partnerships to conduct future research efforts on the Foundation. We were excited to have fellowship applicants triple from the previous year and these included outstanding young researchers across 12 different academic universities, including



several from Virginia, North Carolina, and Ohio. We are grateful to support ten exceptional Welder Fellows entering 2024. Regarding Welder Fellows, we were happy to host past fellow Dr. Ed Michael and his son Sean for a few days during the summer last year. For me, this was special as I got to learn more about the early years (1960s) of the fellowship program and the interaction with all the researchers living onsite at the time. The Welder fellowship experience, and the connection this wonderful place instills in all of us, has been and will continue to be one of community and family that aims to develop leaders in conservation but also create friendships and future research collaborators.

In 2023, we also initiated the inaugural cohort of Collaborative Interns in partnership with Nemours Wildlife Foundation. Ryland (Texas A&M University) and Michael (Clemson University) were great representatives of their respective universities and this internship program. We look forward to growing the Collaborative Internship program and developing other internships including the Cottam Conservation Corps aimed at recruiting local high school students interested in conservation careers.


On the operational side, we are continuing to address aging infrastructure issues as our facilities are critical to the success of our education and research programs. We are also looking to improve or develop new areas, especially those around our outdoor education programs, to include trail development and maintenance, an outdoor classroom, and a native plant garden; all aimed to transform the Welder Wildlife experience.



The rich history, unique landscape and facilities, outstanding education programs, and support of exceptional graduate researchers continues at the Welder Wildlife Foundation today just as it all started with Mr. Rob's vision in 1954. While our staff is small, they are



very resilient and resourceful and take pride in contributing to making a difference. From our board of trustees to our staff and all our supporters and partners in conservation, we are making a difference every day... one child, one student, one researcher at a time. Rob Welder left his legacy in the form of this Foundation seven decades ago and today we keep it alive but also challenge ourselves and others to ask, **“What will our conservation legacy be?”**

To our many volunteers, friends, and donors, we thank you for your continued support of the Welder Wildlife Foundation. We hope our 2023 Annual Report resonates with all of you and that it provides you with a greater understanding of our work. 

Handwritten signature of J. Rob Garrison in blue ink.

*“I can say that so far as I know there is no other Foundation quite like this one with which I am now associated...The Welder Wildlife Foundation is not the result of a group of Texans, but the request of one man. In my opinion, the Welder Foundation, while of major concern and value to Texas, is no less of national or perhaps international significance.*

*-Dr. Clarence Cottom*



# FOUNDATION HISTORY

The Welder Wildlife Foundation's history began long before the vision and legacy of Robert H. Welder was initiated in 1954. Early inhabitants of the Foundation lands included the native occupants belonging to the Coahuiltecan and Karankawa tribes. These early occupants were known to fish the waters and hunt bison and deer on inland prairies. Mexican and European settlement followed and brought forth a continued use of the land. The following is a sampling of an excerpt from an article titled, "Proud Dynasty" that was reprinted in the Sinton Enterprise in 1971. We invite you to come visit the Welder Wildlife Foundation to learn more about our rich history and how relationships with the land from years past played a role in the establishment of the Foundation. These same relationships continue today as the Foundation uses our lands to educate future generations of land stewards and supporters of conservation.

"The Power-Welder family is one of the most noteworthy and distinguished in the history of the Coastal Bend counties of the state." Their story is, in turn, the story of three men- a Spaniard, Felipe Roque de la Portilla, an Irishman, James Power, and a Bavarian, Franz Welder- three men of vastly different backgrounds but with the same vision; three men who played equally important roles in the development of Texas' coastal plains and who passed on to their children a respect for the land and a desire to keep it whole.



Shortly after the purchase of Louisiana by the United States in 1803, the Spanish government of Mexico, fearful of occupation of Texas by people from the north, decided to establish Spanish settlements. To initiate this venture, the governor of the Province of Texas chose a close friend, Felipe Roque de la Portilla. During the early months of 1807, Portilla began arrangements to establish a colony on the San Marcos River. The settlement was to be called Villa San Marcos de Neve. The settlers made a valiant effort to maintain their new homes but to no avail. In June 1808, the town was washed out by flood. It was rebuilt, but frequent Indian attacks and, finally, the Mexican revolution forced the abandonment of San Marcos in 1812.

Portilla returned to the Matamoros area, where he continued as a civil servant until 1829. He was to stay there until he became a colonist in the Power and Hewetson Colony in 1832. The new colonization law of 1825 invited foreigners to the area. The law provided that local agents, or "empresarios", might obtain an assigned territory within which to locate colonists. The empresarios did not own the land granted for colonization but, as compensation for their efforts received 23,000 acres for every 100 families they brought to the territory. While each family was entitled to receive 177 acres to farm, 4,251 acres to raise stock, or 4,428 to do both.



It was a colonization law that drew the attention of Colonel James Power to this area. Power had sailed to America in 1809 from Ballygarrett, Ireland. After 12 years in New Orleans, he left for Mexico to seek his fortune, finally settling in Saltillo, where he engaged in mining operations. It was here he joined forces...with Felipe Roque de la Portilla.

Encouraged by prospects across the Rio Grande, Power sought out the experienced Portilla to discuss the feasibility of locating an empresario grant in Texas. Portilla's enthusiasm for the undertaking went so far as to include himself and his family among Power's colonists. In 1826, Power and fellow Irishman James Hewetson jointly applied for an empresario contract. Two years later they were issued a contract to colonize 200 families, half Mexican and half Irish, on the coastal lands from the mouth of the Nueces River as far as Lavaca Creek and later expanded to include lands between the Guadalupe and Lavaca Rivers.

By June 1834, most immigrants that James Power recruited from Ireland had reached the Refugio Mission. Colonel Power had done his part, and the settlement could now strike out on its own. He had also married Portilla's daughter Dolores and after her death, her sister, Tomasa, thereby bringing two families and their lands together. On 15 August 1852, Power died, at the age of 63, leaving his heirs a rich legacy.

Franz Welder...with his family, left southern Germany for northern Europe, where he soon found his way aboard a ship bound for America. The family lived in New Amsterdam (current day New York) until 1833 when Welder decided to join a party that was about to go to Texas.

The Beales and Grant Rio Grande Colony of 59 people embarked from New York on November 11, landed at Old Copano on December 6, and tripped overland to the Rio Grande. The Welders would later head to Matamoros, Mexico where Franz opened a store. This was short lived as the locals were less than friendly. So, when his wife died, Welder and his children John, Franz Jr., Elizabeth, and Thomas, returned to Texas, settling at Copano Bay. It was here, in 1850, that John Welder married Dolores Power, daughter of James Power and his first wife, Dolores de la Portilla, thereby uniting the three families and the lands that united them.

A century later, Robert H. Welder, grandson of John Welder, would bequeath part of the original grant to Texas for the establishment of the Welder Wildlife Foundation. ^



# RESEARCH PROGRAM

The Welder Wildlife Foundation has conducted and supported wildlife conservation research since 1956. Our science activities seek to understand relationships between wildlife species and their habitats and aim to provide solutions for land managers by linking the best available science to on-the-ground implementation. The 7,800-acre Welder Wildlife Foundation Refuge is a biologically diverse area that serves as a biological station and “living laboratory” for staff and partner scientists, teachers, and research fellows.

Our research fellowship program supports outstanding student researchers pursuing graduate degrees in conservation and resource management and seeks to develop leaders in conservation science. The Foundation also offers research and management training to senior-level and post-baccalaureate students through our growing Collaborative Internship Program in partnership with Nemours Wildlife Foundation, Texas A&M University, and Clemson University.

The Welder Wildlife Foundation research program objectives are focused on sustaining wildlife populations, the natural habitats they depend on, and the many benefits the natural world bestows on people. ^





# WELDER FELLOW SPOTLIGHT

*Dr. Michael McCloy*



Michael McCloy is a former Welder Fellow who received his Ph.D. from Texas A&M University in May 2023 under the supervision of Dr. Jacquelyn K. Grace. His dissertation research investigated the response of songbird communities to habitat alterations on the Welder Wildlife Refuge, and short-term weather patterns that may have broader-scale implications in the face of climate change. Growing up in the longleaf pine savannas of the North Carolina Sandhills, Michael knew from a young age that he wanted to pursue a career in conservation.

He received a Bachelor of Science degree from Western Carolina University, where he majored in Natural Resources Conservation and Management. During his time there, he became involved in multiple research projects relating to forestry and avian ecology which included a poster presentation at the 2012 Society of American Foresters annual conference. Michael was a founding board member and later President of his collegiate chapter of The Wildlife Society, and subsequently received the Ken Wilson Student Award from the North Carolina state chapter of The Wildlife Society along with the E.J. Whitmire Student Leadership Award from the WCU Department of Geosciences & Natural Resources. While at Western Carolina, he also received his wildland firefighting certification through the US Forest Service and participated in several prescribed burns.

After graduating, Michael spent several years working in various field-based avian research positions. These included a year as a full-time Ecologist for the environmental consulting firm Corblu Ecology Group, based near Atlanta, Georgia. Here his work involved wetland mitigation, habitat mapping, endangered species surveys, and GIS. He also spent an extended period working for Bird Conservancy of the Rockies as an Avian Field Biologist in Fort Collins, Colorado. In this role, he helped manage a team of eight seasonal technicians to conduct avian breeding population monitoring across five states in the Great Plains.

Michael soon channeled his interest in applied conservation and research into graduate school applications and enrolled in Texas A&M's Ecology and Evolutionary Biology Ph.D. program in May 2018. Shortly after joining the Grace Lab, he received the Welder Fellowship to study the avian response to Hurricane Harvey. Michael explored this through a combination of fieldwork and computational modeling. He actively participated in the Monitoring Avian Productivity and Survivorship (MAPS) station on the Welder Wildlife Refuge and implemented an array of avian point count surveys. He also used large datasets to investigate how avian response to short-term changes in temperature and precipitation differed at local and regional scales. The impact of Michael's work was highlighted through the publication of two dissertation chapters in leading ecological journals, five additional peer-reviewed publications, and presentations at several international research conferences. He also received several research and travel awards throughout the course of his Ph.D. program from Texas A&M University and the Schubot Center for Avian Health.

While at Texas A&M he also nurtured a burgeoning interest in science communication and science policy, winning the Ecological Society of America's Graduate Student Policy Award along with the Emerging Public Policy Leadership Award through the American Institute of Biological Sciences. These opportunities allowed him to receive formal media and communications training, connect with a wide range of science policy professionals, and meet with the offices of multiple Senators and congressional representatives on Capitol Hill to discuss the annual funding of national scientific institutions.



Receiving the Welder Fellowship was a huge blessing that allowed me to focus on my research from the very beginning", said Michael. "It also provided me with the opportunity to work with a variety of conservation biologists from around Texas and to gain exposure to a multitude of field techniques". During his time as a Welder Fellow, he also maintained several extracurricular involvements including as a Senator for the Texas A&M Graduate and Professional Student Government and executive board member for the Rio Brazos Audubon Society, a local nonprofit dedicated to bird conservation and education. Michael also served as President of Aggie Toastmasters, the collegiate chapter of leading public speaking organization Toastmasters International.



Michael currently works for management consulting firm McKinsey & Company in Washington, DC. Working across various industry sectors including agriculture, healthcare, and technology, McKinsey & Company partners with some of the leading NGOs and multinational agencies worldwide to design and drive some of the world's largest conservation initiatives. Michael is aiming to continue to actively develop his executive leadership skills and eventually pair them with his research background to lead a conservation-focused NGO. Outside of work, Michael enjoys traveling, birding, hiking, wildlife photography, distance running, and exploring the local coffee shops and restaurants around Washington DC. ^

*Dr. Michael McCloy is an outstanding representative of the Rob and Bessie Welder Wildlife Foundation's Fellowship Program and its mission to seek excellence in research and education. The Foundation is proud of Michael's accomplishments and is honored to have him forever represent the Foundation as a Welder Fellow. We look forward to his continued success as a conservation leader and his contributions to the greater good in addressing ecological issues.*



## RESEARCH FELLOW

# DUSTON R. DUFFIE

*Texas A&M University-Kingsville, Ph.D.*

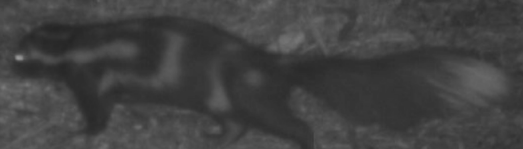
*Scott E. Henke, Ph.D., Major Co-Advisor, Texas A&M University-Kingsville*

*Cord B. Eversole, Ph.D., Major Co-Advisor, Stephen F. Austin State University*

## Effects of Invasive Vegetation on Medium and Large Mammal Communities



Nonnative and invasive plants are considered to be a conservation threat to native ecosystems. The goal of our research is to determine if the presence of invasive plants causes differences in abundance, diversity, occupancy, and habitat associations of medium and large-sized mammals. To meet these objectives in July 2021, we established 24 remote camera stations across Welder Wildlife Refuge. As of August 2022, we have observed 15 mammal species including plains spotted skunk, a species of conservation concern. Vegetation structure along with abiotic factors such as average rainfall appear to play a role in mammal species distribution and abundance. Results from a connected study at Welder surveying small mammal and herpetofaunal communities indicated that habitat specialists were likely to be negatively affected by plant invasion; whereas, generalist species were either unaffected or increased in abundance at sites with a high density of invasive plants. We expect medium and large-sized mammals to similarly respond to the increasing density of plant invasion. We will continue to monitor these communities until July 2024 to provide information on managing invasive vegetation to maintain mammal species diversity. ^



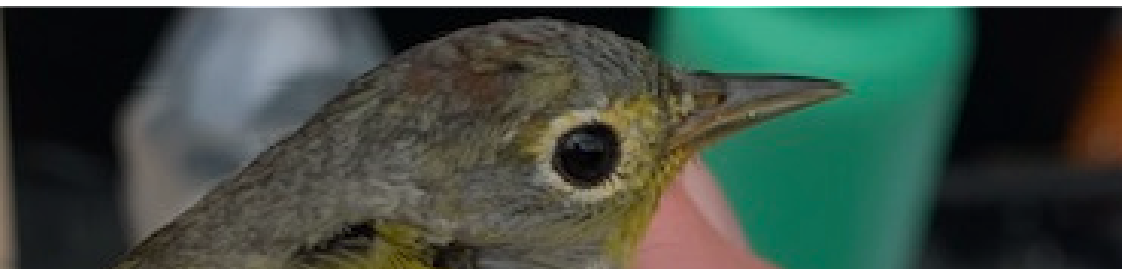


## RESEARCH FELLOW

## DAWN R. HOUSTON

*Texas State University, Ph.D.**Joseph A. Veech, Ph.D., Major Advisor***Analysis of Stopover Sites for Migrating Songbirds in Central Texas**

Migration is the period of greatest mortality throughout a migratory songbird's annual cycle and has profound effects on breeding success and survivorship. High-quality stopover sites, with abundant food resources, allow for rapid refueling of energy stores enabling a songbird to continue the next portion of its journey. Identifying where high-quality stopover sites are located along migratory pathways, and how habitat characteristics affect the physiological condition of migratory birds has implications for the conservation of these species. Riparian areas are recognized as important stopover habitats, particularly in the desert Southwest, whereas upland habitats provide adequate stopover sites in other regions of North America, such as the Midwest. Central Texas lies squarely in the Central Flyway, yet no research to date has investigated stopover habitat in this region. Our study aims to assess the relative stopover habitat quality of riparian and upland habitats in Central Texas by comparing refueling performance, physiological condition, and chronic stress of migratory songbirds using plasma metabolite profiling and other laboratory techniques. Utilizing remote sensing methods, we will also compare fine-scale habitat characteristics between habitat types with regard to migratory songbird abundance. Additionally, we will develop predictive models to assess whether NDVI values, a proxy for vegetation productivity, are strong indicators of high-quality habitat. Finally, we will evaluate arthropod abundance to identify which habitat type may be more useful as a food resource for migrating songbirds. This research will strengthen our knowledge of region-specific stopover habitat use and contribute to the overarching goal of facilitating avian conservation. ^



## RESEARCH FELLOW

# CAMRYN M. KIEL

*Texas A&M University, Ph.D.*

*Toby J. Hibbitts, Ph.D., Co-Advisor*

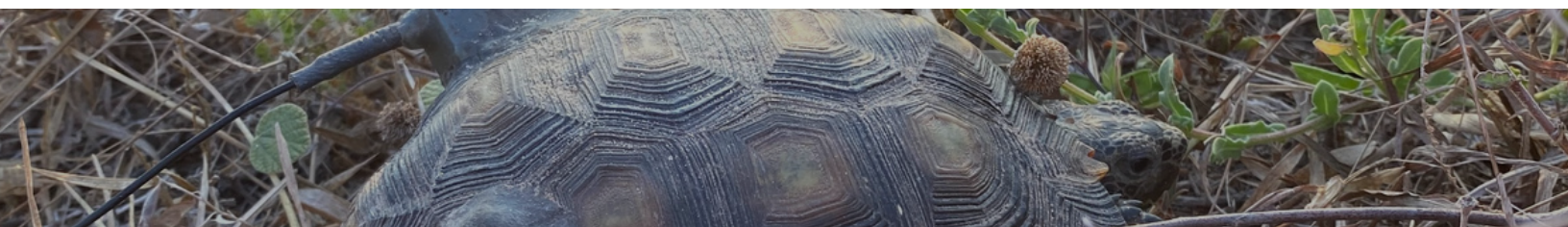
*Andrea Montalvo, Ph.D., Co-Advisor*

### Effects of Prescribed Fire on the Texas Tortoise (*Gopherus berlandieri*)



Prescribed fire has become a popular land management tool to create variety in vegetation, which may benefit wildlife species that utilize multiple cover types. One such wildlife species is the state-threatened Texas tortoise (*Gopherus berlandieri*), a slow-moving, long-lived ectotherm in south Texas. The body of literature examining the effects of fire on herpetofauna is growing; however, we found no such data for Texas tortoises. Texas tortoise movement and activity are linked to temperature, which they manage using varying degrees of cover.

This study assesses the vegetation tortoises use in south Texas coastal rangelands, as well as the effects of prescribed fire on their movement, thermal ecology, and survival through burn events. On a ranch in Willacy County, we affixed tortoises with GPS and temperature loggers to monitor these variables through prescribed burns. This ranch employs a prescribed fire regime with pastures assigned to summer burns, winter burns, or no burns (control). We also monitored tortoises before and after fires to quantify fire-induced mortality. We collected data across seasons to determine if the season of burning also plays a role. This study was designed to inform land managers of prescribed fire practices that support tortoise populations by reducing prescribed fire mortality and by providing variation in available vegetation that suits their activity and thermal needs. ^





## RESEARCH FELLOW

# ALEJANDRA S. MARTINEZ

*Stephen F. Austin State University, M.S.*

*Jessica L. Glasscock, Ph.D., Major Advisor*

COMPLETED

### An Assessment of Avian Community Dynamics and Avifauna Sampling Methodologies



Long-term declines in a wide range of avian species have been documented within North America. These declines have been attributed to a variety of underlying mechanisms including deforestation and urbanization. Accurate detection of species within avian communities is essential for long-term evaluation of populations. Also, observing temporal changes in avian community composition is critical for evaluating population persistence and maintenance of biodiversity. Our study site was a riparian woodland along the Aransas River on the Welder Wildlife Refuge. Our goals were to compare (1) avian community structure between two time periods (2007–2009 and 2021–2023) and describe the community dynamics across time, and (2) the effectiveness of species detectability utilizing four sampling methodologies: mist-netting, visual and auditory observations, point count surveys, and automated recording units (ARUs). In addition, we evaluated the effectiveness of the MAPS sampling protocol, a combination of mist net and visual/auditory observations, for detecting breeding passerines. Temporal data analysis showed the community composition from 2007 and 2008 was significantly different from 2022 ( $p = 0.015$ ,  $p = 0.045$ ), and 2007 was also significantly different from 2023 ( $p = 0.045$ ). Rank abundance analysis indicated the Northern Cardinal (*C. cardinalis*) was the top-ranking species in all years; however, a decline in the catch per unit effort was documented in all years except 2023. The comparison of sampling methods revealed species richness was most accurately detected by a combination of visual/auditory surveys and ARU recordings. The MAPS protocol detected the majority of breeding passerines within the riparian woodland community. ^




RESEARCH FELLOW  
**CHRISTIN A. MOELLER**

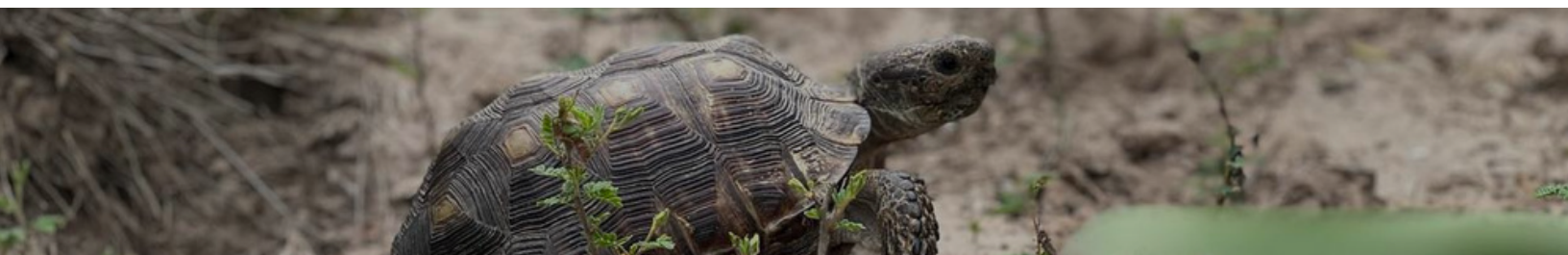
*Texas A&M University-Kingsville, M.S.*

*Scott E. Henke, Ph.D., Major Advisor*

## Effect of Translocation on the Threatened Texas Tortoise

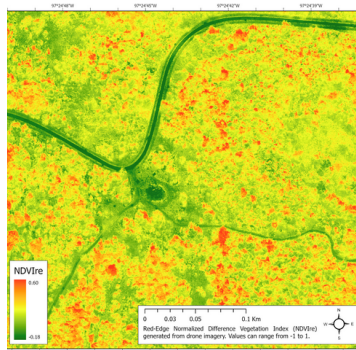


Due to a 98% decrease in population size and distribution, the Texas tortoise (*Gopherus berlandieri*) is classified as a threatened species in Texas. Their populations, which were once widespread in southern Texas from Victoria to San Antonio to Del Rio, are now scattered, with concentrations estimated to be around 0.1 tortoises per acre. It has been documented that Texas tortoises favor lomas in southern Texas, these areas are at high risk of habitat fragmentation due to industrial development. Although translocation has been proposed as a potential management strategy, it is unclear how such efforts will affect tortoise survival, movements, and reproduction. Therefore, to date, we translocated 221 Texas tortoises from the Port Isabel area to 3, 5-acre enclosures at Kingsville, Texas to assess the viability of translocation for Texas tortoises as a potential mitigation option before their habitat is altered. We are monitoring tortoise movements, survival, and reproduction via cellular telemetry. After 4-, 8-, and 12-months within enclosures (soft release), we will dismantle the enclosure walls to determine if tortoises remain in their newly established habitat or leave. The walls of the 4-month and 8-month enclosures were removed during March and July, respectively, which allowed 28 and 30 tortoises equipped with cellular transmitters to have free choice of movement. Tortoises have not displayed directional movement (i.e., homing behavior), but instead have randomly moved from the enclosed area at a rate of ~23m/day, on average. 

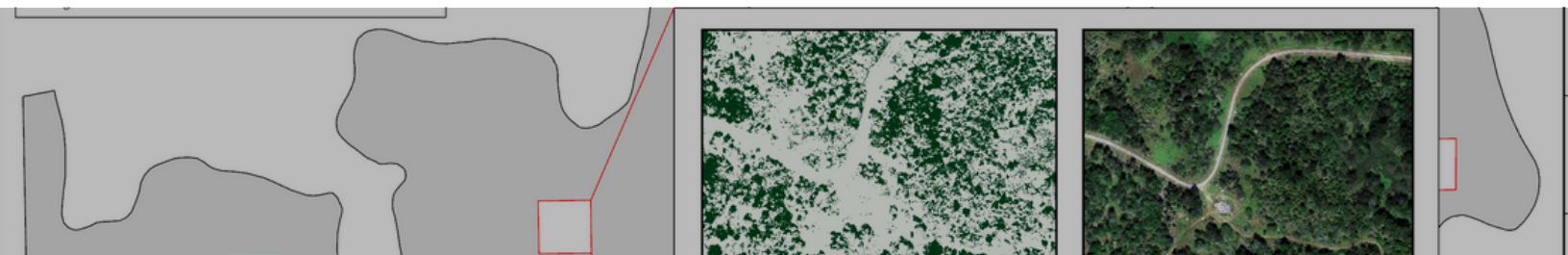




## RESEARCH FELLOW

**MIRANDA R. PETERSON***Texas A&M University, Ph.D.**William E. Grant, Ph.D., Major Co-Advisor**Hsiao-Hsuan Wang, Ph.D., Major Co-Advisor***Modeling Woody Plant Encroachment in a South Texas Grassland**

Grasslands support wildlife, store carbon and water, conserve plant genetic resources, and serve as ecosystem service providers. Yet, grasslands are the most threatened and least protected biome. Woody plant encroachment, which is the accumulation of native and/or non-native trees and shrubs, is a threat to grasslands globally. Woody plant encroachment has been attributed to fire suppression, overgrazing, climate change, and more. The relative importance and way in which these factors influence woody plant encroachment is still debated within the literature. A grazing and prescribed fire management strategy that fits future climate conditions is necessary to tackle woody plant encroachment and maintain grassland ecosystems. Simulation modeling is used increasingly as a tool to better understand and address this threat. Given the threat woody plant encroachment poses to grasslands globally and the significance simulation modeling has in addressing this threat, our objective is to use systems modeling to simulate grass and brush dynamics on South Texas rangelands under alternative future climate scenarios and management schemes. Our model simulates the effects of various grazing and prescribed fire management schemes on woody plant dynamics under baseline and two future 30-year climate scenarios, which assume moderate and worst-case CO<sub>2</sub> emissions. Preliminary results indicate that heavy stocking rates and summer burns reduce grass biomass under all three climate scenarios. Heavy stocking rates and winter burns reduce grass biomass under the current climate, but in future climate scenarios, grass biomass is maintained. Our proposed model can be used to evaluate future grassland management practices.

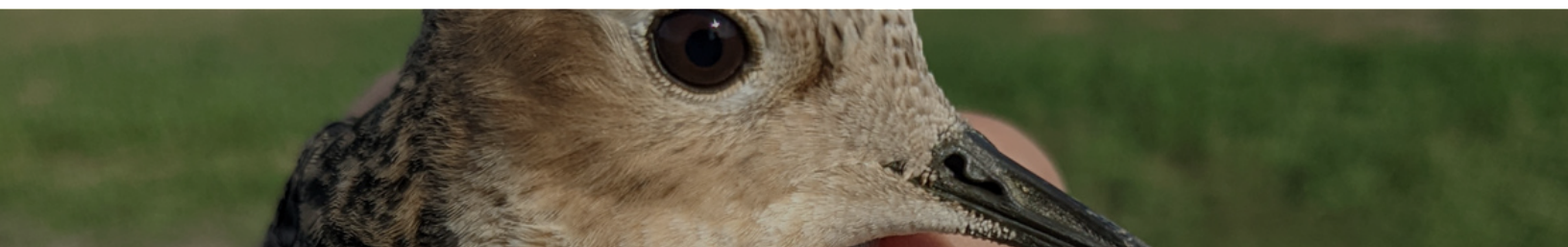


## RESEARCH FELLOW

## TARA L. RODKEY

*Texas A&M University-Kingsville, M.S.**Bart M. Ballard, Ph.D., Major Advisor***COMPLETED****Navigating Grassy Biomes: Insights Into Buff-breasted Sandpiper Migration Ecology In The American Mid-Continent**

Migratory shorebird populations are declining precipitously across the globe. These long-distance migrants may be used as sentinels of environmental change as research on shorebirds has the potential to uncover and predict environmental issues across vast and interconnected landscapes. Grassy biomes are landscapes under threat globally, with few intact and all under high threat of development or further ecosystem degradation. To examine how a migratory species navigates these threatened systems, we investigated the migratory stopover distribution and habitat preferences of the Buff-breasted Sandpiper, a species of shorebird that depends on grassy biomes across most of its lifecycle. We estimated the distribution of Buff-breasted Sandpiper in four critical stopover regions along its migration: the tropical savannas of the Llanos de Moxos and the Llanos del Orinoco; the temperate grasslands of the Western Gulf Coastal Plain; and the arctic lowlands of north-central Canada. Under a moderate future climate change scenario, our models indicated that the Western Gulf Coastal Plain is likely to lose the majority of its current suitable area, followed by the two tropical savannas. In the Western Gulf Coastal Plain, Buff-breasted Sandpipers are most often associated with cropland, particularly sod, a relatively rare and specialty crop type. Given this peculiar association and our findings highlighting the future precarity of this region, we further investigated the habitat preferences of the species in this region. We estimated the habitat selection of Buff-breasted Sandpipers tracked here in spring and fall. Our analyses revealed a strong selection for sod and a surprising avoidance of grasslands and pastures. Our findings underscore the importance of the Western Gulf Coastal Plain for this species and the increasingly urgent need for conservation strategies that collaborate with private landowners and policymakers in this region for the benefit of migratory grassland birds.





## RESEARCH FELLOW

## AMARIS D. SHAMMAA

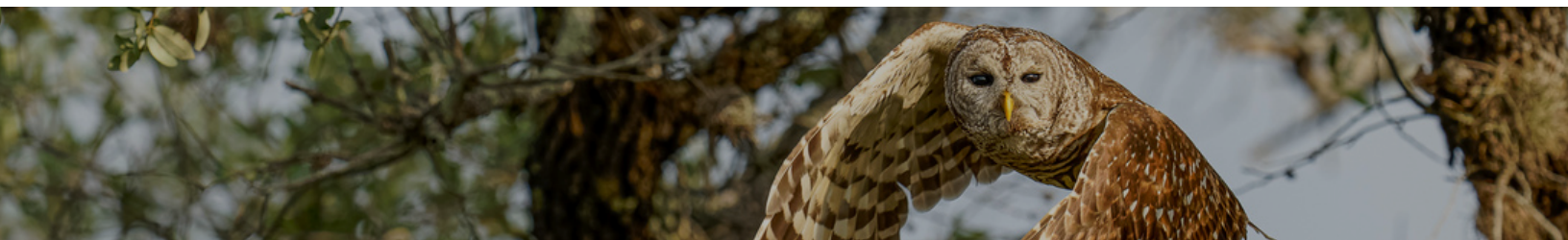
*Texas Tech University, M.S.**Clint W. Boal, Ph.D., Major Advisor*

## Habitat Associations, Resource Partitioning, and Community Structure of Owls



As a taxonomic group, owls are some of the poorest understood avian species in North America due to their nocturnal behavior. Far less is understood for multi-species owl community structure in terms of species overlap, exclusion, or resource partitioning. My study objectives are to determine owl species-specific densities, assess nesting habitat associations, spatial distributions, and extent of overlap of owl species on the Weller Wildlife Refuge.

Additionally, I will determine nesting success and compare prey use among species. I will use passive audio monitoring (PAM) and call playback methods to locate areas occupied by owls, then use ground searches for nest location, and subsequent productivity monitoring, nesting habitat assessments, and the extent of overlap of owl species. Additionally, I will assess risk of exposure by owls to second-generation anticoagulant rodenticide (SGAR) across protected and unprotected landscapes by collecting and comparing blood samples from adult owls on the refuge to those submitted to regional wildlife rehabilitation facilities. By systematically collecting these combined data, a clearer understanding of the owl community structure and effects within the local ecosystem can be obtained and used to assess regional population trends and questions of fluctuations in distribution or phenology associated with a changing climate. ^



# EDUCATION PROGRAM

2023 was a successful, exciting, and fun year for the education team. Filled with several first-time programs, the Foundation reached nearly 5,000 individuals through both on-site and outreach educational programming. We also achieved a new milestone in 2023, as the Foundation reached over 110,000 people since 1994! We look forward to continuing to reach thousands more in 2024 with even more new programs in the works. Thank you to all of our volunteers who contributed to a successful 2023. We couldn't have done it without you! ^

## 2023 MILESTONE

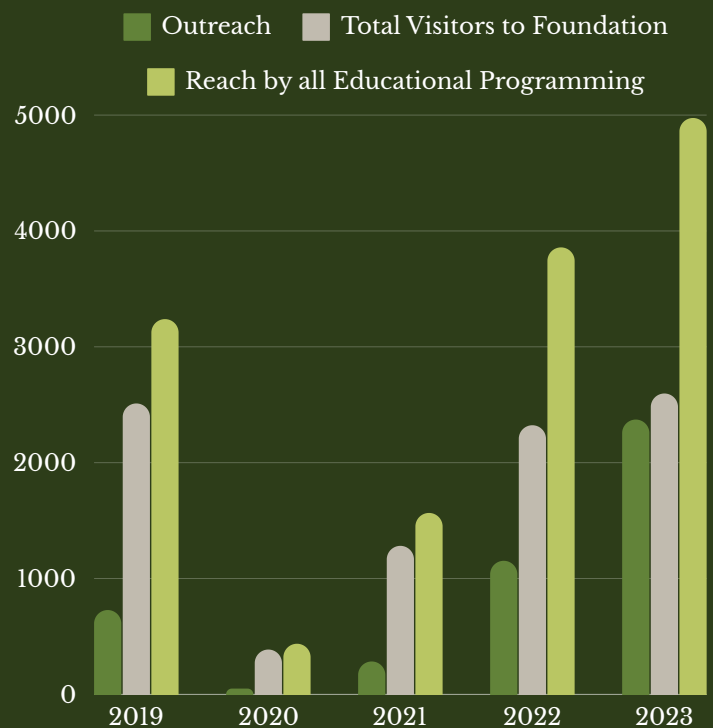
# 110,000

INDIVIDUALS REACHED SINCE 1994!

# 28%



Increase of individuals reached through all educational programs from 2023 to programs from 2023 to 2024





# VOLUNTEER PROGRAM

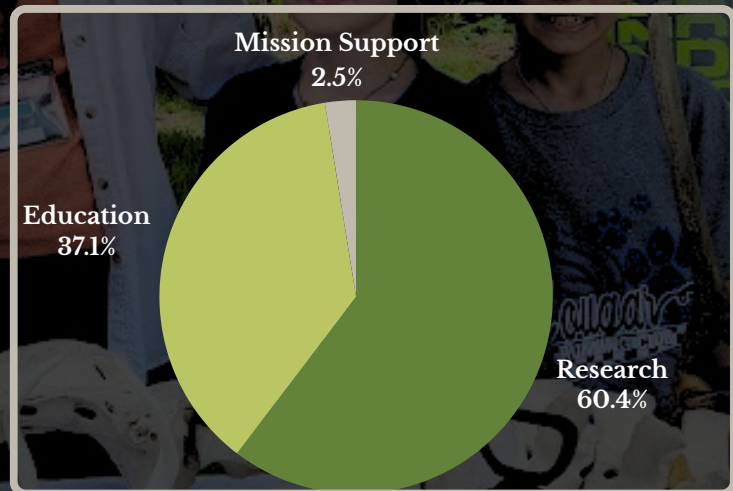
2023

903

VOLUNTEER HOURS  
SERVED!

Many of our programs rely heavily on volunteer help. Simply put, we could not complete half of what we do each year without these amazing individuals. Many volunteers are professionals in the natural resource field such as biologists, game wardens, extension agents, and more who come to share their expertise with visitors on the Refuge. Organizations represented by these individuals include Texas Parks and Wildlife Department, Ducks Unlimited, AgriLife Extension, San Patricio Soil and Water Conservation District, and many more. There are several areas to which volunteers can choose to dedicate their time. We separate those into three main categories- Mission Support, Education, and Research.

The majority of volunteer work is dedicated to research, primarily at the Foundation's MAPS (Monitoring Avian Productivity and Survivorship), station. These volunteers work hard, meeting a total of ten times throughout the summer, with their days starting at 5:30 and lasting, oftentimes, till noon. There was a total of 545 hours served this summer at the station alone. In addition to the hours served in Research, there were another 335 hours of volunteer work dedicated to our educational programming. These volunteers assist with group field days, lead lessons, hikes, and activities, and participate in our annual Youth Hunt, and so much more. These brave volunteers take on hundreds of students at a time most days and do so with a smile on their faces. Lastly, there was a total of 23 hours



served in our Mission Support programs. These volunteers serve in archival projects for the Foundation, clerical work in the office, building maintenance, and many more jobs that help the Foundation run smoothly. We cannot thank you all enough for your dedication to our programs and mission. It is because of dedicated volunteers that we can reach so many every year and carry on Rob Welder's vision for the Foundation. Special thanks to Kris and Ray Kirkwood, Philip Woods, Chad Huckabee, Grace Lopez, Bill Burge, Janie Von Dohlen, Ron Schulze, Jeremy Miller, Alexander Sharp, and many, many more!



# MUSEUM & COLLECTIONS

The term conservation is often extended to resources other than land and wildlife. The Foundation has also been entrusted to conserve a number of other special items including an extensive research library and collection of scientific specimens to be used for educational and research purposes. These collections include:

## The Donald Bowman Exhibit

405 Taxidermied Birds  
170 species represented

## The Roy Quillin Egg Collection

10,000 eggs  
400 species represented

## Francis Lee Jaques Art Collections

Wildlife murals and dioramas of  
native flora and fauna

## Specimen Collections

Herbarium- 1,400 pressed plants  
Avian- 545 species represented  
Amphibians and Reptiles- 104 species represented  
Mammalian- 61 species represented

## Historical Library

24,000 Volumes of Books  
Rare text dating back to the 1600s





# 2023 SUPPORT


*Thank you!*

Private donations, contributions, and sponsorships are a driving force behind the Welder Wildlife Foundation and our ability to deliver conservation programs. We are grateful for our supporters who give generously through general gifts and/or project-specific contributions. This support develops tomorrow's leaders in conservation science and educates future generations toward growing good stewards of our natural resources. We are thankful to our many partners and friends of the Foundation who make our work possible. ^

Steel Dynamics Southwest LLC  
Shasta Wildlife Conservation Foundation  
Coastal Bend Community Foundation  
Harry and Diana Hamilton Foundation  
Ed Rachal Foundation  
Corpus Christi Rotary Club  
San Patricio Soil & Water Conservation District  
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Randy and Dawn Bissell  
David Edwards III  
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Kirk & Leonora Wiener  
Ms. Angela Garcia  
Mr. Chuck Weil  
Dr. & Mrs. Dale James  
Mr. Charles Ellis



## RESEARCH & CONSERVATION PROGRAM PARTNERS

The Welder Wildlife Foundation would not be as effective and efficient in delivering our research and education programs without the collaboration and support of our many partners. We aim to engage with public and private conservation professionals whose goals align with our conservation mission and those collaborative partnerships that advance conservation research and education. 









# ROB AND BESSIE WELDER WILDLIFE FOUNDATION



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